Frank Bünning
Georg Spöttl
Harry Stolte   *Editors*

Technical and Vocational Teacher Education and Training in International and Development Co-Operation

Models, Approaches and Trends

Springer

Technical and Vocational Education and Training: Issues, Concerns and Prospects

Volume 34

Frank Bünning • Georg Spöttl • Harry Stolte
Editors

Technical and Vocational Teacher Education and Training in International and Development Co-Operation

Models, Approaches and Trends

Springer

Editors
Frank Bünning
Faculty of Humanities
Otto-von-Guericke University Magdeburg
Magdeburg, Germany

Georg Spöttl
University of Bremen
Center for Technology, Work and TVET
Bremen, Germany

Harry Stolte
Deutsche Gesellschaft für Internationale
Zusammenarbeit, GIZ, Academy for
International Cooperation (AIZ)
Berlin, Germany

Series Editors Introduction

This groundbreaking volume, which is edited by Frank Bünning, Georg Spöttl and Harry Stolte, on *TVET Teacher Education and Training in International and Development Co-operation: Models, Approaches and Trends*, is the latest book to be published in the long-standing Springer Book Series on "Technical and Vocational Education and Training". It is the 34th volume to be published to date in this TVET book series.

It is increasingly accepted by governments and policy makers worldwide that skills development for employability, and technical and vocational education and training (TVET), have a crucially important role to play if countries throughout the world are going to be able to achieve the United Nations Sustainable Development Goals (SDGs). In fact, many argue that education and training is the Master Key to achieving the SDGs, with enhanced skills development for life and employability having a particularly important part to play.

This book, which showcases international perspectives and experience, and development cooperation, regarding TVET teacher education and training, deals with an important topic. As such this volume will no doubt be widely read, and the research and views expressed by the editors, and by the authors of individual chapters, are widely respected since they are evidence based.

Through its 28 chapters the volume comprehensively and critically examines and evaluates key aspects of TVET teacher profiles and standards for a master's degree programme, and international perspectives regarding pre- and in-service education and training programmes for TVET teachers and trainers. As such the editors of this book argue that it is essential to develop high-quality and relevant TVET as an important pillar of education and training.

The book focuses particularly on examining what teachers and trainers can learn from modelling and measuring vocational competence learning tasks related to each other, and identifies development for the design and organization of vocational training processes; whether test and learning tasks are related to each other, and what distinguishes them from each other.

Frank Bunning, Georg Spöttl and Harry Stolte are all well qualified to edit this important and timely book since they are all well-known and respected scholars working in the field of TVET, who have a special interest in applied research in the area of teacher and trainer education. In addition to their substantial academic credentials, each has been deeply and widely involved with policy making concerning TVET teacher education and has practical hands-on international experience in many regions of the world, although particularly in Asia-Pacific, to assist governments and TVET providers improve the quality, relevance and reach of their TVET teacher education and training programmes.

In terms of the Springer Book Series in which this volume is published the various topics dealt with in the series are wide ranging and varied in coverage, with an emphasis on cutting-edge developments, best practices and education innovations for development. More information about this book series is available at http://www.springer.com/series/5888.

We believe the book series (including this particular volume) makes a useful contribution to knowledge sharing about technical and vocational education and training (TVET). Any readers of this or other volumes in the series who have an idea for writing their own book (or editing a book) on any aspect of TVET are enthusiastically encouraged to approach the series editors either directly or through Springer to publish their own volume in the series, since we are always willing to assist prospective authors shape their manuscripts in ways that would make them suitable for publication in this series.

School of Education, University of   Rupert Maclean
Tasmania, Hobart, TAS, Australia

RMIT University, Melbourne, VIC,
Australia
8 July 2021

Preface

Technical and Vocational Education and Training (TVET) has increasingly been gaining attention, as it is considered the driving force for economic and sustainable development. Consequently, the whole sector of TVET, including its central elements such as TVET teacher training, is the subject of intense debates.

> It is widely acknowledged that the quality of teachers and training greatly influences the effectiveness of technical and vocational education and training (TVET) institutes in generating qualified and skilled workers. The effectiveness of any education system also strongly depends on the quality of interactions and relationships that occur between the teachers and students (UNESCO-UNEVOC 2012, p. 5).[1]

Yet the development of national TVET teacher education systems is confronted by several severe problems across the globe, such as low social status of TVET teachers and low levels of professionalization.

There is now global consensus that TVET teacher training is the "glue" for ensuring quality development in the "practical" and "theoretical" learning processes of the skilled workers undergoing vocational training. Without teachers who are thoroughly qualified professionally and pedagogically, important prerequisites for promoting a higher level of societal recognition for TVET are missing.

Based on the above-mentioned needs, as well as regarding the further development of technical vocational education and training, the necessity arose for introducing structures for the initial and in-service training of specialized teaching personnel involved in technical and vocational education and training.

This publication analyses current approaches to TVET teacher education and in doing so it provides a concise overview of diverse practices and problems in developing as well as in industrialized countries. Particular attention is paid to reform initiatives and international cooperation in the area of TVET teacher education.

---

[1] UNESCO-UNEVOC: Strengthening TVET teacher education—Report of the UNESCO-UNEVOC online conference. 2012.

Since the development of TVET systems, TVET teacher education has gained importance, and government and donor policies are outlined and discussed. Special attention is paid to support strategies seeking to promote the effective and sustainable reduction of poverty by emphasizing TVET and TVET teacher education, and above all, national concepts seeking to achieve national ownerships of training programmes by national authorities but also appropriately established at regional and local levels.

Based on the analysis of the approaches of different countries and donor policies, recommendations and new concepts for supporting these processes are derived. These recommendations and ideas aim at the supranational and national political level and are fostering TVET and TVET teacher education.

In particular, the political development prospects of the OECD, the ILO, the ADB, the ETF, CEDEFOP and the BMZ as well as national case studies are presented in this publication.

The individual developments in different countries complete the overview of the international situation.

The main perspectives of these supranational organizations in support of TVET teacher training are central to the overall discussion, and concrete implementation cases from selected countries provide further insight into the current state of TVET teacher education.

By bringing together national perspectives and international prospects, including international donor policies, a holistic picture of obstacles, tendencies and opportunities for further development of TVET teacher education is outlined. Collectively, the multi-perspective contributions provide helpful and manifold perspectives on TVET teacher education relevant for TVET practitioners, researchers, educational policy makers, donors as well as implementation institutions and agencies at the national and international level.

Magdeburg, Germany   Frank Bünning
Bremen, Germany   Georg Spöttl
Berlin, Germany   Harry Stolte
2021

Contents

Contributors

Aim Abdulkarim Faculty of Social Sciences Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

Moh Sanni Mufti Alamsyah, ST, M Pd UNEVOC Centre at BBPPMPV BMTI, Bandung, Indonesia

M. Syaom Barliana Technical and Vocational Education and Training (TVET), Research Center, Faculty of Technology and Vocational Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

Affero bin Ismail, PhD Malaysia Research Institute for Vocational Education and Training, Universiti Tun Hussein Onn Malaysia, Johore, Malaysia

Ronel Blom, PhD Regent Business School, Durban, South Africa

Elena Boldrini Training Department, Swiss Federal Institute for Vocational Education and Training, Zollikofen, Switzerland

Per Borjegren Asian Development Bank (ADB), Pacific Regional Department, Manila, Philippines

Daiva Bukantaitė Vytautas Magnus University, Kaunas, Lithuania

Frank Bünning Faculty of Humanities, Otto-von-Guericke-University of Magdeburg, Magdeburg, Germany

Nguyễn Thị Kim Chi, MA Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Hanoi, Vietnam

Fook Yen Chong Asian Development Bank (ADB), South East Asia Regional Department, Manila, Philippines

Siripan Choomnoom Cornell University, Ithaca, NY, USA
Office of Vocational Education Thailand, Bangkok, Thailand

Sesokunthideth Chrea, MEcon General Secretariat of National Council for Minimum Wage, Phnom Penh, Kingdom of Cambodia

Paul Comyn International Labour Organisation (ILO), Geneva, Switzerland

Marion Edel Federal Ministry for Economic Cooperation and Development (BMZ), Division Education, Berlin, Germany

Miquel Àngel Essomba, PhD Autonomous University of Barcelona, Barcelona, Spain

Sara Galbaatar Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Cooperative Technical and Vocational Education and Training Project, Ulaanbaatar, Mongolia

Withfield Green, PhD Department of Higher Education and Training, Pretoria, South Africa

Slava Pevec Grm, MSc Department of Systems and Institutions, European Centre for the Development of Vocational Training, CEDEFOP, Thessaloniki, Greece

Teresa Guixé Universitat Autònoma de Barcelona, Barcelona, Spain

Razali Hassan, PhD Malaysia Research Institute for Vocational Education and Training, Universiti Tun Hussein Onn Malaysia, Johore, Malaysia

Lilian Hincu Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Bonn, Germany

Ecaterina Ionascu-Cuciuc Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Bonn, Germany

Lee Jae-Cheol Vocational Training Teacher Training Plan Team, Human Resources Development Institute, Koreatech University, Cheonan, South Korea

Shinyoung Jeon Vocational Education and Training and Adult Learning, OECD Centre for Skills, OECD, Paris, France

Aurélien Kaske Research in Microeconomics, Development Economics and Education Policy, Leuven, Belgium

James Keevy, DEd JET Education Services/UNEVOC Centre, Pretoria, South Africa

Lisa-Marie Kreibich Asian Development Bank (ADB), Sustainable Development and Climate Change Department, Manila, Philippines

Kyi Kyi Lwin Technical Promotion Training Centre, Baelin, Department of Technical and Vocational Education and Training, Ministry of Education, Naypyidaw, Myanmar

Gerda Magnus, MBA Department of Higher Education and Training, Pretoria, South Africa

Johar Maknun, MSi Technical and Vocational Education and Training (TVET), Research Center, Faculty of Technology and Vocational Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

Katherine Manley, EdD School of Education, Ferris State University, Big Rapids, MI, USA

R. Adam Manley, PhD Workforce Education and Development, Western Michigan University, Kalamazoo, MI, USA

Michelle Mathey, MEd Department of Higher Education and Training, Pretoria, South Africa

Danny Meriawan Department of Civil Engineering Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

Montserrat Milán Autonomous University of Barcelona, Barcelona, Spain

Brajesh Panth Asian Development Bank (ADB), Sustainable Development and Climate Change Department, Manila, Philippines

Irene Psifidou, PhD Department of Systems and Institutions, European Centre for the Development of Vocational Training, CEDEFOP, Thessaloniki, Greece

Vesna Puratić, MA Freelancer, Sarajevo, Bosnia and Herzegovina

Pupung Purnawarman, MSEd, PhD Faculty of Language and Literature Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

Yulia Rahmawati Faculty of Technology and Vocational Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

Ulrike Schmidt, MSc/MA Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ GmbH, Bonn, Germany

Johann Schustereder ADB-Supported Skills for Inclusive Growth Sector Development Programme, Bishkek, Kyrgyz Republic

Sello Sethusha Department of Higher Education and Training, Pretoria, South Africa

Erica Smith School of Education, Federation University Australia, Mount Helen, VIC, Australia

Georg Spöttl University of Bremen, Center for Technology, Work and TVET, Bremen, Germany

Julian Stanley European Training Foundation, ETF, Turin, Italy

Harry Stolte Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Academy for International Cooperation (AIZ), Berlin, Germany

Edi Suryadi, MSi Faculty of Economics and Business Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

Rodrigo Torres Vocational Education and Training and Adult Learning, OECD Centre for Skills, OECD, Paris, France

Vidmantas Tūtlys Vytautas Magnus University Academy of Education, Kaunas, Lithuania

Lina Vaitkutė, PhD Vytautas Magnus University Academy of Education, Kaunas, Lithuania
University of Verona, Verona, Italy

Nguyễn Quang Việt National Institute of Vocational Education and Training (NIVT), Hanoi, Vietnam

Oana Vodita Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Bonn, Germany

Dinn Wahyudin Universitas Pendidikan Indonesia, Bandung, Indonesia

Isma Widiaty Faculty of Technology and Vocational Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

Emanuel Andreas Wüthrich, MSc Swiss International VET Academy, Swiss Federal Institute for Vocational Education and Training, Zollikofen, Switzerland

Pengfei Xue Institute of Vocational and Adult Education, Beijing Normal University, Beijing, China

Sothy Yok National Technical Training Institute (NTTI), Phnom Penh, Kingdom of Cambodia

Zhiqun Zhao Institute of Vocational and Adult Education, Beijing Normal University, Beijing, China

Chapter 1
Introduction

Frank Bünning, Georg Spöttl, and Harry Stolte

Vocational training worldwide is facing rapid changes. The two phenomena such as:

- the increasing complexity of work processes, and,
- rapid technological changes.

have a considerable impact on the situation in the workplace and, thus, also on the requirements for modern vocational training. The aim of this publication is to clarify which concepts:

- for TVET (Technical and Vocational Education and Training) teacher training are being pursued by selected and leading governmental and supranational institutions and which ones,
- are being implemented in selected countries or are in the planning stage.

The aim is to create a basis for future quality improvements in TVET teacher training that can be based on reference concepts which, in particular, encourage quality orientation.

In many countries, TVET teacher training (this also includes instructor training) is still seen as something that "people should do on the job". Very often, there are no career paths for becoming a teacher or trainer in TVET, and there are no clear stages for teacher training, either through pre- and in-service programmes or other

F. Bünning
Faculty of Humanities, Otto-von-Guericke-University of Magdeburg, Magdeburg, Germany

G. Spöttl (✉)
University of Bremen, Center for Technology, Work and TVET, Bremen, Germany
e-mail: spoettl@uni-bremen.de

H. Stolte
Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Academy for International Cooperation (AIZ), Berlin, Germany

solutions. If teachers are not properly trained, this creates many difficulties for the personnel to function effectively (Axmann, 2015, p. 13).

The potential of technical and vocational education and training to support progress and transform societies is widely acknowledged. The European Union (EU) refers to it as the "engine of economic development and international competitiveness" (Azzoni & Arbizu, 2013). The strength and resilience of an economy is built on the skills and capabilities of its workers, and these skills are developed in a teaching process.

Internationally mandated guidelines which have specifically been created for TVET personnel do not exist, but there are numerous international normative frameworks and agreements which are applicable for the sector (ILO-UNESCO, 2012, 2015a, 2015b, 2016a, 2016b).

Several international guidelines from the last decade reflect the growing importance of TVET: UNESCO's Recommendation for TVET (UNESCO, 2016a) and the UN's Sustainable Development Goals framework (UN, 2015). TVET is crucial for fostering an economically productive labour force but also for facilitating the personal fulfilment and social cohesion necessary for a sustainable future. Nevertheless, this greater interest in TVET and the resulting recognition of its most important role have not yet led to the development of strong systems across the world. Indeed, particularly in low-income countries, TVET provision is limited, expenditure is low, and teacher and programme quality are inadequate. A study conducted by UNESCO-UNEVOC (2020) stated that the reasons why the pre-service training of TVET teachers is not a requirement in various countries is not due to a lack of funding or a lack of awareness of the usefulness of pre-service training, but instead a lack of systems and/or trained staff with the relevant knowledge and expertise to deliver the training.

The paper "Teachers in the Asian-Pacific" (UNESCO, 2016b) has further implications for TVET personnel. Their capabilities must go "beyond mastering work-specific skills, emphasis must be given on developing high-level cognitive and non-cognitive/transferable skills (problem-solving, critical thinking, creativity, teamwork, communication skills and conflict resolution)". Finally, it calls for increased cross-border recognition of the appropriate qualifications and quality assurance processes which will have direct implications for teacher and student mobility and teacher appraisal processes.

Given the challenges facing TVET, more attention has to be paid to change the attitudes, approaches and professional activities of teachers and trainers. Several challenges continue to arise in situations where teachers and trainers inevitably have a greater role to play than they do now in successful reforms and innovation. Yet the training and development of TVET instructors themselves has frequently received too little attention (Marope et al. 2015). Therefore it is crucial that TVET personnel receive more focused attention in the international education policy discourses. The growing importance of TVET, its specialization in linking up education and employment, and the complexities of TVET teaching provide a strong rationale for greater international peer learning and international guidance within the domain (Rawkins, 2018).

As mentioned in the Joint ILO-UNESCO Committee of Experts on the teaching personnel (CEART, 2019), some specific recommendations should be considered as particularly pertinent. These should promote and develop pre-service training programmes which are cognizant of the multifaceted role of TVET teachers:

- Recognizing the need for personnel to develop pedagogical, technical and practical skills and competences, pre-service training should parallel provide experience and learning in all three areas. Where possible, this should harness the expertise of various stakeholders, thus enabling TVET teachers to establish useful links with colleagues and industry professionals from the start of their careers.
- Having a clear understanding of what a TVET teacher needs to know and to do is most important for this idea. Therefore, governments should begin by pursuing the development of TVET teacher occupational standards. These can form the backbone of the recruitment and initial training programmes as well as contribute to continuing professional development, appraisal and quality assurance. These should be established in cooperation with teachers themselves as well as integrate the knowledge of academics and industry representatives.
- Pre-service training providers should be carefully regulated at a national level; this should include ongoing quality assurance processes.

A number of aspects which are embedded in international frameworks, policies and declarations were already touched on in the "Hanghzou Declaration" (UNEVOC, 2004),[1] "The Declaration" which requested international cooperative efforts towards TVET teacher education and training with a focus on the following:

- TVET should be developed into an internationally acknowledged scientific community.
- Sustainable, transferable and innovative national scientific systems should be developed and integrated into national systems of innovation.
- International exchange of learners and educators should be accelerated.
- Expertise in the pedagogy of TVET should be linked to vocational disciplines as well as to integrative perspectives on school-based and work-based learning.
- An improvement in vocational skills in order to ensure employability and as a criterium for applying for citizenship can only be realized if there is an increase in the quality, effectiveness and relevance of teaching.
- An effective interaction between teachers and learners lies at the centre of quality TVET.

Resulting from intensive exchanges of ideas and discussions between experts during the Hanghzou Meeting, an "international framework curriculum for a Master degree in TVET" was proposed which seeks to define:

---

[1] UNESCO International Meeting on Innovation and Excellence in TVET Teacher/Trainer Education. The meeting was jointly organized in 2004 by UNESCO-UNEVOC and UNESCO Office Beijing in partnership with the Chinese National Commission for UNESCO and the Chinese Ministry of Education. The discussion was continued in the Bandung Declaration (2009).

- A set of quality criteria for the education of teaching and lecturing professionals in initial and further education and training.
- A basis for future international scientific cooperation.
- A basis for the mutual exchange of students, lecturers and scientists.
- A framework that can form a basis for the mutual approval of students' credits.

A legitimation for an internationally agreed framework curriculum for a master's degree in TVET was deduced from actual global developments. Global economic competition increases the demand to produce high-quality products. High-quality products and high-quality, high-value-added work are at the core of global economic success for the twenty-first century. This is underscored by the increasing importance placed on broad and specific skills and competences. As a result of these challenges, education, training and human resources development has become of paramount importance for sustainable and competitive development for almost every country worldwide. When examining societies and in-company organizational development and restructuring, one can also see increasing attention being paid to learning processes. Training and education are being more and more integrated into production and work processes in order to achieve a better balance between implicit experience-led learning and systematically contextualized training processes. The sustainable exploration of the learning potential of work processes needs more developed expertise around the optimal design of complex arrangements for teaching and learning.

Worldwide roughly two thirds of the workforce are qualified at the intermediate level, which corresponds to technical and vocational education and training.

Vocational education and training, human resources and the overall management of the development of human competence can be seen as one of the key professions in the twenty-first century. Movements towards the professionalization of education and training can be found both in developed and developing regions.

Despite nationally specific features, common product and process standards have become increasingly binding.

This publication analyses current approaches towards TVET teacher education and, in doing so, provides a concise overview of diverse practices and problems in both developing and industrialized countries. Particular regard is given to initiatives for reform and international cooperation and to the particular approaches of relevant actors in international development cooperation.

The requirements for TVET teachers which have been outlined are taken up and further elaborated on in the individual articles. In each case, the positions taken are very closely related to the roles of the authors and their institutions.

The book is divided into five main sections. The first article by Georg Spöttl and Harry Stolte deals with the question of structuring master's degree programmes and offers standards for content orientation and structure. This is followed by articles that can be classified according to four focal points. These are as follows:

- Perspectives from internationally oriented institutions and organizations that pursue the pre- and in-service education of TVET teachers.

- Case studies of selected countries that are in the process of developing TVET into an important pillar of education.
- Case studies of countries that are already well-developed (countries in transition) and where TVET already plays a role as an important factor for the further development of those countries' society and industry.
- Case studies of industrialized countries where vocational education and training as a system is already established and is indispensable as a pillar within the educational system, alongside general education institutions.

The first group (internationally oriented institutions and organizations) is represented by:

- The BMZ (Federal Ministry for Economic Cooperation and Development), Germany, by Marion Edel's article on "Qualified Teaching and Training Staff as a Key for Implementation of Sustainable TVET Reforms".
- The ADB (Asian Development Bank) by Brajesh Panth, Lisa-Marie Kreibich, Per Borjegren and Fook Yen Chong's article on "Perspectives of ADB on the Education and Training of TVET Teachers".
- The OECD (Organisation for Economic Co-operation and Development) by Aurélien Kaske, Rodrigo Torres and Shinyoung Jeon on "Promoting Work-Based Learning for Vocational Teachers".
- The ILO (International Labour Organization) through Paul Comyn on the focus "TVET Teacher Education and Training in International and Development Co-operation".
- The CEDEFOP (European Centre for the Development of Vocational Training) by Irene Psifidou and Slava Pevec Grm with a focus on "VET Teachers and Trainers' Competence in Creating Inclusion and Excellence - European Policy Agenda, Approaches and Challenges".
- The ETF (European Training Foundation) by Julian Stanley, presenting the article "Support for Europe's Neighbours to Improve the Professional Development of Vocational Teachers and Trainers - the Experience of the European Training Foundation".
- GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ GmbH) by Frank Bünning and Ulrike Schmidt, who present the article: "International Framework for a Master Degree for the Professionalization of TVET Teachers - Potentials for International Development Cooperation".

The second group (countries under development) is represented by:

- Viet Nam by the authors Nguyễn Quang Việt and Nguyễn Thị Kim Chi. They focus on "Training and Professional Development for VET Teachers in Viet Nam".
- Myanmar by author Lwin Kyi Kyi, who focuses on "Teacher Professional Development: Institution-Based Professional Development (IBPD) Centre Myanmar".

- Indonesia by an author community of 10 authors coordinated by Moh Sanni Mufti Alamsyah on "Indonesia TVET Teacher Training: Policy and Implementation to Meet Industry Demands".
- Mongolia by Sara Galbaatar on "TVET Teacher Education System in Mongolia".
- Cambodia by Sesokunthideth Chrea and Sothy Yok analysing the concept of "Pre-Service TVET Teacher Education in Cambodia".
- Kyrgyzstan by Johann Schustereder, who takes a closer look at "TVET Teacher Pre- and In-Service Training in the Kyrgyz Republic".

The third group (countries that are already well developed) is represented by:

- Malaysia by Razali Hassan and Affero bin Ismail. They present the development status of their country in TVET teacher training: "The Development of Malaysian TVET Teacher Training".
- Thailand by Siripan Choomnoom who describes "TVET Teachers Training in Thailand" in the different facets of its development.
- South Africa by the author group Ronel Blom, James Keevy, Whitty Green, Michelle Mathey, Gerda Magnus and Sello Sethusha. They thoroughly discuss the role of TVET teachers with regard to "Positioning TVET Lecturer Identities at the Centre of TVET Lecturer Education and Training in a Post-COVID-19 Context".
- Moldova with Oana Vodita, Ecaterina Ionascu-Cuciuc and Lilian Hincu on "Education and Training of Vocational Education and Training (VET): Teachers in the Republic of Moldova".
- Bosnia and Herzegovina with Vesna Puratić presenting "TVET Teacher Education and Training in Bosnia and Herzegovina".

The fourth group (industrialized countries with an established vocational education system) is represented by:

- Lithuania with Vidmantas Tūtlys, Lina Vaitkutė and Daiva Bukantaitė, who deal with the institutionalization of TVET teacher education in their article: "Development of Competences and Qualifications of the VET Teachers and Trainers in Lithuania".
- South Korea with Lee Jae-Cheol who focuses on "Past, Present, and Future of Vocational Training Teacher System".
- China with Zhiqun Zhao and Pengfei Xue, on the topic of "TVET Teacher Training in Transformation in China".
- Switzerland with Elena Boldrini and Emanuel Andreas Wüthrich. They describe the approach taken in Switzerland under the title: "A Situation-Based Model for Swiss VPET Teacher and Trainers' Education: Main Orientations and Structure".
- Spain with Miquel Àngel Essomba, Montserrat Milán and Teresa Guixé, on "Initial Training of Vocational Education Faculty in Spain: Higher Quality, Better Skills".
- Australia with Erica Smith on quality development in teacher education with the topic "Australian TVET Teacher Training - Once Flourishing but now Neglected".

- USA with R. Adam Manley and Katherine Manley on teacher training from the perspective of "Career and Technical Education in the United States".
- Germany with an article by Frank Bünning on "Models of TVET Teacher Education in Germany and Their Potential to Meet Growing Demands in TVET Teacher Education".

With a total of 27 articles, a comprehensive insight into the importance of TVET systems and the teachers who need to be qualified for them is provided. With all the differences in the perspective of each article and the objectives of each country's activities towards implementing successful teacher education, one thing becomes clear: *there is a consensus regarding the need to professionalize teachers for TVET*. The consequence of this is not necessarily that all authors demand bachelor's and master's programmes for TVET teachers. What is needed, however, is a professional qualification of teachers in order to be able to competently promote learning as a central element of competence development for all participants in educational and qualification processes within the TVET systems.

References

Axmann, M.. (2015). Vocational teachers and trainers in a changing world: the imperative of high-quality teacher training systems. Employment Working Paper, no.1, 77. Geneva: ILO.

Azzoni, L., & Arbizu, F. (2013). *TVET and skills development in EU development cooperation 2012/3080551, final report* (p. 14). European Commission.

Bandung Declaration on TVET Teacher Education. (2009). Dittrich, J., Md Yunos, J., Spöttl, G, Buckit, M. Standardisation in TVET teacher education. Frankfurt, pp. 191–198.

CEART. (2019). ILO/ UNESCO Recommendation concerning the Status of Teachers (1966) International Labour Organization and UNESCO 2019. Joint ILO/UNESCO Committee of Experts on the Application of the Recommendations concerning Teaching Personnel (CEART). ILO. Available: https://www.ilo.org/wcmsp5/groups/public/%2D%2D-ed_dialogue/%2D%2D-sector/documents/normativeinstrument/wcms_493315.pdf

ILO-UNESCO. (2012). Transforming TVET: Building skills for work and life (Shanghai Consensus): Recommendations of the Third International Congress on Technical and Vocational Education and Training. UNESCO. Available: https://unevoc.unesco.org/home/Report:+Building+Skills+for+Work+and+Life,+Shanghai,+China,+13-16+May+2012:+Third+International+Congress+on+TVET&context=.

ILO-UNESCO. (2015a). *Recommendation concerning technical and vocational education and training (TVET)*. UNESCO. Available: http://portal.unesco.org/en/ev.php-URL_ID=49355&URL_DO=DO_TOPIC&URL_SECTION=201.html

ILO-UNESCO. (2015b). EFA Global Monitoring Report 2015: Education for All 2000–2015-Achieve-ments and Challenges. UNESCO. Available: https://unesdoc.unesco.org/ark:/48223/pf0000232205

ILO-UNESCO. (2016a). Education 2030: Towards inclusive and equitable quality education and lifelong learning for all. Incheon Declaration aned Framework for Action. Paris: UNESCO.

ILO-UNESCO. (2016b). *Strategy for technical and vocational education (TVET) - (2016–2021)*. UNESCO.

Marope, P. T. M., Chakroun, B., & Holmes, K. P. (2015). *Unleashing the potential: Transforming technical and vocational education and training* (p. 113). UNESCO.

Rawkins, C. (2018). A Global Overview of TVET Teaching and Training: Current Issues, Trends and Recommendations, Joint ILO-UNESCO Committee of Experts on the Application of the Recommendations concerning Teaching Personnel (CEART), Paris – Geneva, 2018, p 1, p. 25–26.

UN. (2015). United Nations Summit on Sustainable Development 2015. 70thSession of the General Assembly. Informal summary. New York: United Nations Headquarters. 25–27 September. Available: https://sustainabledevelopment.un.org/content/documents/8521Informal%20Summary%20-%20UN%20Summit%20on%20Sustainable%20Development%202015.pdf.

UNESCO. (2016a). *Recommendation concerning technical and vocational education and training (TVET)*. UNESCO. Available: https://unesdoc.unesco.org/ark:/48223/pf0000245178

UNESCO. (2016b). *Teachers in the Asia-Pacific: Career progression and professional development*. UNESCO. Available: https://unesdoc.unesco.org/ark:/48223/pf0000246011

UNEVOC. (2004). UNESCO International Meeting on Innovation and Excellence in TVET Teacher/Trainer Education. Documentation. UNEVOC: Hangzhou 8–10. November 2004. Available: https://unevoc.unesco.org/fileadmin/user_upload/pubs/Hangzhou_International_framework.pdf

UNESCO-UNEVOC. (2020). Future of TVET Teacher. UNESCO-UNEVOC Study. Education 2030. UNESCO-UNEVOC Centre. Available: https://www.skillreporter.com/wp-content/uploads/2020/08/Future-of-TVET-Teaching-Pooja-Gianchandani-Gita-Subrahmanyam-UNESCO-UNEVOC-Report-Skill-Development.pdf

Chapter 2
TVET Teacher Profile and Standards for a Master's Degree Programme

Georg Spöttl and Harry Stolte

Abstract The training of TVET teachers is scarcely comparable from country to country, because very different educational policy frameworks and concepts exist for it. Nationally, too, the concepts and programmes implemented in individual regions are often not comparable. Depending on each country's interests and responsibilities, very different solutions are practised, ranging from a few hours of instruction in pedagogical approaches to training at universities.

In this paper, a framework is outlined for university-based master's programmes to qualify TVET teachers. The proposals build on participants already having earned a bachelor's degree in a subject (e.g. an engineering subject such as electrical engineering) and then earning a TVET teacher master's degree.

2.1 Introduction

Technical Vocational Education and Training (TVET) is increasingly considered as one of the three pillars of educational systems, along with general school education and university education. TVET has central significance for the organization and the design of school-to-work-transitions and also forms an important basis for lifelong learning. The professionalism of TVET teachers is crucial for ensuring that graduates are adequately prepared for their occupational work and careers and that the thresholds between school and vocational training, as well as between vocational training and the employment system, are kept low.

G. Spöttl (✉)
University of Bremen, Center for Technology, Work and TVET, Bremen, Germany
e-mail: spoettl@uni-bremen.de

H. Stolte
Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Academy for International Cooperation (AIZ), Berlin, Germany

By making work, technology and education as a whole the object of academic qualification, the vocational specialization will enable graduates to systematically shape both the technical vocational educational processes and for those work processes for which they are being qualified. Within this academic context, technology is reflected upon critically and dealt with in connection with corporate work processes, as well as with regard to vocational competence development.

Currently, universities are intensively pursuing an improvement of the training of TVET teachers and a quality-based reform of the related study programmes. The demand for an international comparability of the graduating academic degrees achieved as well as the permeability of the labour market lead to a modularization of study offerings and the quantification of the study specifications through uniform credit systems (e.g. ECTS in Europe). At the same time, the introduction of bachelor's and master's study programmes aims at internationally comparable graduation certificates. Thus the university education of TVET teachers takes changes in the technical vocational training practice into account. There is an ongoing process of modernization which can be described by keywords such as work and business process orientation or context-oriented learning. These requirements can only be adequately implemented if the necessary basics for quality assurance and the modernization of the vocational specializations as well as the future-oriented education of TVET teachers are safeguarded.

In order to provide guidance to the planners and implementers of courses of study about the framework of study programmes for TVET teacher education and the necessary qualitative orientation, a framework for a master's degree programme that meets international standards is presented here. This should provide the basis for the quality education of TVET teachers.

The benchmarks presented here provide an orientation for subject- related standards, both for the further development of the TVET specializations in existing master's programmes and for study programmes for TVET teachers.

2.2   Demands and Fields of Responsibility for TVET Teachers

Often, the quality of teaching will be determined by the outcome of the learners' learning processes. How well learners are performing is often the subject of measurement. But it is important to recognize that different levels and parameters of a TVET system influence the outcome. TVET systems are networks with interdependent systemic areas, yet there are three factors in addition to overarching framework conditions which are powerful determinants of quality: teachers, learners and the content of and methods for learning. Additionally, the framework should deliver suitable conditions for learning as, such as, a legal framework, rooms, equipment and media and so on; however, teachers are the essential actors for bringing the content together with the framework conditions and the learners.

Therefore a TVET teacher profile has to be defined in such a way that it becomes clear, what TVET teachers should be able to do to produce "quality".

Strangely enough, most quality assurance systems for TVET focus on the framework conditions and on topics like certification and assessment, also when laying out these standards for teachers (e.g. UNESCO, 2017). It is important to emphasize that TVET teacher standards should focus on the key factors mentioned above: the teachers, the learners and the content and methods of learning with the teacher in the centre.

A link to the industrial and labour market is important for teacher education at universities. After graduation TVET teachers have to be able to act competently in their own professional field of education and training. They also have to be accepted by the teacher and trainer labour market and have to be able to cooperate with industries in the planning and implementation of TVET. The main areas of requirements and work of TVET teachers will be described in subsects. 2.1, 2.2, and 2.3 (cf. Spöttl, 2018b, Becker & Spöttl, 2020).

2.2.1   Promoting Learning Quality

TVET teachers are able to:

- Form the curriculum contents, as objects of learning for the occupations both theoretically and practically.
- Prepare curriculum contents in a way that students at different levels are supported in developing occupational competence and becoming motivated to understand theoretical and practical contexts and reflect on them.

Both tasks require TVET teachers to be capable of planning and implementing a teaching and learning process.

2.2.2   Overall Competences

Each TVET teacher needs to have access to the students and understand what is required from them. Overall competences needed to reach this aim are:

- Analytical competences regarding learning at TVET institutions and learning based on the requirements of work, as well as learning that is taking place during a defined timeframe
- Various pedagogical-didactical approaches and concepts must be at hand in order to apply them when needed
- Teaching staff should be acting in an adequate pedagogical manner within the organization and development of their TVET centres, training institutes and colleges

- Cooperation with colleagues and companies
- Promoting the development of an occupation-related identity for the students.
- Adhering to legal guidelines
- Identifying and addressing possible personal needs for their own continuing professional development
- Based on the company-related requirements for the students, the teaching staff must keep "holistic teaching practice" in mind.

2.2.3   Specific Competences

The work contents of TVET teachers concentrates on planning, implementation and evaluation and assessment of one's own teaching against the background of existing standards and framework conditions. Thus TVET teachers:

- Analyse occupational standards and profiles, curricula and corporate requirements and shape pedagogical processes (objectives for competence development, selection of relevant contents, structuring of their approaches according to factual, process-related and didactical considerations with the goal of developing competence in trainees/students in different learning environments)
- Understand the changing world of work including technological novelties and procedures of work and business processes in companies and other sectors
- Analyse the work processes in companies and interlinks them with elements of cooperation of learning environments and through the shaping of adequate learning tasks, etc. with occupational learning processes. This promotes the understanding of the processes and their special contents and the learners' capability to reflect on their own behaviour as well
- Coordinate the planning of instruction with the aims and themes of the curricula. They plan the use of methods and media in existing learning and work environments and keep in mind the individual needs of the students in their specific situations
- Prepare the students for their future work in a particular occupation by selecting adequate learning and working tasks for them. Thus TVET teachers inspire the students to develop their knowledge of technology, problem-solving and other soft skills during practical work in their occupation as well as within the chosen occupational training they have chosen
- Promote self-organized and cooperative learning by applying student- and action-oriented teaching methods and media
- Consider differences among students (heterogeneous learning groups) in their choice of instruction methodology
- Plan the systematic development of specialist, social and human competences and promote the development of reflective and metacognitive competences as well as the relevant methodological competences

- Are able to combine practical and theoretical learning lessons in workshops and in other learning environments
- Intensively promote the development of occupational competence of action by accessing specialist interrelationships and complexity. They support students and their learning processes in order to enable them to make sound decisions in all occupational challenges they are confronted with
- Are able to develop and implement a balanced, indicator-related assessment of performance in order to guarantee the individual development of students.

TVET teachers who meet all these requirements are called "fully qualified teachers".

2.3 Background of Master's Degree Programmes for TVET Teachers

In line with the "UNESCO Hangzhou Declaration" (UNEVOC, 2004) and the Bandung Declaration 2009 (Bandung Declaration on TVET Teacher Education, 2009), the TVET Institutions are strongly encouraged to introduce a standard of TVET teacher education which will support and ensure the quality of academic and scientific learning. A linkage to the practice of TVET in industry should ensure a multidisciplinary approach to their work, reach mutual recognition agreements with other institutions and partners and enhance the framework for students' quality and mobility. Teacher training (TT) standards of TVET teacher education are new for TVET teacher educators, professors and researchers. In order to implement the TT standards at universities, teacher educators must be familiar with the standards themselves and with their implications for TVET teacher education. That means, among other things, that TVET teacher educators must be able to implement

- Vocational pedagogy as a scientific discipline.
- Concepts for cooperation and communication in TVET teacher education.
- A "self-reliant learning" culture.
- An appropriate evaluation and assessment culture.
- An appropriate research culture with respect to teaching content and further requirements in TVET and the world of work.
- An appropriate research culture regarding teaching methods.
- An appropriate learning environment for their TVET teacher students.

The idea that TVET should play a crucial role for societal progress in every country is taken up by a lot of international strategy papers: in recent years, this has, more and more, become a shared firm conviction of public and private stakeholders of educational policy all over the world. This is well proven by the Shanghai Consensus (Shanghai Consensus, 2012) which contains Recommendations of the Third International Congress on Technical and Vocational Education and Training.

This document is a key message being sent to UNESCO's Member States with the goal of enhancing the relevance of TVET everywhere.

Nevertheless the need to better train teachers for the TVET system has been chronically underestimated in many countries. This results in very few or no initiatives at all for training teaching staff generically in both a specialization and in pedagogy and vocational educational pedagogy. This prevalent approach presumes that vocational education and training is a simple training of skills and neglects the fact that TVET teaching staff have more to impart than skills. They must cope with considerable and far-reaching tasks, such as:

- Shaping of learning cultures and processes in a didactical way
- Support of learning processes
- Motivation for learning by using a variety of methods
- Processing complex specialist interrelationships in a didactical way
- Shaping of curricula
- Support in developing of an identity with the help of a particular occupational profile that is being imparted
- Safeguarding employability
- Support of sustainability and societal stability

This short list underpins the fact that TVET is more than simple skill training or simple imparting of knowledge. TVET teachers take over important societal tasks as they train skilled workers who have to deliver high-quality work in companies, who should be promoters of innovation within their enterprises, who could become self-employed and more. TVET teachers also have to ensure that the requirements of the industry, the private sector and the public sector can quickly be integrated into vocational training. This can only succeed if the teachers are qualified as professionals and if they are prepared for dealing with such far-reaching tasks.

2.3.1 Implications of TVET Teacher Training[1]

Global economic competition is increasing the pressure to produce high-quality products. High-quality products and high-quality, high-value-added work are seen as being at the core of economic success for twenty-first-century economies all over the world. Digitalization is one of the main issues currently under discussion in this context. This is emphasized by the increasing importance of "broad" competences (Spottl, 2018a). In light of these challenges, education, training and human resource development has become of outstanding importance for a sustainable and competitive development for almost every country worldwide.

Looking at different sectors as well as in-company organizational development and restructuring, one can also see the increasing attention being paid to learning

---

[1]Partially selected from UNEVOC, 2004.

processes. Training and education are being more and more integrated into production and work processes in order to achieve a balance between implicit experience-led learning and systematically contextualized training processes. The sustainable exploration of learning potentials of work processes needs highly developed expertise in the optimal design of complex arrangements for teaching and learning. In both instances, learning is more and more being seen as a lifelong and also "life-wide" process, which not only takes place at the individual but also on the organizational level. Both aspects are confronting those who are responsible for the shaping and design of learning processes with new challenges.

The apparent paradox of simultaneous convergence and divergence of education and training can be observed in a global setting which is often labelled as "globalization and localization". However, economic processes have been increasingly expanded into what is called a globally organized market. Despite nationally specific features, common product and process standards have become increasingly binding. International cooperation within multinational enterprises and between globally active companies is increasingly becoming key to sustainable economic success.

2.3.2 *Objectives of Study Programmes*

In many countries, there is an increasing and widespread awareness of the importance of TVET teacher training for the further development of TVET. At least in politics, there is also a broad awareness of the need to improve the number and quality of TVET teachers. The survey carried out by Euler (2018) underscores that there is no doubt that TVET is seen as a second choice when compared to an academic education. This has major implications especially for the reputation, status and attractiveness of both TVET programmes and TVET staff and teachers. Compared to teaching staff in general education, requirements for TVET are perceived as more demanding. The reputation and status of TVET and general schools are more or less seen to be similar.

Study programmes should consider the National Qualifications Framework of their respective countries as well as the development of the TVET occupations and should impart a future-oriented competence of action for vocational teaching staff working in the different institutions and learning environments of vocational education and training. The scientific reflexion on the vocational and societal structures of the learning and working of skilled workers is of central interest, above all with regard to a co-shaping of the world of work and society with a sense of social and ecological responsibility. Work, technology and education in a comprehensive perspective have become the subject of scientific teaching. Technology will thus be examined in connection with the shaping of work and business processes and with regard to the competences of the employees.

The international framework curriculum for a master's degree in TVET aims to define[2]:

- A set of quality criteria for the education of teaching and lecturing professionals in initial and further education and training
- A basis for future international scientific cooperation
- A basis for the mutual exchange of students, lecturers and scientists
- A framework that can form a basis for the mutual approval of students' credits

2.4 Study Programme Framework

A study programme must be assigned to level 7 master's degree of the European Qualifications Framework (EQF). The requirements underpin the quality standards of level 7. This classification ensures that a high professionalization level is aimed at. In spite of their central task of shaping educational processes, TVET personnel is traditionally first and foremost defined via their expertise and their knowledge of vocational and professional scientific knowledge, thus justifying their expert status, in the sense of professionalization.

Both the professional knowledge defined here and a specific competence in processes are at the centre of any TVET activity. At the same time, theoretical knowledge and methodological competence are also crucial for the training of pedagogical professionalism. The category of reflection on one's own actions has central priority. This means that theory-guided reflection and justification of one's own behaviour in pedagogical situations can help to relieve the strain of acting and decision-making on TVET professionals.

2.4.1 Rationale of a Framework Based on Vocational Disciplines

There is a large gap in qualifications and a high demand for teachers for TVET institutions and vocational training in many countries. At the same time, quality standards and new qualification requirements for staff in the areas of technical training have arisen.

The development of TVET teacher competences are deeply linked deeply to the study areas of vocational teachers which are differentiated along the vocational disciplines (UNEVOC, 2004) and based on the abovementioned competence areas. One central point is that TVET teachers need a "double subject reference" (Spöttl 2014, KMK 2019, p. 6), a reference to the occupations in a vocational area as

---

[2]Partially selected from UNEVOC, 2004.

subjects[3] as well as the corresponding vocational scientific discipline. This double reference is essential for TVET teacher training (developing occupational competence and specific teaching competence) as well as for the TVET teacher profession (determining the content and methodology of learning as typical teacher tasks). The following definition should clarify the meaning of a vocational discipline.

Vocational Discipline (formal definition).

It is the area to be studied by TVET teacher students in order to develop relevant teacher competences to teach occupational subjects in a particular occupational field, the scientific subject for the clarification of the theory of occupations / occupational competence and the contents of teaching.

Furthermore:

- The field of specialization of teaching in the area of TVET
- Scientifically based "occupational subjects"
- A theory of occupations for the needs of study programmes
- Linked to occupational domains/occupations in a particular occupational field
- A combination of occupational science (which identifies the content of professional knowledge and skills for mastering work processes and work tasks in an occupation and vocational didactics)

The term vocational discipline is normally used in the area of TVET to clarify the specific learning area and related learning needs for the world of work. Because of the close linkage between the occupational subject and the vocational didactic as parts of a vocational discipline, the term "vocational disciplines and their didactics" is sometimes used.

For the vocational academic disciplines, UNEVOC (cf. UNEVOC, 2004, p. 15) defines 12 subject areas which are listed below:

- Business and administration
- Production and manufacturing
- Civil engineering
- Electrical and electronic engineering
- Information and communication technology
- Process engineering and energy
- Health care and social care
- Education and culture
- Leisure, travel and tourism agriculture, food and nutrition
- Media and information
- Textile and design
- Mining and natural resources

---

[3]That means that the occupation as a subject should be one focus for teacher competences and competence development. Mastering the tasks in an occupation requires knowledge, skills and abilities which do not only come from the area of scientific disciplines or from technology. We have termed these "work process knowledge" (Boreham, et al. 2002) as an important competence orientation for TVET teachers.

Fig. 2.1 Areas of TVET teacher standards
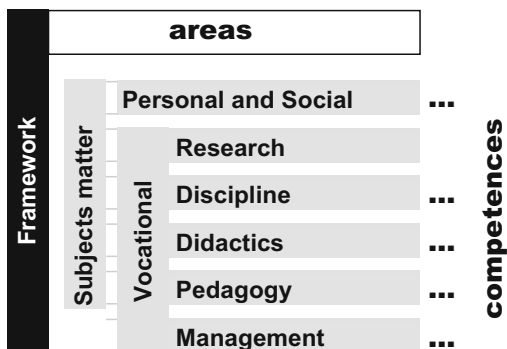
The core of the discussion related to vocational disciplines is that TVET teachers need a close interlinkage between different competence areas. On the one hand, they need vocational competences (related to a technical vocational discipline), while on the other hand, they also need personal, social and occupational competences as well as pedagogical and especially methodological and didactical competences at an academic level (see Fig. 2.1).

The development of these competences andof course—the capability of the TVET teachers to perform them as part of their duties requires a combination of and interconnectedness between all areas of competence listed here and especially between the dimensions "vocational pedagogy" and the vocational discipline as a "subject matter". In general education the subject matter is defined with the help of general scientific disciplines like biology for a biology teacher or technology for a technology teacher. In contrast to this, the subject of a TVET teacher in the area of TVET is one with a "double subject reference" (see above) which means that vocational disciplines and referencing occupations define the subject matter.

The *pedagogical* dimension in TVET should be understood as a bridge between the areas of responsibility needed for identification, preparation and implementation of work and learning content and processes. This bridge (expressed through the term "vocational") ensures effective occupational related teaching and learning and makes clear that TVET teaching is sometimes fundamentally different from teaching general subjects. In this context, the special significance of vocational learning processes is to secure a vocational ability to support the learners in the working world.

In further considering the competences discussed, it is a challenge to differentiate between competence areas and at the same time to combine and integrate them as a standard. Since competences are, in reality, not separate from each other, but are identifiable as performance outcomes within the context of tasks, the standards for outcomes are described as competences for teachers.

There are two holistic competence areas classified as TVET teacher tasks:

Personal and social competences describe the competence of a TVET teacher to become acquainted with the TVET school as an institution, with the underlying

system and their own personal attitudes for the ongoing further development of their own skills and competences.

Vocational research, discipline, didactics, pedagogical and management competences describe the competences for identification, preparation and implementation of teaching with a focus on occupations in the vocational field and based on competences in a vocational discipline (for more details see the tables below). This second point consists of several categories or priorities:

(a) *Vocational research*: competence of TVET teachers for determining occupational competence requirements, developments of the occupations and teaching requirements.
(b) *Vocational discipline*: competence of TVET teachers for analysing the occupational subject (manufacturing, automotive, etc.) and the relevant requirements and changes in the world of work.
(c) *Vocational didactics*: competence of TVET teachers to choose and structure relevant contents and methods for supporting vocational learning processes.
(d) *Vocational pedagogy*: competence of TVET teachers for planning, carrying through and assessing learning sessions.
(e) *Vocational management:* competences of TVET teachers for organizing and further developing vocational schools and vocational education programmes.

Each of the categories listed here has links to adjacent categories.

2.4.2 Qualification Title

The master's course is targeted towards graduate students in TVET, i.e. teachers, trainers and lecturers.

Issued degree: *Master of Technical and Vocational Education and Training (TVET)*

Length of study time: 90–120 credits according to national regulations. Priority: 120 credits.

2.4.3 Competence Development Within the Study Programme

In fact teachers at TVET institutions are already initiating the learning processes as they are needed for TVET teacher education. The orientation of vocational education towards competence-promoting learning processes is thus based on one of the basic elements of implicit learning through concentrating on the further development of problem-solving abilities and the corresponding behaviour within the work process. Central structuring elements of vocational learning processes are work processes, which can be constructed in a more or less complex way. This offers starting points

for reflection on curriculum during teacher TVET training oriented towards competence development.

In short: a competent teacher is best able to support the students during their development towards a trained skilled worker or future course of studies at university.

With regard to the question of how the required competences could best be developed, it is an empirically confirmed claim that teachers can be enabled to reflexively co-plan competence-promoting learning processes, to accompany them by being able to moderate in a flexible way and to support them by organizational further development, provided they have experienced such kind of learning as profitable during their own learning biography[4]:

- Learning processes have to be oriented towards real tasks in occupational work (e.g. order processing, project work, shaping of work).
- *Learning must be able tolerate a certain degree of mistakes; a zero-mistakes-*philosophy hampers taking responsibility and the possibility for self-reflection.
- The implementation of these learning processes requires teachers to cope with complex organizational preparatory work that can only be realized by interdisciplinary teams.
- It will be necessary to create new ways for these ideas and to implement external cooperation as schools alone cannot provide all necessary resources (in terms of knowledge, environment, equipment, etc.).

These ideas offer a framework for the development and shaping of a "learning culture" including the contents and organization of teacher training. In order to achieve competence-based learning, the perception of learning as a long-term change of attitude must be extended, as the traditional ideas neither include the ability to acquire new knowledge nor do they increase problem-solving abilities and self-reliant learning.

The planning of instruction, aimed at supporting the development of these abilities, can, therefore, not be limited to the provision and structuring of information. In addition it must create a working environment favourable for learning and motivate learners to ask questions and improve their own reality.

One basic idea is shown in the table below and is compared to a traditional learning culture.

According to these ideas for a competence-oriented learning culture for TVET teacher training, it is important to develop learning-teaching concepts aimed at the following objectives:

---

[4]Nevertheless it must be emphasized that it is insufficient for a teacher when he or she exclusively concentrates on a moderating or organizing task. Specialized competences in several disciplines (subject, pedagogy, vocational education, didactics, etc.) are a crucial prerequisite for this as well as for competent support of the learning processes.

- Young teachers have to be given a chance to extend their learning biography for the sake of the promotion of more competences. This means that they have to learn to experiment with the different didactical and methodical instruments in a way that the development of an adequate personalized problem-solving attitude ("expertise") is supported.
- The shaping competence of the teaching staff needs improvement.

The idea of competence development is that learners become TVET experts through conducting increasingly complex tasks of TVET teachers based on existing research as well as with their learning being based on research. Therefore the study programme must:

- First: introduce basic ways of thinking in vocational pedagogy categories and occupational research.
- Second: emphasize the importance of the academic disciplines for specialization in the chosen vocational disciplines in order to enable a critical reflection on and a grounding in the basics of the occupational sciences as well as the development of occupational contents.
- Third: ensure the analysis of TVET structures and the reflection on TVET systems and learning processes.

TVET teachers are at the centre of the curriculum of these six competence development fields:

1. Analysis and design of skilled work and competences in the chosen domain/vocational discipline.
2. Analysis and design of objects of skilled work and technology fields as subjects of working and learning processes.
3. Analysis, design and evaluation of occupations, vocational education and work.
4. The genesis of the vocational discipline, the occupations and the world of work.
5. Analysis and design of TVET systems, structures and organizations.
6. Analysis and design of learning processes in VET institutions based on learning and VET theories.

The competence developments fields of the module areas in a proposed master's study programme for TVET teachers are as follows.

2.4.3.1   Vocational Discipline and Didactical Studies

Vocational Discipline

The students are able to work on basic vocational and didactical questions on education and training in the professional field. They analyse developments and connections between work, technology and vocational training. They reflect on the development of TVET and the underlying goals.

Projects in the Area of Vocational Discipline

Students are able to analyse technology and to acquire knowledge and competence in domain-specific fields. They execute projects to implement technology in learning and work environments which consider the work flow and work process of workers in the industry. They establish connections between implemented technology and work organization concepts and the necessary competences of skilled workers.

Didactics of Vocational Subjects

The students are familiar with the didactic models and curricular approaches that are essential for organizing and carrying out learning in vocational schools and can use these to develop an academically grounded and reflected teaching concept. They apply learning and curriculum theories for planning teaching and for reflection on the discipline in general and on vocational education. On the basis of curricular guidelines, they design training concepts in the field. They are able to make a contribution and at the same time can promote innovation for the didactic-methodical teaching and training design. They are familiar with different approaches to teaching in the occupational field, and they have mastery of methods for teaching-related competence diagnostics. Based on the requirements and intentions of VET in the particular vocational discipline, they can select and design media and learning environments for teaching. They are able to apply digital media in teaching in the field.

Practice in the Area of Vocational Discipline

With a high degree of independence, students can design, test and conduct teaching and learning arrangements for vocational education. They are able to penetrate professional problems and to structure contents didactically so that competence development for occupations can be promoted in a positive learning culture. They can evaluate teaching and learning arrangements and develop suggestions for improvement. This includes practising in the specific vocational discipline.

TVET Research

Students are able to choose and apply occupational science methods for analysing work; they can investigate a question from the world of work that addresses hints or problems of vocational training or professional work in the vocational discipline. They can independently carry out a corresponding work study and document the research approach, the research process and the results according to occupational science standards. They can formulate and evaluate findings for the design of

occupational standards, occupations, job profiles and education and training in the occupational fields.

2.4.3.2 Professional Studies

TVET Concepts and Systems

Students are able to describe TVET systems, the theories and history behind them and are able to apply concepts like action orientation and work process orientation. They have a deep understanding of the approach of different TVET systems and are able to take advantages and disadvantag
es into account when creating TVET arrangements.

Vocational Pedagogy

Students can reflect on the meanings of learning theories for their choice of learning approaches, especially the meaning of non-formal learning and experience-based knowledge as well as the coherence between work and learning.

Students are able to determine course structures for different career pathways and transitions between learning organizations or TVET schools and the world of qualified work. Students can handle standards and curricula for designing TVET-based learning in companies and schools in cooperation with all relevant partners. They can develop programmes and courses, and they are also able to evaluate learning and training.

TVET Management

Students are able to implement a modern learning culture in learning environments and to apply interventions for the individual development of capabilities and competencies of learners. They use suitable media and arrangements in the classroom for ensuring efficient learning processes.

Students can handle standards, curricula and quality assurance methods and management concepts for organizing TVET-based learning in companies and schools in cooperation with all relevant partners.

TVET Research

Students are able to analyse learning processes and competence structures as well as developments in TVET. They can choose and apply methods for assessment and measurement of learning outcomes considering different TVET structures and qualification models.

2.4.4   Entry Requirements for Students

Admission into the programme:

One of the following graduation certificates is a prerequisite for a Master's study programme in vocational education and training:

- Bachelor of Vocational Education in a relevant vocational-technical specialization.
- Bachelor of Science in a relevant vocational-technical specialization.
- Bachelor graduations provided they are named in specific admission regulations and meet the formulated requirements.
- English language skills: minimum B2 level, better C1 – examination.

The prerequisite for the admittance to the final examination is an internship in a company in the occupational specialization field being studied or a relevant vocational training.

2.4.5   Qualification Requirements for Teaching Staff

The quality of TVET teacher training exerts a major influence on the quality of the young persons being trained and on the sound development of economies and societies. It is therefore recommended to implement the TVET teacher training at universities by all means possible. The studies as well as the internal structure of the studies must be safeguarded by linking professional studies, vocational disciplines and didactics of vocational subjects as well as TVET practical training elements together.

From a formal point of view, teachers in a master's programme should hold a higher academic degree than the future graduates of the course of study they are teaching in. In a master's programme, teachers must therefore hold a PhD degree. This regulation can be neglected in case of tutoring practical training in TVET centres.

2.4.6   Required Teaching Staff

One of the central questions is how the study courses can be staffed. This question is relevant as TVET study courses are conceived in an interdisciplinary way and partly tap into lectures of affine disciplines. It is therefore recommended for students to combine a TVET study course with some type of research project in order to contribute to the further development of the discipline.

Given that an already existing course offer can be also used by TVET study courses, it is recommended that the key faculty positions mentioned below should be implemented:

- Fundamental and interdisciplinary: Professorship in "Vocational Pedagogy".
- A Professorship for "Vocational Pedagogy" must be created in order to guide interdisciplinary vocational education and research. The employment of scientific assistants must be further clarified and will depend on the number of vocational disciplines.
- Vocational disciplines: Professorship for "Vocational Disciplines".
- It is recommended that each vocational discipline should include a professorship. These professors will concentrate their research and lecturing within the vocational discipline and didactics of vocational subjects.

2.4.7   Assessment and Credits

2.4.7.1   Credit System

The following descriptions of modules use an approved template for the module descriptions. For each course there is a clear link to a module and to a semester. Student workload is given in ECTS credit points. This means that the time spent on lectures as well as on practical training courses is given in nominal ECTS points multiplied by 30 hours study time.

2.4.7.2   Assessment

Assessment of the study programme is done through assessments of each module. The procedure of assessment for each module is part of the module description.
    The graduation requirements for the programme are:

- All the required courses and modules and the minimum credit hours stated should be satisfied.
- At least 120 credit points (ECTS – European Credits Transfer System) reached.

2.4.8   Quality Assurance

The quality of the programme is assessed in terms of instruction performance and impact on the quality of graduates in the labour market and in their further studies. The following processes are factors in ensuring the quality of education in the institution:

- Course descriptions are prepared in detail which contain course objectives, contents, learning outcome, textbooks, references and laboratory tasks to maintain the required level courses.
- Student evaluations are given preferential attention. The feedback from students is used to improve the quality of instructions.
- Examinations are assessed by the Departmental Examination Committee to verify the level of the course instructions.

Feedback from TVET colleges and industry will be an integral part of the process of quality assurance. The quality of graduates is measured by the feedback mechanisms obtained from stakeholders, such as directors and teachers from TVET colleges and employers who will be the immediate beneficiaries of the programme as well as the graduates who are able to rate their own confidence in meeting the challenges they encounter after graduation.

In order to fulfil their functions, universities also need to meet certain standards of quality. In order to achieve this, a good regulatory framework is necessary that mandates and ensures, among others, continuing attention to promoting and attaining quality, assessment and control of quality and providing evidence to the relevant stakeholders about the quality levels attained in universities.

On the other hand, this discussion is not only about ensuring quality, through internal or external mechanisms, although this is very important. This discussion is also about putting in place a system of accountability. Study programmes should be able to document aspects of quality and inform their stakeholders about the quality achieved.

2.5 Labour Market Perspectives and Practical Relevance

In numerous countries there is still no professionalized training for TVET teachers. There is a shortage of teachers who have successfully completed an academic training for TVET teachers. A need for TVET teachers with this profile is therefore seen as being very high.

2.6 Curriculum

2.6.1 Curriculum Orientation and Standard

TVET teacher training is currently shaped in a competence-oriented way. In order to reliably provide this requirement, the performance of the TVET teacher training institutes or faculties must be fine-tuned into this direction.

Standards have to be formulated for TVET study courses in order to identify the criteria for the quality which is to be attained. Standards must be created for

professional studies, vocational disciplines and didactics of vocational studies. Standards are a necessary instrument for a competence-oriented teacher education course of study. Standards are required so that the degrees achieved at different universities can be compared. Standards can be outlined in the instrument generally known as "curriculum", which both broadly and more precisely lays out the most important goals related to occupationally oriented competences and contents. It determines the amount and the grade of depth of the specialized and methodical competences needing to be acquired during the various courses of study and identifies themes (theories, concepts, findings, methods and results) necessary to acquire a coherent and specialized knowledge about TVET. Curricula are the basis for the construction of modules and the orientation towards an accreditation. The requirements of the curricula are defined via the systematics of the disciplines and the educational and training criteria of the TVET system. Curricula must also include a coordination of the specialized academic topics for prospective TVET teachers, based on the qualification aims as well as the requirement that they generate new forms of learning and teaching.

2.6.2   Curriculum Structure

The professionalization of teachers in TVET courses of study is a specific challenge. This is mainly due to the variety of TVET structures in the various countries as well as the diversity of programmes within their TVET institutions. In addition, the cooperation with industry plays an important role.

One of the most important concerns of the didactics of vocational subjects is the development of occupational-specific competences in both subject-specific and pedagogical fields. Thus, the teachers-to-be can support the development of competences in students and enable them to cope with tasks in their environment as well as to co-shape their work for society in terms of overall social, economical and ecological responsibility. The didactics of vocational subjects must therefore be designed as a subject-specific didactic which is constructed according to the needs of the world of work and of occupations.

The contents of all courses of study must be interconnected and also have to have a relevance for learning goals. Special care should be given to the fact that the teaching of subject-specific contents must always consider their manifestations in the world of work. Interdisciplinary aspects such as ecology, economy and ethics in subject-specific academic and didactical contents have to be integrated.

2.6.2.1   Module Areas

The curriculum follows the state-of-the-art TVET research on the requirements of TVET teacher training. It covers three main areas:

- Professional studies.
- Studies in a vocational discipline or subject.
- Studies in the didactics of a vocational discipline or subject.

There is a close relationship between these three areas, and the second and third module areas have especially to be understood as one area of study. The academic level is oriented towards a master's level.

On the other hand, the professional studies aim at developing a deeper understanding of special features and the importance of TVET in connection with overall societal, social and economic development. In addition an understanding of the academic considerations of individual TVET key issues should be developed. The range of the most important study topics is therefore broadly based and extends from research and vocational pedagogy to structures of TVET systems and the management of TVET offers. A very specific area of the study programme encompasses the so-called vocational disciplines and didactics of vocational subjects. Since a BA degree is the prerequisite for enrolment, the master's programme no longer deals explicitly with vocational disciplines. Nevertheless the students have to keep these in mind, as they are the basis for studies in didactics and vocational disciplines.

The programme contains different modules which are clustered into three categories:

1. Professional studies.

   - System studies: TVET system modules.
   - Vocational management studies: TVET management modules.
   - Research studies: scientific occupational modules.
   - Vocational pedagogy studies: basics in pedagogy and didactics.

2. Vocational discipline and didactics studies:

   - Vocational discipline studies: modules to deepen competences in the technical professional field.
   - Didactics of vocational subjects: modules to develop competences for analysing work, determining learning contents and structure, organizing and carrying out learning units and evaluating learning processes.

3. Master's thesis.

2.6.2.2 Vocational Discipline and Didactics Studies

Vocational discipline studies are helping to develop competences for the chosen domain. This domain or sector is defined as the object of work for skilled workers in the industry including the service area. The focus here is on the professional action fields and the competences for work processes in this area. Students develop the competences needed to analyse technology and the professional action fields of the domain with academic approaches.

Determining and analysing the professional action fields and work processes is the first step for profiling and shaping didactics of vocational subjects.

2.6.2.3   Professional Studies

Professional modules deliver the abilities to analyse, design and evaluate teaching and learning arrangements in TVET colleges and to transfer the relevant knowledge and competences for the domain to the industry (didactic). This includes a basic understanding of learning psychology, education, pedagogy, vocational training organization, classroom management and TVET systems.

2.6.2.4   Master's Thesis

By completing the master's thesis, the students show that they are able to work on a research question in a given time using academic methods. They present results in a structured way and can discuss them and derive insights from this work for the practice of vocational education and training.

2.6.2.5   Graduation/Master's Examination

The study course and its two elements, didactics of vocational subjects, professional studies (including educational and social sciences as well as TVET research and vocational discipline studies), leads to the academic degree Master of Technical and Vocational Education and Training. An alternative denomination for this graduation could be, for example, Master of Science in Vocational Education or Master of Science in Technical and Vocational Education and Training.

The master's examination encompasses:

- Course-related module examinations in the three specializations including their relevant didactics.
- A written master's thesis to be finalized within 6 months including an oral exam (20 ECTS).

The concrete prerequisites and requirements for of the final exam in teacher education in TVET are determined by the relevant examination regulations.

2.6.2.6   Differentiation According to School Types

The competences required for teachers of a TVET area clearly differ from the competences required for other school types. Therefore a structure of the contents related to TVET is necessary for the master's programmes.

2.6.2.7 Practice Orientation

Master's study courses for TVET must integrate practical occupational elements in a double fashion: occupational practical training phases on the one hand and school practical training phases on the other hand (which last 6 weeks each). An interlinking of the study course with the practical training phases must also be ensured.

2.6.2.8 Sustainable Implementation of the Modularised Course Structure

In order to implement the courses at a specific institution, TVET teacher educators must be available for each of the modules or courses, who have the knowledge and the competences to teach these modules or courses.

TVET teacher training departments or sections have to ensure that they have the necessary capacities to carry through TVET teacher training with the necessary quality.

A reference system oriented towards facts and figures should be made available before the accreditation.

2.6.2.9 Accreditation

An accreditation must, at any rate, be envisaged for all TVET graduations in order to attain a high acceptance of the degrees. Evaluation and accreditation must offer instruments in order to ensure the quality orientation of a competence-oriented TVET teacher training module.

2.7 Conclusions

Within the higher educational system, teacher training for vocational education and training and didactics are usually located "between subject areas", without belonging to one or another, and are often poorly equipped (cf. Vollmer 2012). A description of requirements which is based on content criteria and oriented towards a quality teacher training course of study does not exist. Thus, teacher training within vocational-technical courses of study is significantly endangered.

These concisely formulated facts underscore the need for implementation of TVET teacher study courses at universities for countries which have already implemented vocational education and training in order to help them attain a high degree of professionalization.

The proposed framework aims at a target group who has already graduated from a BA study course and wishes to participate in and graduate from a master's course of

study in teacher education. The study programme designed for teacher education further pursues the discipline studied during the bachelor's programme. The TVET study course is conceived to explore questions related to the discipline, to work and to vocational pedagogical issues and aims at the acquisition of core competences in a deeper fashion.

References

Bandung Declaration on TVET Teacher Education. (2009). Dittrich, J., Md Yunos, J., Spöttl, G, M. Buckit, Standardisation in TVET teacher education. Frankfurt, pp. 191–198.

Becker, M., & Spöttl, G. (2020). Regional TVET teacher' standards for Asean. In *Essential competences for TVET teachers in Asean*. SEAMEO VOCTECH AND GIZ.

Boreham, N., Samurcay, R., & Fischer, M. (2002). *Work process knowledge*. Routledge Studies in Human Resource Development.

Euler, D. (2018). *TVET personnel in ASEAN. Investigation in five ASEAN states*. Eusl.

KMK. (2019). Ländergemeinsame inhaltliche Anforderungen für die Fachwissenschaften und Fachdidaktiken in der Lehrerbildung. Beschluss der Kultusministerkonferenz vom 16.10.2008 i. d. F. vom 16.05.2019. Berlin. Available: https://www.kmk.org/fileadmin/Dateien/veroeffentlichungen_beschluesse/2008/2008_10_16-Fachprofile-Lehrerbildung.pdf

Spöttl, G. (2014). Teacher training in TVET – A structural dilemma and the role of standards. In *Congress proceedings. TVET capacity development: Career & Life Skills for 21st century. Malacca: Malaysia*.

Spöttl, G. (2018a). Development of "industry 4.0"! – Are skilled workers and semi-engineers the losers? 2017. In *7th world engineering education forum (WEEF), IEEE Xplore: 20. September 2019* (pp. 934–951). https://doi.org/10.1109/WEEF.2017.8467033

Spöttl, G. (2018b). *Training of trainers in TVET in Jordan. Feasibility study*. University of Bremen/Paris: UNESCO.

UNESCO. (2017). *Towards quality Assurance of Technical and Vocational Education and training. Education 2030*. UNESCO.

UNEVOC. (2004). UNESCO International Meeting on Innovation and Excellence in TVET Teacher/Trainer Education. Documentation. UNEVOC: Hangzhou 8–10 November 2004. Available: https://unevoc.unesco.org/fileadmin/user_upload/pubs/Hangzhou_International_framework.pdf.

Vollmer, T. (2012). Didaktik gewerblich-technischer Fachrichtungen. In M. Becker, G. Spöttl, & T. Vollmer (Eds.), *Lehrerbildung in Gewerblich-Technischen Fachrichtungen* (pp. 199–228). Bertelsmann-Verlag.

Shanghai Consensus. (2012). Transforming technical and vocational education and training: building skills for work and life: Shanghai consensus. Third International Congress on TVET Shanghai, Published in 2012. Paris: United Nations Educational Scientific and Cultural Organization. http://unesdoc.unesco.org/images/0021/002176/217683e.pdf

Part I
Perspectives from Internationally Oriented Institutions and Organizations That Pursue Pre- and In-Service Education of TVET Teachers

Chapter 3
Qualified Teaching and Training Staff as a Key for Implementation of Sustainable TVET Reforms

Marion Edel

Abstract The present article summarizes the position and main approaches of the German Federal Ministry for Economic Cooperation and Development (BMZ) with regard to the qualification of TVET teachers and trainers. Within the overarching strategic orientation of BMZ, TVET is a key sector. Accordingly, the commitments to financing TVET rose from 170 million euros in 2014 to almost 484 million euros in 2019. The BMZ supports TVET in almost all of its partner countries in order to increase the supply of skilled workforce on the labor market and, through this, to support sustainable economic growth and decent employment. German TVET cooperation is oriented towards the fundamental principles of the German dual TVET system while taking into account the specific conditions and requirements in the partner countries. At the center of the German dual system is close cooperation with the private sector. State, employers, and trade unions jointly define the framework for TVET including the development of curricula and standards. The implementation of cooperative vocational education and training takes place at apprenticing companies and vocational schools. Therefore, both teachers at vocational schools and in-company trainers are important for the delivery of dual TVET. Correspondingly, the BMZ supports partner countries in the qualification of teachers and trainers in order to strengthen the quality of vocational education and training and enable the implementation of TVET reforms. Central instruments for supporting the qualification are presented in the article, and relevant project examples are provided.

M. Edel (✉)
Federal Ministry for Economic Cooperation and Development (BMZ), Division Education, Bonn, Germany
e-mail: Marion.Edel@bmz.bund.de

3.1   Introduction

Education is a human right—it serves the full development of the human personality and enables individuals to contribute to the development of a free society in a self-determined way. It has a positive effect on the health of families, strengthens the role of women, and enables social and economic participation. At the same time, education plays a central role in overcoming global challenges: a well-educated population is the foundation for poverty reduction, sustainable economic growth, and social development. High-quality education and the opportunity for lifelong learning (SDG4) are thus crucial for achieving all sustainable development goals (SDGs) as well as the guiding principle of Agenda 2030 of leaving no one behind. Supporting education throughout the entire education system is a priority of German development cooperation. In the education system, initial and continuous vocational education and training play a key role in promoting employability as well as social and economic development. TVET contributes directly to achieving the Sustainable Development Goals high-quality education (SDG 4), gender equality (SDG 5), and decent work and economic growth (SDG 8). Additionally, vocational education and training support the achievement of all 17 SDGs of Agenda 2030. Labor market-oriented and practical vocational education and training improves opportunities for decent employment and secure incomes. The availability of qualified specialists is an important prerequisite for a competitive economy. Furthermore, TVET plays a key role in finding solutions to the major political challenges of the twenty-first century such as digitalization and climate change. New jobs and qualification requirements are emerging worldwide as a result of the ever more rapid progress of digital change. People need to develop essential twenty-first-century skills to participate in the digital transformation of the economy. Additionally, a transition towards more environmentally friendly means of production is required to achieve international climate goals. TVET can enable the shift towards a green economy by helping professionals to develop green skills. However, in most developing countries, TVET systems are chronically underfunded, and curricula do not correspond to labor market needs. In many cases the private sector is not systematically involved in the design and implementation of vocational education and training, which leads to a lack of practical relevance and acceptance of TVET within private companies. Furthermore, many developing countries and emerging economies lack sufficient and well-qualified vocational training personnel. This is mainly the result of inadequate framework conditions, such as a poor image of vocational training and insufficient conditions for the qualification of TVET teachers and trainers. There is also usually a lack of structures for the continuous and systematic further training of TVET personnel. Vocational school teachers often do not have sufficient practical work experience.

The German Development Cooperation therefore supports partner countries in expanding and improving the quality of TVET systems. In doing so, BMZ is committed to equal access to vocational training and to inclusive, high-quality, and labor market-oriented vocational training. To increase employability and

strengthen the labor market supply side, TVET has to be closely aligned with the private sector. Therefore, German TVET development cooperation aims at bringing vocational education to the partner countries in line with the labor market's demands by facilitating private sector participation in the design and implementation of TVET. The fundamental principles of the German dual TVET system will act as a frame of reference for German TVET cooperation.

Accordingly, the training of TVET personnel plays a key role within BMZ's TVET strategy. Corresponding to the German dual model of vocational education and training, BMZ follows a holistic approach to training TVET personnel, including teachers in vocational schools and training centers, management staff at TVET institutions, as well as in-company instructors. Providing teachers and instructors with technical and pedagogical qualifications is viewed as a necessary precondition in order to achieve high-quality TVET (cf. BMZ, 2012).

This article illustrates BMZ strategies, approaches, and instruments for the training of vocational training personnel, focusing on vocational teachers and in-company trainers. First, the overall relevance of TVET within the BMZ's education portfolio will be illustrated. Then, the current TVET strategy as well as concrete instruments will be explained. Central approaches and strategies, specifically those which address TVET teacher and instructor training, will then be presented. Finally, future challenges will be outlined, followed by a summary of the most important outcomes of the article including concrete recommendations for decision-makers.

3.2   Strategies and Development Trends for BMZ's Education Portfolio

The BMZ pursues a holistic approach to education and promotes quality education along the entire education chain—early childhood education, basic and secondary education, technical and vocational education and training, higher education, and adult education. The overarching principle of educational support is lifelong learning, and the strategic approach covers not only support for formal education in schools but also non-formal and informal education. The BMZ's regional focus is on Africa.

With regard to funding the BMZ's goal is that 25 percent of development spending should go to education. For this reason, the commitments for education have more than doubled since 2014: The total of bilateral commitments, grants to beneficiaries, and multilateral contributions rose from approximately 480 million euros in 2014 to roughly 1.2 billion euros in 2019. During the same time, commitments for TVET rose from around 170 million euros to almost 484 million euros.

TVET plays a decisive role within the overarching strategic orientation of BMZ and is at the center of various strategic documents and policy papers, most importantly, the "Marshall Plan with Africa." Vocational education and training are important instruments for supporting sustainable economic development and

promoting employment in partner countries by strengthening the labor market's supply side. In order to have a sustainable impact, BMZ's TVET cooperation is embedded into an integrated approach for employment promotion. While increasing employability through TVET, BMZ supports the creation of jobs through private sector development and encouraging conducive economic framework conditions. At the same time BMZ fosters coordination mechanisms on the labor market in order to enable an improved matching of demand and supply of labor.

The overall objective of TVET cooperation is to contribute to employability as well as availability of "skilled workers to ensure productivity and competitiveness" (BMZ, 2015) of the private sector. While increasing employability through TVET, BMZ supports the creation of jobs through private sector development and encouraging conducive economic framework conditions. At the same time, BMZ fosters coordination mechanisms on the labor market in order to enable an improved matching between demand and supply of labor.

The BMZ supports bilateral TVET projects in almost all of its partner countries. The German development cooperation aims at building sustainable TVET systems in developing countries and emerging economies. BMZ's TVET projects are based on five fundamental principles of the German TVET system:

- A close cooperation between the state and the private sector.
- On-the-job learning.
- Societal acceptance of occupational, training, and examination standards.
- Training of vocational teachers and instructors as well as management personnel.
- Institutionalized research and career guidance.

Technical cooperation projects provide advisory services and capacity development to partners for establishing or improving labor market-oriented TVET systems, developing vocational standards as well as designing curricula and qualifying TVET personnel. Within the scope of financial cooperation, BMZ supports the construction and equipment of vocational schools and training centers as well as financing of education and training vouchers.

BMZ has a broad range of instruments for mobilizing the private sector's expertise for development cooperation in the field of TVET. One of these is the Vocational Education and Training Partnerships (BBP) program. Via BBPs, German business membership organizations support local partner organizations, such as vocational schools, TVET institutions, or chambers in establishing demand-oriented vocational education and training (cf. Sequa, KVP+BBP, 2019). With the DeveloPPP.de program, BMZ supports private companies who want to engage in developing countries in order to create synergies between business opportunities and development policy initiatives. Private sector companies receive funding as well as technical support and advisory service. About a third of all develoPPP.de projects currently running are in the field of vocational education and training.

BMZ also provides support to nongovernmental organizations (NGOs). NGOs often have efficient tools for reaching marginalized and informally employed target groups. German civil society organizations provide non-formal training offers which

are geared towards the needs of marginalized youth and young adults, often in cooperation with local NGOs.

While BMZ supports the development of TVET in cooperation with almost all partner countries, the regional focus is on Africa. BMZ supports partner countries in Africa in expanding their TVET systems and aligning them more closely with the demands of local labor markets. For this cooperation with African partner countries, the strategic framework is the "Marshall Plan with Africa" which aims at strengthening African partner countries' own contributions to sustainable development by supporting the cooperation through "targeted support to reform-minded countries" (BMZ, 2017). The Marshall Plan with Africa highlights the importance of vocational training for the promotion of African economies as well as trade and employment. BMZ aims at increasing private investments in Africa to increase employment as well as training opportunities. With the new "Special Initiative on Training and Job Creation," BMZ encourages private sector engagement in Ethiopia, Côte d'Ivoire, Ghana, Morocco, Rwanda, Senegal, and Tunisia. The objective of the special initiative is to create up to 100,000 jobs and 30,000 apprenticeships in these partner countries in close cooperation with German and international companies.

3.3 Location and Range of TVET Teachers Addressed within BMZ's Education Strategy and its Position Paper on TVET

BMZ recognizes the important role teachers play for quality education and learning outcomes. "Poor-quality education is chiefly a staff-related issue" (BMZ, 2015). Teachers and trainers at all educational levels are a key to improved quality of education. At the moment, however, both the quality of teacher training and teachers' working conditions in many of BMZ's partner countries are lacking. Teaching and learning methods merely impart knowledge but lack soft skills such as analytical thinking, communication, or empathy. Often there are no sufficient training opportunities for TVET teachers and instructors. Working conditions are often inappropriate, and suitable teaching aids and learning materials are missing. Hence BMZ puts a focus on teacher training in its development cooperation. In its education strategy, BMZ lists teacher development as one of the main objectives of Germany's engagement in the education sector. Most comprehensive programs of education and TVET contain a component on teacher and trainer development. BMZ promotes lifelong learning for teachers and trainers including initial and continuing education and training for TVET staff.

The BMZ's approach to TVET follows the German dual vocational education and training model, which is based on in-company training combined with theoretical classes in vocational schools. Initial and continuous training of vocational teachers and in-company trainers is one of the fundamental principles of dual TVET.

A sufficient number of qualified teachers is crucial for ensuring quality education and training. Training of teachers and trainers through initial as well as demand-driven further training is highly important for successful, labor market-oriented TVET and ensures long-term quality development. TVET teachers and trainers who are not sufficiently familiar with their subject, or with the technology used in the industry, cannot deliver vocational education and training which is sufficiently geared towards labor market needs. Especially in the age of digital change, teachers and trainers have to adapt to technological innovations in order to design teaching and training according to labor market needs. Therefore, teachers and trainers need access to initial and continuous training to be able to develop the required technical and pedagogical competence. Hence, the German development cooperation helps to improve the content of vocational education and training through pre- and in-service training for vocational teachers and instructors (BMZ, 2012). BMZ supports a wide range of measures aimed at improving teacher and trainer qualification through its entire spectrum of development cooperation instruments.

3.4 Models of Capacity Development for TVET Teacher Training Supported by the Organization

Teachers and trainers in TVET work either at school—in the classroom, or in the workshop, or in enterprises providing training. They support trainees in obtaining the necessary vocational action competencies through work-based learning as well as theoretical lessons in vocational schools.

In Germany, the state and the private sector cooperate closely in the area of TVET. This dual approach is also reflected in the interaction between schools and companies as places of learning. Correspondingly, there are also two types of teaching and training staff: vocational school teachers who mainly provide the general and theoretical knowledge required for a given profession and in-company training staff who provide practical training at companies. Training of both these types of teaching and training staff is regulated. Vocational school teachers obtain a master's degree at university, followed by a practical training period and then a state examination. In-company trainers must themselves be trained in the occupation in which they are to supervise trainees. In addition, they must complete an assessment according to the German Ordinance on Trainer Aptitude, which makes sure that trainers are competent in pedagogy and didactics.

Many developing countries take their guidance from this dual system and are progressively including more company-based training in their TVET systems. Hence in-company training staff plays an increasingly important role in those countries. Along with instructing trainees, the range of tasks handled by in-company trainers consists of management, planning, and organization of training; process design; involvement in assessment; communication and cooperation with vocational schools; advisory and support functions; as well as multiplier functions.

The latter are particularly relevant in TVET projects in the field of development cooperation (cf. GIZ, 2017).

As one of the five core principles of German vocational education and training, the qualification of teachers and trainers is one of the basic elements for German development cooperation in the field of TVET. BMZ supports partner countries in improving and professionalizing systems and institutions for the initial and continuing training of teachers and trainers in a sustainable manner. The German development cooperation strengthens dialogue and cooperation with universities, institutions in the field of initial and continuing training, and the private sector in introducing institutionalized approaches for the practice-oriented qualification of vocational training personnel. A particular emphasis is placed on promoting female vocational teachers and trainers.

This cooperation includes:

- Fostering cooperation between government and business in order to create conducive conditions for the qualification and deployment of TVET personnel.
- Support of the academic and practical qualification of vocational school teachers at universities and institutions for the initial and continuing training of TVET teachers. This includes the development and implementation of internationally comparable courses of study for the training of vocational school teachers.
- Support for the development and implementation of training programs and vocational standards for the qualification of in-company training personnel.
- Joint development and implementation of training programs for the management of vocational schools.
- Promoting the adoption the initial and continuing training of vocational training personnel to the opportunities and challenges of changing labor market demands and digitalization.

3.5 Instruments in BMZ's Development Cooperation for Training Vocational Teachers and in-Company Instructors

As mentioned in section three, BMZ has a variety of instruments at its disposal for strengthening vocational education and training in developing countries. Several approaches exist within the portfolio of technical cooperation which aim at capacity development for instructors and teachers:

- Sectoral advice for educational administrations on recruitment, initial and in-service training, and distribution issues for teachers.
- Support for the initial and in-service training of teachers and trainers.
- Strengthening the framework conditions for teachers at the school level.
- Support for the development of pedagogical teaching and learning materials.

supporting school management in the effective deployment and further training of teachers.

Project Example: An Integrated Approach to the Training of Teachers and Trainers in the Palestinian Territories
The aim of the program "Train the trainers—pre-service and in-service teacher training" (GIZ, 2019) is to improve the teaching skills of training staff at vocational schools and companies which offer training. To this end, the program advises the Palestinian Ministry of Education and Higher Education regarding a legal framework for pre-service and in-service training of teachers and trainers. At the same time, pre-service and in-service training measures are on offer for teaching and training staff as well as for vocational school managers. Together with Palestinian partners, occupational standards were developed for the occupations "TVET teacher" and "in-company trainer." In 2020 the standards will be adapted for TVET teachers and in-company trainers in the automotive industry. Through the adoption and implementation of occupational standards, the pedagogical and technical skills of Palestinian TVET personnel will be improved and brought in line with inter-company or inter-vocational school minimum standards. This will increase the quality of vocational teaching and training in a sustainable manner and also improve trainees' employability.

Through the Financial Cooperation, BMZ finances the rehabilitation and building of public and private education institutions and provides technical equipment for workshops in TVET institutions and vocational schools. In addition to this technical equipment, Financial Cooperation projects deliver trainings in the use of these technologies for vocational teachers at the respective institutions. Within the framework of the courses, professional skills and the necessary technical know-how are transferred to TVET teachers. Often these trainings are provided in cooperation with the supplier of the technical equipment. The aim of such training activities is to enable vocational teachers to integrate modern equipment efficiently into their teaching and training.

Beyond that, activities in the field of teacher training are integrated into Financial Cooperation projects through the support of TVET Centers of Excellence. In several partner countries such as Kenya, Vietnam, and Indonesia, the BMZ supports Centers of Excellence through Financial Cooperation and technical support. Centers of Excellence are TVET institutions with special tasks that have a model character and are meant to support the further development of national TVET systems and TVET policy reform. In addition to other projects, initial and further training courses for vocational teachers are also piloted at these Centers of Excellence. The teaching staff receive on-the-job trainings and further education in order to utilize these investments appropriately and to achieve better learning outcomes within the new facility. Within the frame of the existing institutional set-up or reform agenda of the

country, initial training of future teachers is provided at the Centers of Excellence. One objective is to draw conclusions from these Centers of Excellence for the reform of TVET systems at the macro level. Furthermore, Financial Cooperation supports the training of TVET personnel through the provision of corresponding infrastructure for training and through scholarships.

> **Project Example: Vocational Education in Laos (VELA)**
> The objective of the Financial Cooperation project is to strengthen the qualitative and quantitative supply of vocational education and training at selected vocational schools as well as at the Vocational Education Development Institute (VEDI), the central institute for initial and continuous TVET teacher training in Laos. Through the project vocational schools receive modern technical equipment. In order to guarantee a sustainable improvement of TVET quality, teachers are being trained in the use of the technical equipment as well as integration into the training courses. Additionally, scholarships for short-term qualification courses at VEDI enable further training of TVET teachers in Laos. So far, almost 1500 participants were trained in 35 different technical fields.

Through Vocational Education and Training Partnerships (BBPs), BMZ supports practice-oriented TVET systems in partner countries. German chambers of commerce and business associations are actively involved in the implementation of BBPs and provide capacity development as well as advisory services to local partner institutions (cf. Sequa, KVP+ BBP, 2019). The training of TVET teachers as well as in-company trainers is a central area of focus within BBP projects. Through training as master trainers, TVET personnel is able to carry out further teacher training which contributes to a sustainable improvement of TVET quality beyond the project duration. Furthermore, BBPs contribute to improved training of TVET personnel through technical equipment and support of teacher training workshops.

> **Project Example: Vocational Education and Training Partnership (BBP) Between the Cologne Chamber of Crafts and Trades and the Technical, Entrepreneurial, and Vocational Education and Training Authority (TEVETA) in Malawi**
> Through the BBP between the Cologne Chamber of Crafts and Trades and TEVETA, 50 vocational teachers and in-company trainers received training in welding, electrics, and metal construction. They acquired competences in vocational pedagogy and in practical technical skills. In-company trainers and teachers are now able to apply didactical methods in their teaching and training, as well as their new practical technical skills. Both of these contributed to an improvement of practical and theoretical components of TVET in Malawi. Eight persons were trained as master trainers and are now able to carry out trainings for TVET personnel themselves.

With DeveloPPP projects, BMZ supports German and European companies who want to commit themselves to development initiatives in partner countries where entrepreneurial opportunities and development goals overlap. BMZ supports private enterprises through technical support and funding.

Project Example: DeveloPPP Tajikistan: Training in the Field of Automotive Technology
The development partnership with the German automotive industry supplier LIQUI MOLY aims at improving the quality of initial and further training in automotive technology in Tajikistan. Through the DeveloPPP partnership with the local partner company ANTARES, three vocational training centers receive support regarding the implementation of a new training concept: The Adult Training Centre of Tajikistan (ATCT) in Duschanbe, the Regional Adult Training Centre of Tajikistan (RATCT) in Kulyab, and the School of Professional and Continuing Education (SPCE) at the University of Central Asia (UCA) in Khorog. Four vocational teachers from the partnering institutions were trained as multipliers. During the course of the project, the trained multipliers trained 65 automotive service specialists. In the future, up to 250 professionals will be able to participate in the training courses of ANTARES TJ, ATCT, and UCA each year. Through the training offer for vocational teachers, automotive specialists are skilled in a practical and labor market-oriented manner. So, the Tajik automotive industry is supported by better qualified professionals. Their income opportunities are increased and so are the road safety and environmental protection through more economical fuel consumption and an associated reduction in CO_2 emissions.

With the ExperTS program, the BMZ supports sustainable economic activity in cooperation with the German Chambers of Commerce Abroad (AHK). Via the ExperTS program, professionals in about 30 countries provide technical advice to both local and German businesses on development matters. TVET is one of four focus areas, including training of TVET personnel. Among others, ExperTS assist the AHK on training of trainers, pedagogical training for vocational teachers, as well as qualification and certification of in-company trainers. Additionally, ExperTS support the development of nationally adapted standards for the qualification of TVET personnel.

Project Example: Qualification of in-Company Trainers in Indonesia
Together with the German-Indonesian Chamber of Industry and Commerce (AHK/EKONID), the German bilateral TVET project in Indonesia, the German Industry and Trade Federation (DIHK), and the Chamber of Industry and Commerce Trier (IHK Trier), the ExperTS program supports the qualification

of in-company trainers in Indonesia. The training of in-company trainers is organized according to the "Standards for In-Company Trainers in ASEAN Countries" and the German Ordinance on Trainer Aptitude (AEVO) and adapted to the specific Indonesian context. Furthermore, master trainers are trained and educated, who will function as multipliers and provide trainings for in-company trainers. Around 200 trainers are trained annually for work in companies, schools, ministries, and chambers. The ExperTS program advises AHK/EKONID regarding the implementation of the training offers.

The development of the "Standard for In-Company Trainers in ASEAN Countries" was supported by the German Development Cooperation. This regional standard is an important instrument for ensuring training quality in companies and to enable trainers' regional mobility. The latter promotes experience exchange and regional networking.

With the Special Initiative on Training and Job Creation, the BMZ wants to create 100,000 Jobs and 30,000 training places in Africa. Further objectives are improving local working conditions and promoting economic growth. Therefore, the special initiative supports private investment from German, European, and African companies in partner countries. Where a shortage of skilled workers is constraining investments, the BMZ supports training and qualifications jointly with the private sector to increase the employability of local workforce.

Project Example: Tunisian Automotive Management Academy (TAMA)
In cooperation with the Special Initiative, the German automotive suppliers Dräxlmaier Group, Leoni AG, Kromberg & Schubert, and Marquardt GmbH have recognized that the lack of qualified specialists for middle management in Tunisia is impeding further investments. The jointly developed solution: The establishment of a "Tunisian Automotive Management Academy" (TAMA) – a training institution oriented towards the German dual TVET system—will qualify suitable candidates for middle management positions in the automotive sector. The innovative partnership is expected to create 260 additional training places and 7500 jobs by 2022.

3.6   Current Challenges for the Organization in Addressing Capacity Development for TVET Teachers

3.6.1   TVET Staff in the Context of Digital Transformation

Digitalization, automation, and the platform economy are among the main drivers of change in the world of work. They intervene in the labor market in many ways: in the

market itself, in the number of jobs, in job profiles and tasks, and in methods of communication. These trends have significant implications for TVET all over the world and hence on TVET in development cooperation. They impact TVET in two respects: firstly, in the changing demands on the skills needed in the labor markets and, secondly, in the means of teaching and learning. Teaching and training staff are the ones who primarily design the implementation of the digital transformation in TVET. They must be both willing and able to make use of new ways of learning and of digital learning technologies in their teaching and training. This is a huge challenge: Teachers and trainers must prepare their students and trainees for jobs and technologies that do not exist yet and to solve problems that are still unknown. At the very least, teachers and trainers must themselves be digitally literate, aware of the competences needed in the world of work, and able to effectively make use of digital technologies in teaching and training.

In addition to the use of digital technologies, teachers and trainers must prepare students and trainees for lifelong learning. In order to adapt to future technological innovations throughout their careers, professionals need self-learning competencies to be able to acquire the necessary skills and competencies which will be required by future labor markets. In the age of digital transformation, the competences needed for a successful career are not only more technical but much broader. According to the OECD, there is a "need for a broad set of knowledge, skills, attitudes and values in action" (OECD, 2018).

> Future-ready students will need both broad and specialized knowledge. [...] Students will need to apply their knowledge in unknown and evolving circumstances. In order to do so, they will need a broad range of skills, including cognitive and meta-cognitive skills (e.g. critical thinking, creative thinking, learning to learn and self-regulation); social and emotional skills (e.g. empathy, self-efficacy and collaboration); and practical and physical skills (e.g. using new information and communication technology devices) (OECD, 2018).

These same competences will be required for teachers and trainers if they are to foster them in their students and trainees. Just like their students and trainees, teachers and trainers will have to continue to learn and to adapt to changing requirements and opportunities through the digital transformation.

Project Example: Regional Cooperation for the Development of Technical and Vocational Education and Training (RECOTVET)
With RECOTVET the BMZ supports the member states of the Association of Southeast Asian Nations (ASEAN) in strengthening the quality and labor market orientation of TVET. One focus area of the program is on the qualification of TVET personnel, including TVET teachers, in-company trainers, and management personnel. Based on the request of TVET teacher training institutions, RECOTVET has supported ASEAN member states (AMS) in developing in-service training modules for TVET teachers and managers on topics such as "Innovative Teaching and Learning for Industrial Changes due to

Industry 4.0" and "Curriculum Design for Industry 4.0." These topics are high on the agenda throughout the ASEAN region, as AMS are under increasing pressure to develop their human resources in order to realize the benefits of digital transformation. The challenge for TVET teachers and trainers is to understand changing labor market needs and to adapt their teaching and training contents and methods accordingly. In the in-service training modules, RECOTVET and its cooperation partners have qualified more than 100 multipliers from 11 countries since August 2019. By January 2020 these have already replicated the contents for almost 500 TVET teachers in six countries.

Additionally, RECOTVET promotes and supports the expansion of in-company training at the regional and national levels as a way to strengthen business and industry cooperation in TVET and realize the potential of dual training approaches. In a collaborative process with partners from six countries, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH developed a common "Standard for In-Company Trainers in ASEAN Countries," which has since been published as an ASEAN publication and endorsed by ASEAN's sectoral bodies for labor and education as a regional benchmark to ensure that trainers in companies have the necessary skills to prepare and conduct trainings effectively. In cooperation with the bilateral TVET projects, 200 master trainers have been qualified to train in-company trainers at the country level. Through these multipliers and RECOTVET's partners, trainings have been provided to more than 2600 in-company trainers, in accordance with the Standard for In-Company Trainers in ASEAN Countries.

3.6.2 Greening TVET

Climate change is one of the most urgent challenges of our time: it is destroying development successes and threatening future development opportunities. International climate targets to reduce global warming will only be achieved if emerging and developing countries embark on sustainable development paths at an early stage. A structural change towards a low-emission, climate-friendly green economy is therefore necessary.

Such a transition towards a green economy will fundamentally shape the future of work and competence requirements in future labor markets. New professions are emerging, and existing job profiles are changing due to the development of environmentally friendly industries. In order for this to be possible, suitable skilled workers are needed who have the vocational qualifications to build and maintain an environmentally friendly economy. TVET plays an important role in the transition to a low-carbon economy and a climate-sensitive, sustainable society through training and further education for future sectors.

BMZ's TVET cooperation is based on the following points: the introduction of environmental education in training courses, training in (new) professions and in sectors that affect the climate, and the adaptation of existing vocational skills to the needs of a green economy.

BMZ promotes the development of ecologically sustainable standards for "green" occupations, certification and examination standards, the development of curricula for the initial and continuing vocational training of skilled workers, and the qualification of TVET teachers and trainers. Teachers and trainers play a key role in the process of greening TVET. In order to be able to provide the skills required by a green economy, teachers need to be provided with the necessary technical and pedagogical skills through continuous and initial training.

> **Project Example: Reform of Technical and Vocational Education and Training in Vietnam**
> The technical cooperation project aims to improve TVET to support sustainable green economic development in Vietnam. The project supports the Directorate of Vocational Education and Training under the Ministry of Labor, Invalids and Social Affairs in the institutional and legal TVET reform process, in improving the quality and demand orientation of training offers, and in the development of Centers of Excellence (CoE) [28]. The CoEs carry out training activities for vocational teachers from TVET schools and trainers from the business sector. Furthermore, one CoE is being advised to specialize on green TVET. Courses on topics such as environmental protection or energy efficiency are being implemented. Through the training, TVET teachers and trainers acquire the necessary skills to prepare trainees for a career in a sustainable green economy and to embed aspects of sustainability in their daily work.

3.6.3   Challenges in Capacity Development for TVET Teachers Regarding Gender

The relevance of gender equality across the entire educational sector is highlighted by SDG 4—inclusive and equitable quality education. One component of this goal is ensuring high-quality, labor market-oriented, and inclusive TVET for all. Inequality between women and men exists in labor markets all over the world, for example, with regard to payment and access to employment and qualifications. Additionally, numerous legal and social barriers hinder women and girls from participating in TVET. This discrimination carries high social and economic costs. Discrimination against women and girls in TVET also means reduced access to certain economic sectors such as engineering and motor mechanics.

Female teachers and in-company trainers are a minority in vocational education training worldwide. Female teachers and trainers often work in occupational fields

which are culturally perceived as feminine such as hair dressing or domestic science (cf. ILO, 2015).

Female teachers and trainers can be very influential for learners. They act as role models and can potentially inspire female trainees to pursuit a professional career, even in male dominated occupations. However, "there are not enough female teachers, who could serve as role models for schoolgirls" (BMZ, 2015).

BMZ is committed to improving employment opportunities and eliminating structural barriers for women and girls in TVET as well as elsewhere.

> The needs of women and girls and their social, cultural and economic settings, interests and potentials are appropriately taken into account in all bilateral development cooperation projects and programs through gender-sensitive planning and implementation tools. BMZ supports partner countries in designing their TVET and labor market policy in such a way that they give women and men equal opportunities and promote the integration of women into the economy (GIZ, 2018).

Project Example: CAADP: Promoting Agricultural Technical-Vocational Education and Training (ATVET) for Women

The project focuses on promoting agricultural technical-vocational education and training (ATVET) for women to ensure that training delivery is inclusive, labor market-oriented, and income-enhancing. The appropriate training of teachers in the application of competency-based training for women is an important prerequisite. TVET teachers and managers from vocational training institutions are made aware of gender issues—for example, by focusing on non-formal training courses that are flexible in design, such as evening or weekend courses that are tied to local formal training institutions.

Nine hundred twenty-eight teachers from agricultural technical colleges of whom 223 are women have been trained in competency-based agricultural training. About one third of those 928 teachers have further been trained in gender-sensitive training design and delivery with new training projects for all teachers still planned as part of the implementation.

In the six partner countries Kenya, Malawi, Ghana, Benin, Burkina Faso, and Togo, almost 2000 women have received agricultural technical-vocational education and training, and a total of 46 new or revised competency-based and gender-sensitive curricula have been developed consisting of 250 training modules for 10 agricultural value chains during the ATVET Project.

3.6.4 Challenges in Capacity Development for Trainers in the Informal Economy

In many partner countries of German development cooperation, the majority of young people are trained in the informal economy. The most common forms of skills development are informal learning and traditional apprenticeships in the informal economy. Workers in the informal economy are usually guided by the

owners of informal enterprises, who themselves acquired their skills through traditional apprenticeships and learning on the job. The relevance of a formal TVET system for workers in the informal economy is often limited as the curricula do not match their skills requirements and training courses are often not accessible due to high direct and indirect costs. In the informal sector, the approach to developing the skills of trainers has to take account of the fact that the skills that need to be taught are not usually as complex as in large- and medium-sized industrial companies. The priority is strengthening existing traditional training structures, for example, by improving trainees' access to the formal TVET system, and improving training quality in the informal economy. At the same time, companies in the informal economy are faced with new challenges as a result of digital transformation and globalization. So, business owners and trainers must be able to adjust their production and services as well as their provision of training accordingly. To this end, business owners and trainers in the informal economy should have access to relevant training opportunities.

Project Example: Ghana Skills Development Initiative (GSDI)
Ghana's informal sector provides between 80% and 90% of the country's employment. The Ghana Skills Development Initiative, which is supported by BMZ, provides in-service training for the owners of micro-, small-, and medium-sized enterprises in three regions. The selected craft sectors addressed were electronics, automotive technology, welding, textiles, and hairdressing/ beauty treatment. Training was focused on the actual needs of the target group, and training modules are competency-based. Master crafts persons were trained to provide competency-based training themselves. In addition, a module on training the trainers was implemented to further improve trainer aptitude. Training takes place at private and government training institutions. Two hundred thirty-two master craftspersons were trained in competency-based training courses.

   If informally employed workers are trained at all, they acquire their skills through traditional apprenticeships. There has long been consensus in the country that the employability of apprentices and workers in the informal economy needs to be improved and that improvement should be effected through simplified and adapted formats. In this way, training quality is slowly being improved.

3.7   Conclusions and Outlook

The approaches and experiences of German development policy regarding the qualification of vocational training personnel mentioned here can be used to derive recommendations for decision-makers when designing development interventions and strategies. It is therefore advisable to consider the following success factors in

the design and implementation of German and international development cooperation.

1. Development cooperation should focus even more on the qualification of vocational training personnel. This can make a significant contribution to achieving Sustainable Development Goal 4.c of Agenda 2030 for sustainable development, which is to increase the supply of qualified teachers by 2030 through international cooperation in the field of teacher training in the partner countries of development cooperation.
2. Targeted measures should improve the image of vocational training in general and the social status of vocational training personnel in particular in the partner countries of the German development cooperation. Targeted incentives should be created to increase society's interest in the profession of vocational training personnel. This would help to counteract high attrition rates among teachers and develop targeted improvement measures.
3. In order to ensure uniform quality in the training of vocational training personnel, uniform professional standards for teachers, trainers, and management personnel at vocational schools should be developed. In order to ensure broad social acceptance of the standards, it is advisable to involve actors from politics, private sector, and civil society as early and intensively as possible in the development of these standards.
4. The competence of vocational training personnel should be continuously and systematically adapted to the dynamic needs of the world of work through tailored continuing training programs.
5. Teachers must be able to integrate digital technologies into teaching and learning and to teach digital topics in a way that is compatible with the needs of the economy.
6. A sufficient number of female teachers and trainers are needed to render gender-sensitive vocational education and training. Female vocational school teachers and trainers can serve as role models for female trainees and make vocational education and training an attractive career option. Accordingly, greater importance should be attached to qualifying female teachers and trainers.

The promotion of dedicated, high-performance vocational training institutions as Centers of Excellence is an effective tool for providing training courses at a high level of technical specialization in accordance with international standards. In addition to regular training operations, Centers of Excellence can also provide training for in-company trainers and vocational teachers according to modern technical standards and thus contribute to the sustainable improvement of the TVET system. When promoting competence centers, it is therefore recommended that the qualification of TVET personnel is included separately in the planning and implementation of such centers.

References

BMZ 2012 – BMZ. 2012. Vocational education and training in German development cooperation. https://www.dcdualvet.org/wp-content/uploads/2012_BMZ_VET-in-German-Development-Policy_Strategy-Paper-8.pdf

BMZ 2015 – BMZ. 2015. Education Strategy, 2015, p. 17. https://www.bmz.de/en/publications/type_of_publication/strategies/Strategiepapier355a_07_2015.pdf

BMZ 2017 – BMZ. 2017. Africa and Europe - A new partnership for development, peace and a better future, 2017, p. 13. https://www.bmz.de/en/publications/type_of_publication/information_flyer/information_brochures/Materialie270_africa_marshallplan.pdf

GIZ 2017 – GIZ. 2017. The role and skills development of in-company trainers in development cooperation, p. 5. http://star-www.giz.de/cgi-bin/getfile/53616c7465645f5f6128a326b07629955579f34b9a7c602d32bfe9ee7cbca92cb1a9b66f929243d96ad7e031d088574499a7987959c95782c776b8e30ebe43a3fbd1af6d2959e2cb/giz2017-0189en-role-skills-development-trainers.pdf

GIZ 2018 – GIZ. 2018. Vocational Education and Training and Gender: Equality is Crucial. http://star-www.giz.de/cgi-bin/getfile/53616c7465645f5fffdc062bf4074bd8ae99a7c0f010387891e457c039c69fa2c2566401336eb9aabcac0dd0c3ea1185f079fabbf355f44533b731078dd53fef/giz2018-0188en-vocational-education-training-equality-crucial.pdf

GIZ 2019 – GIZ. 2019. Train the trainers (TTT) – pre-service and in-service teacher training, 2019. https://www.giz.de/en/worldwide/63130.html

ILO 2019 – ILO 2015. Vocational teachers and trainers in a changing world: The imperative of high-quality teacher training systems, 2015, p. 32. https://www.ilo.org/employment/Whatwedo/Publications/working-papers/WCMS_383787/lang%2D%2Den/index.htm

OECD 2018 – OECD. 2018. The future of education and skills – Education 2030, p. 4. https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf

Sequa, KVP + BBP, 2019. https://www.sequa.de/en/projects-programmes/kvp-bbp/

Chapter 4
Perspectives of ADB on the Education and Training of TVET Teachers

Brajesh Panth, Lisa-Marie Kreibich, Per Borjegren, and Fook Yen Chong

Abstract The Asian Development Bank (ADB) designs technical and vocational education and training (TVET) interventions based on global good practices and lessons learned from projects it has supported in developing member countries (DMCs). Successful TVET teacher training systems consist of well-structured pre- and in-service training components, targeted pedagogical and domain-specific training elements, close linkages and partnerships with industry, and innovative practices in teaching and learning methods and course content. ADB supports DMCs in adapting these aspects to local realities as it aims to shift ad hoc, short-term training courses for teachers toward sustainable systems for high-quality, relevant pre- and in-service TVET teacher training through the establishment of strong and reliable institutions. The example of Indonesia shows that strengthening the teaching

B. Panth (✉)
Asian Development Bank (ADB), Sustainable Development and Climate Change Department, Manila, Philippines
e-mail: bpanth@adb.org

L.-M. Kreibich · P. Borjegren
Asian Development Bank (ADB), Pacific Regional Department, Manila, Philippines

F. Y. Chong
Asian Development Bank (ADB), South East Asia Regional Department, Manila, Philippines

capacity of universities for teacher education is crucial for sustainable improvements in quality. An ADB-funded TVET project in India has demonstrated how a network of master trainers can ensure the continuous upgrading of teachers' competencies. In the People's Republic of China, an ADB-funded project is focused on increasing the industry experience of TVET teachers as a key factor for obtaining the up-to-date skills needed to design and implement demand-oriented training. ADB also helps in establishing centers of excellence for TVET teacher training in order to provide pedagogical and domain-specific training as well as for the training of teachers and managers on essential topics, including industry linkage, technology use, and curriculum development. The success of all these interventions requires strong leadership at the institutional level which will enable TVET teachers to use and continuously upgrade their competencies.

4.1 Introduction

Over the last three decades, Asia has experienced remarkable growth and has considerably outperformed other regions in the world. In 2000, Asia accounted for just under one-third of the global real gross domestic product (GDP) in purchasing power parity terms; by 2040, it is projected to make up more than 50% of the global real GDP (cf. McKinsey Global Institute, 2019). This growth potential, however, depends on Asia's ability to sustain and increase recent rates of productivity growth. Moving up global value chains and transforming into knowledge-intensive economies depends on the presence of adequate human capital. Having the skills required for such economic development will determine the continuation of the region's success (cf. Ra, Chin, Liu, 2015).

Developing member countries (DMCs) of the Asian Development Bank (ADB) are increasingly facing challenges related to a shortage of skilled workers, as technical and vocational education and training (TVET) systems are not fully equipped to produce graduates with skills that meet the needs of the labor market. This skills gap or skills mismatch hampers productivity and economic growth. Governments of DMCs are recognizing the importance of reforming TVET systems from being largely supply-driven toward becoming demand-oriented. The industry's involvement in defining occupational standards, developing curricula, and providing training, as well as the assessment, certification, and modernization of equipment and physical facilities, is important for improvement. Reform efforts are also targeted toward improving learners' access to TVET and strengthening the capacities of school management and teachers in order to provide demand- and practice-oriented training using technology as well as preparing students for the requirements of the labor market.

Research finds that increasing teacher quality is a key instrument for improving learning outcomes and creating long-term impacts for students (cf. Rockoff, 2004). In TVET, teachers play an important role in transforming supply-driven systems into those that are led by labor market demand. Yet the education and training of TVET

teachers frequently receive insufficient attention (cf. Marope, Chakroun, Holmes, 2015).

This paper examines the key features of successful TVET teacher training and derives strategic directions for prioritizing sustainable and effective interventions from ADB's TVET projects. The structure of this paper is organized as follows: Section 2 describes the strategies and development trends of ADB's education portfolio, including TVET. Section 3 discusses the relevance of TVET teacher training in ADB DMCs. Section 4 identifies core aspects of successful TVET teacher training systems. Section 5 illustrates ADB's approach for establishing TVET teacher training systems based on global good practices and lessons learned, which are adapted to local contexts by presenting case studies from Indonesia, India, and the People's Republic of China (PRC). Finally, Section 6 identifies six strategic pillars guiding ADB interventions, with a particular focus on sustainable TVET teacher training systems.

4.2 Strategies and Development Trends for ADB's Education Portfolio

ADB has a long track record of assistance to DMCs in achieving their goals of improving access to and quality of education – with $9 billion in loans and grants to 107 projects in preprimary and primary education, secondary education, TVET, higher education, and education sector development reform from 2008 to 2018. ADB's ongoing operations are valued at $5.4 billion across 55 projects in 23 DMCs. Operations in the educational sector are growing, due to an increase in demand for support in TVET. In 2016–2018, ADB's program for education sector operations accounted for $3.17 billion, 35% of which was earmarked for TVET; for 2021–2023, this is projected to increase to $6.79 billion, of which 36% is for TVET (ADB, 2021).

Activities in the education sector are aligned with the Operational Priority 1 of ADB's Strategy 2030 which seeks to address existing poverty and reduce inequalities. Operational Priority 1 is comprised of three interconnected focus areas: (1) enhancing human capital and social protection for all, (2) generating quality jobs, and (3) reducing inequality of opportunities. Enhancing human capital is largely the focus of sectors such as education, health, and social protection. For generating quality jobs and reducing inequality in opportunities, collaboration across all sector and thematic areas is required (ADB, 2018).

The share of the education sector is expected to be about 6% of ADB's total lending portfolio for 2019–2021. Demand for multisector projects is likely to grow as collaboration between education and other sectors gains importance, such as training to build up infrastructure, urban development, energy, smart cities, and expansion of special economic zones. The expansion of education operations will focus particularly on improving quality in teaching at all levels, scaling up teacher

and trainer professional development, and deploying new technologies with parallel impact assessment. ADB will also explore new partnerships by drawing on global good practices to augment the impact of knowledge work and technical support.

4.3   Relevance of TVET Teacher Training in ADB Developing Member Countries

In many ADB DMCs the lack of trained teachers is a major constraint to effective TVET delivery. Improving the professional skills and competences of TVET teachers, including their pedagogical skills, domain-specific theoretical and practical skills, and industry experience, is a crucial factor for increasing the quality and relevance of TVET. This is becoming even more urgent, given the increasing importance of lifelong learning in the workplace.

Yet, the unknown skill needs for future workplaces, especially in the context of digitalization and the 4th Industrial Revolution, will increasingly require a change in core work skills, such as problem-solving, teamwork, and self-learning capacity, resulting in the need for TVET teachers to not only maintain a high level of knowledge and skills but also effectively apply new teaching and learning methods. Furthermore, TVET teachers need to contribute to the development of TVET institutions regarding strategic direction, organization, and curricula (cf. Spöttl, 2009).

In ADB DMCs, diverse approaches to pre-service TVET teacher preparation are characterized by inadequate output of teacher training institutions, and, furthermore, a lack of in-service training can be observed. Existing in-service training options are often ad hoc, with missing linkages to industry needs or inputs from TVET teachers, and they are not linked to career progression of TVET teachers. The most significant challenges remain the integration of domain-specific and pedagogical training and the acquisition of practical industry work experience. A key factor of demand-oriented training is to link TVET institutions more closely to the needs of the industry. Relying on TVET teachers to design and implement training programs when they do not have a thorough understanding of the future workplaces of their students will have a negative impact on the quality of the training and learning outcomes.

4.4 Core Aspects of Successful TVET Teacher Training Systems

ADB designs TVET interventions based on global and regional good practices and lessons learned through supporting TVET. Analyses of good practices reveal that successful, high-quality, relevant, and effective TVET teacher training systems include the following core aspects:

- Well-structured pre- and in-service training components
- Adequate and targeted pedagogical and domain-specific subject matter training components
- Close linkages with industry for the acquisition of practical work experience
- Innovative practices in teaching and learning methods and in course content

4.4.1 Republic of Korea

TVET development in the Republic of Korea (ROK) within a relatively short time demonstrates the importance of establishing a well-functioning system of pre-service training, which equips TVET teachers with the necessary theoretical knowledge and practical skills as well as pedagogical skills, depending on their existing qualification and experience.

The TVET system in the ROK was designed based partly on the dual TVET system in Germany and follows the concept of apprenticeship training. In the 1960s, forepersons at production sites could function as training instructors. They were eligible for obtaining training instructor licenses after learning pedagogical skills through relevant short-term courses. Instructors providing off-the-job training were also equipped with professional abilities, including theoretical knowledge (25–35%) and practical skills (50–60%) in their specialized disciplines and teaching profession subjects (5–15%) during specialized 2-year courses so they could obtain a degree as vocational training instructors.

By the early 1980s, after public vocational training facilities were established, demand for training instructors fell, and the levels for required qualifications were raised, which necessitated changes to TVET teacher training. In response, the government pursued the establishment of the Korea University of Technology and Education (KOREATECH) for vocational training instructors. The university runs two types of courses for training instructors: regular courses for those qualified to enter a college, aimed at producing training instructors equipped with theoretical knowledge and practical skills through 4-year training, and professional courses for those who are qualified and knowledgeable in a given professional area, with the instructor license earned after 4 weeks of intensive education (cf. Ra, Kang, 2012).

4.4.2   Singapore

Singapore has developed a comprehensive system for recruiting, compensating, and continuously professionally developing teachers and principals. TVET teachers are selected from the top ranks of high school graduates and receive a starting salary comparable to entry-level compensation for engineers.

In 1992, the Ministry of Education created the postsecondary Institute of Technical Education (ITE), the principal provider of vocational education and training in Singapore and the principal authority in developing national occupational skills certification and standards. Teachers in ITE are entitled to regular technical, pedagogical, and professional skills upgrading and encouraged to develop their competencies in existing and new areas. Around 6–8% of TVET teachers go abroad for this purpose, while the rest receive training in Singapore. ITE's Total System Capability initiative aims at holistically developing the capabilities of its staff in a continual, integrated, and sustainable manner (www.ite.edu.sg). ITE also requires its staff to conduct relevant assignments in industry for a minimum of 3 months and has the aim of 85% of its faculty staying up-to-date by implementing consultancy or industry projects. Completing these training requirements is a precondition for promotion.

Teachers are assessed annually with regard to their potential for becoming principals. The candidates are then transferred to management teams and receive training to prepare them for their new roles before moving on to the role of assistant principal and principal. At each stage, training prepares them for school leadership and transformation (cf. The National Center on Education and the Economy, 2016; Darling-Hammond, 2013).

4.5   ADB's Approach for Establishing TVET Teacher Training Systems Based on Global Good Practices and Adapted to Local Contexts

When analyzing good practices as a basis for interventions, it is crucial to take into account differences in culture and context. Singapore, for example, has a small and centralized TVET system with good collaboration and a shared vision between all stakeholders, which makes implementing policies easier. Just as Singapore and the ROK developed their systems through examining good practices of other countries such as Germany and Japan, ADB also supports DMCs in learning from these experiences and adapting them to local realities by creating TVET teacher training systems that are relevant to and coherent with national and local context and policy objectives.

Reflecting on the aforementioned central aspects of a successful TVET teacher training system, ADB supports DMCs in establishing or improving existing pre- and in-service training with integrated pedagogical and domain-specific theoretical and practical training components. Increasing the industry exposure of teachers is also a

crucial aspect of ADB's projects as well as the integration of innovative approaches to course content and teaching and learning methods, including the use of digital technology. The following selected project examples in Indonesia, India, and the PRC demonstrate these aspects.

4.5.1   Enhancement of TVET Teachers' Industry Experience in Guangxi Zhuang Autonomous Region, People's Republic of China

ADB and the German Development Cooperation, through the KfW, are cofinancing the "Guangxi Modern Technical and Vocational Education and Training Development Program (2017–2022)" in order to support the TVET system reform program of the Government of Guangxi Zhuang Autonomous Region (GZAR) based on a common results framework. The program aims to establish a TVET system in GZAR that provides graduates with better employment opportunities. It is intended to enhance industry relevance, improve quality, increase inclusiveness, and expand the role of TVET in regional economic development. One of the key successes of the program is an increase in the number of TVET teachers with industry experience.

In GZAR, the short supply of qualified teachers resulted in high student/teacher ratios due to the low number of technical teachers with the necessary practical skills, industry experience, and teaching licenses (the so-called "dual qualification" teachers in the PRC). The program supports the introduction of new policy and assessment frameworks in GZAR in order to increase the number of full-time teachers with industry experience in technical fields. The new policy and assessment frameworks outline the criteria and standards for assessing if the industry experience of technical teachers is sufficient for a "dual qualification" certification, clarifying the career progression of technical teachers in terms of their industry experience, and supporting technical teachers in gaining more industry experience.

Rigorous criteria and standards for assessing industry experience have been developed and are constantly being updated by the College of Professional and Technical Education of the Guangxi University of Science and Technology, one of the national institution in GZAR which are responsible for the pre- and in-service training of TVET teachers. Designated by the GZAR Education Department as the dual qualification teacher certification office in 2017, the college supports the implementation of new policy and assessment frameworks. The framework for teachers at secondary TVET schools was piloted in two municipalities in 2015–2016 and implemented at the provincial level in 2017, whereas the framework for teachers at tertiary TVET colleges (offering 3-year diploma programs) was piloted in 2017 and implemented at the provincial level in 2018. The framework for teachers at application-oriented universities (offering 4-year bachelor's degree programs) is being developed. The college also developed and maintains the dual qualification assessment and certification management information system

(accessible on mobile devices and computers) which can generate the data on TVET teachers' qualifications that can be used to tailor training programs to the needs of individual teachers.

By the end of 2019, over 90% of technical teachers with industry experience at secondary TVET schools and close to 50% of technical teachers with industry experience at tertiary TVET colleges were certified according to these frameworks. The GZAR Education Department requires the dual qualification certification as a criterion for the promotion of technical teachers at secondary TVET schools, which has incentivized teachers to increase their industry experience and obtain this certification. For technical teachers at tertiary TVET colleges, the dual qualification certification is not a requirement. Nevertheless, the GZAR Education Department now requires all new technical teacher recruits at tertiary TVET colleges to have industry experience.

Despite good progress, increasing the industry experience of TVET teachers remains a challenge even though all TVET teachers are required to have completed in-company training for at least 6 months every 5 years. Each TVET institution is responsible for finding partner companies; organizing in-company training for teachers, especially during vacation time; and allocating funding for it. The success varies across TVET institutions and largely depends on the management of each institution. Some TVET institutions have in-company teacher training bases and appoint experienced teachers as master trainers for other teachers. Additionally, many TVET institutions now hire part-time teachers from industry to further strengthen the TVET teaching force and enhance the quality of TVET.

4.5.2   Establishing a System of Master Trainers to Provide In-Service Training to TVET Teachers in Odisha, India[1]

In Odisha, the quality and appropriateness of training is inadequate due to outdated curricula and equipment and a shortage of industry-experienced trainers. The "Odisha Skill Development Project" involves the establishment of a World Skill Center (WSC) in Bhubaneswar that will introduce six advanced engineering training courses (built environment, vertical transportation, mechanical and electrical, ventilation, air conditioning and refrigeration, mechatronics technology, electrical technology, and precision engineering) and two modern service sector courses (hair styling and fashion and beauty and wellness).

In addition to the training courses, WSC will also offer teachers' training in both domain and pedagogical skills, supporting startups through the Nano Unicorn initiatives, putting a career counselling and placement center into place, and

---

[1] In 2011, the Government of India approved the name change of the State of Orissa to Odisha. This document reflects this change.

establishing strong linkages with international TVET training institutes and industries as knowledge partners. WSC will act as the hub resource center for all industrial training institutes in Odisha through mentoring in the areas of pedagogy, technology use, industry linkages, and training of trainers as well as being involved in curriculum and learning materials development.

The project will also establish a pool of master trainers and assessors and will initiate a training program for trainers in partnerships with international institutions. The objective is to create a pool of 250 master trainers and develop a mechanism to train about 6,400 trainers, including about 1000 assessors. It aims to have 250 master trainers certified to internationally recognized country or industry standards and to train 5000 trainers in pedagogy and technical skills, including 1000 as assessors.

Also, within this project, 100 senior policy-makers and principals of industrial training institutes (ITI) were trained in 2018 through the TVET leadership excellence program with the Institute of Technical Education in Singapore. After this training, the participants of the program are introducing many initiatives to improve the ITI system and enhance the image of ITI training, including the collective development of new vision and mission statements, branding improvement for the institutions of choice, establishment of autonomy for teaching faculties, and enhancements for the learning environment of ITIs.

Along with the investment in leadership training and capacity building of teachers, the project has incorporated sufficient funding for improving and upgrading training infrastructure and facilities, including training equipment and tools that are aligned with industry standards. This is an important aspect of the Odisha Skill Development Project to ensure that trained leaders and teachers are given financing and tools of the trade to implement what they have been trained to do. Another aspect of this project is that it is the first TVET leader excellence program that has enabled principals and the senior management team of ITIs to become actively involved in setting up processes to enable WSC to be aligned with international standards.

4.5.3 Supporting the Indonesia University of Education in Improving the Quality of TVET Teacher Training

Through the "Advanced Knowledge and Skills for Sustainable Growth Project" from January 2019 to December 2023, ADB is supporting the Government of Indonesia in TVET teacher training. One of the central components of this project is support for the transformation of the Indonesia University of Education (UPI) into a center of excellence for the education of TVET teachers, in an attempt to address the lack of adequate programs, facilities, and industry linkages in training institutions and universities. Many institutions for TVET teachers in Indonesia are not adequately prepared to meet the demands of employers and integrate new technologies to prepare for the changing needs in technical education. Therefore, many new

and existing TVET teachers lack the practical skills and industry experience needed for the technical subjects they specialize in, and teaching and learning are categorized by traditional lectures and limited knowledge complemented by more interactive, inquiry-based teaching methods.

The project is taking a holistic approach to reforming the UPI's teacher education program and aims to ensure interconnectivity between subjects and departments within the university, so that reforms reinforce each other and are sustainable in improving the quality of technical teachers' education. The underlying principles of the project include a strong industry involvement in pre- and in-service training, continuous professional development of trainers, and an increase in training individuals with industry experience to be TVET teachers.

Initially, the project is upgrading the infrastructure of the entire UPI, including refurbishment and construction of new classrooms, laboratories, a day care center, and other academic buildings. The construction and upgrade of facilities are gender-sensitive, inclusive, and sustainable. The second intervention is the further development and strengthening of the teaching capacity of university staff in line with the TVET teacher education programs in six emerging technologies: information systems and technology, including big data; artificial intelligence and robotics; industrial instrumentation engineering; renewable energy engineering; chemical engineering; and automotive engineering. Third, support for the university's TVET research in developing and applying new and contextualized models for technical education will focus on vocational pedagogy, improved teaching and learning outcomes, and expanded industry collaboration.

In addition to improving the quality of pre-service TVET teacher training, UPI is also developing and offering in-service training to teachers and managers in senior secondary vocational education schools, polytechnic colleges, and in-company trainers in industries. UPI will establish itself as a professional certification body, equipped with centers for competency testing which certify graduates in the six areas mentioned above. In these interventions, industry partnerships are further strengthened, and the involvement of employers is increased.

The institutional reform supported by the "Advanced Knowledge and Skills for Sustainable Growth Project" is closely aligned with the national strategy for strengthening teacher education in Indonesia which was developed by the Ministry of Research, Technology and Higher Education and Ministry of Education and Culture. This strategy includes expanded pre- and in-service training for TVET teachers, increased industry involvement, and changing employment rules, allowing people with industrial backgrounds to become TVET teachers.

4.6 Success Factors and Strategic Outlook for ADB

The ADB project examples from Indonesia, India, and the PRC described in this paper reflect the core aspects of successful TVET teacher training systems: well-structured pre- and in-service training components, adequate and targeted

pedagogical and domain-specific training components, close linkages with industry for the acquisition of practical work experience, and innovative practices in teaching and learning methods and course content by aligning them with emerging industry needs. Within Operational Priority 1 of Strategy 2030, ADB aims to improve the professional development of teachers and trainers (ADB, 2019).

In the TVET sector, a strong emphasis will be placed on teachers and their key role in equipping students with skills that meet the needs of the labor market. Learning from its project preparation and implementation experience, ADB will expand its focus in the next years to the following strategic elements of education and training of TVET teachers.

A holistic approach in reforming TVET teacher training is needed, which aims at ensuring interconnectivity between pre- and in-service training and the integration of pedagogical and domain-specific training components. Shifting from a donor-driven implementation of mostly ad hoc, short-term training courses for TVET teachers, ADB puts the focus on supporting DMCs in establishing sustainable systems for high-quality, relevant pre- and in-service training for teachers.

Strong institutions for TVET teacher training are the basis for a sustainable system; therefore, ADB supports the establishment and improvement of universities, TVET teacher training institutes, or centers of excellence which will provide pre- and in-service TVET teacher training. This includes developing or improving TVET teacher training programs, facilities, and equipment; strengthening the teaching capacity of the teaching staff; and establishing a pool of master trainers in line with the training programs.

Selected institutions are transformed into centers of excellence for TVET teacher training providing not only relevant, high-quality pedagogical and domain-specific theoretical and practical pre- and in-service training but also training for TVET teachers and managers on topics such as industry linkages, technology use, and curriculum and learning materials development. ADB also helps these centers of excellence to provide coaching and mentoring by experienced master trainers to ensure the successful implementation of the skills gained in daily teaching practice. Furthermore, TVET research on new models for TVET, vocational pedagogy, teaching and learning outcomes, industry collaboration, and others conducted by the centers of excellence are contributing to the reform of the overall TVET system. Ensuring the relevance of training and services offered by centers of excellence as well as ensuring that they are oriented toward market needs, the involvement of industry in the establishment and development of these centers of excellence is crucial.

Industry experience during pre- and in-service training is a key factor in obtaining relevant, up-to-date experience and skills. An in-depth understanding of the future workplaces of students will help TVET teachers to design and implement training which is linked more closely to the needs of the industry. Attracting people with previous industry experience to become TVET teachers and promoting the recruitment of part-time or temporary teachers from companies are further areas needing intervention in order to contribute to an increased relevance of TVET.

Strong leadership at the institutional level is crucial for TVET teachers' continuous capacity development, as a clear vision and mission, autonomy of faculties, and an appropriate learning environment will enable TVET teachers to continuously upgrade their skills and make use of their improved competencies. Therefore, ADB supports the training of school management personnel and helps to ensure that trained leaders and teachers are given the financial means, infrastructure, and equipment to implement what they have been trained to do.

Policies and incentives supporting the capacity development of TVET teachers need to be in place to create a framework which defines the regulations, structure, and resources for a successful training system. ADB DMCs are supported in the creation of a framework that includes pre- and in-service training for TVET teachers as well as increased industry exposure and employment rules which allow people with a background in industry to become TVET teachers. Policies can also give incentives to TVET teachers to participate in training offers, for example, by making training a requirement for the recruitment of new teachers and promoting teachers or increasing the salary of trained TVET teachers. Sufficient resources need to be allocated for a TVET teacher training system to be able to function after the completion of a project.

Industry partnerships allow TVET teacher training institutes to enhance synergies with companies for professional development by aligning training closely with the needs of industry. Supporting policies and incentives, e.g., tax incentives, will facilitate TVET-industry linkages. Industry involvement in the development and delivery of TVET teacher training programs ensures that teachers obtain relevant skills and up-to-date knowledge of labor market requirements. Building the capacity of TVET teachers and managers to initiate and maintain industry linkages, for example, for apprenticeships for students, remains one of the core elements of a demand-oriented training system.

References

ADB. (2018). Strategy 2030: Achieving a prosperous, inclusive, and sustainable Asia and the Pacific. Available: https://www.adb.org/documents/strategy-2030-prosperous-inclusive-resilient-sustainable-asia-pacific.

ADB. (2019). Operational priority 1: Addressing remaining poverty and reducing inequalities. Available: https://www.adb.org/documents/strategy-2030-op1-poverty-inequalities.

ADB. (2021). Internal report: Education pipeline 2021–2023. ADB. Unpublished.

Darling-Hammond, L. (2013). Developing and sustaining a high-quality teacher force. Asia Society. Available: https://asiasociety.org/education/high-quality-teaching-force

Marope, P. T. M., Chakroun, B., & Holmes, K. P. (2015). *Unleashing the potential – transforming technical and vocational education and training*. UNESCO.

McKinsey Global Institute. (2019). Asia's future is now. Available: https://www.mckinsey.com/featured-insights/asia-pacific/asias-future-is-now

Ra, S., Chin, B., & Liu, A. (2015). *Challenges and opportunities for skills development in asia: changing supply, demand, and mismatches*. Asian Development Bank.

Ra, Y. S., & Kang, S. H. (2012). *2011 modularization of Korea's development experience: Vocational training system for a skilled workforce*. Korea Development Institute School of Public Policy and Management and the Government of the Republic of Korea, Ministry of Strategy and Finance. Local Publisher. https://www.ite.edu.sg/who-we-are/our-organisation/key-milestones

Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American Economic Review, 94*(2), 247–252.

Spöttl, G. (2009). Teacher education for TVET in Europe and Asia: The comprehensive requirements. *Journal of Technical Education and Training, 1*(1), 1–16.

The National Center on Education and the Economy. (2016). How high-performing systems shape teaching quality around the world. A teaching model for the 21st century. Available: http://ncee.org/wp-content/uploads/2017/02/SingaporeCountryBrief.pdf

Chapter 5
Promoting Work-Based Learning for Vocational Teachers

Aurélien Kaske, Rodrigo Torres, and Shinyoung Jeon

Abstract Industry knowledge and practical experience are important assets for vocational teachers to effectively deliver vocational education and training (VET) and facilitate VET students' entry into the labour market. Work-based learning (WBL) is an effective tool for VET, as learners are placed directly within industries and can gain real-life work experience and skills. Teachers in VET can also benefit from WBL as an effective professional development tool, and WBL is also an opportunity for them to stay in close contact with industry, thereby gaining relevant work experience, updating their technical knowledge and adapting their teaching to rapidly evolving work environments and changing labour market needs. However, many VET teachers still lack access to high-quality WBL due to institutional and organisational challenges. This chapter provides an overview of WBL opportunities for vocational teachers and presents examples of industry placements from selected countries, exploring the question of how best to organise and implement WBL for vocational teachers.

A. Kaske
Research in Microeconomics, Development Economics and Education Policy, Leuven, Belgium
e-mail: aurelien@kaske.org

R. Torres · S. Jeon (✉)
Vocational Education and Training and Adult Learning, OECD Centre for Skills, OECD, Paris, France
e-mail: rodrigo.torres@oecd.org; shinyoung.jeon@oecd.org

5.1   Introduction and Context

Fast-changing technological innovations in labour market needs put significant pressure on VET systems around the world and are forcing them to continuously adapt their curriculum to better match current and future work practices (OECD 2019a, 2019b). Vocational teachers play a crucial role in bridging the gap between the schooling and professional lives of VET students. In order to prepare their students for their future jobs and facilitate their integration into the world of work, VET teachers need to be experts in both pedagogical knowledge and practice and vocational skills and work experience. Given this need for double expertise, VET teachers need to keep up-to-date with industry knowledge and skills through various channels, including participation in workshops, networking with professionals and industry and work-based learning (WBL). At the same time, the availability of strong in-service[1] teacher training programmes remains crucial for VET teachers, as some VET institutions recruit VET teachers directly from the industry without teacher qualifications.

In particular, WBL is an important part of both initial teacher training and professional development for VET teachers and is one of the best ways for them to gain and maintain up-to-date industry knowledge. Originally designed for young people as a way to improve their employability, WBL is used nowadays also by experienced workers participating in lifelong learning and professional development (Choy & Haukka, 2009). WBL refers to a set of learning practices that differ from those that are school-based. It describes learning that takes place through some combination of observing and carrying out productive work taking place in real work environments, regardless of whether formal, non-formal or informal training (Musset, 2019; Kis, 2016).[2]

However, many VET systems face substantial challenges in providing adequate training for their teachers (OECD, 2021; ILO, 2015). In particular, despite its well-known effectiveness and wide usage in VET, WBL remains underutilised as an alternative for the training, professionalising and upskilling of VET teachers. This chapter focuses on in-service WBL opportunities for VET teachers and the challenges related to the provision of these placements. Its goal is to identify common challenges from the literature and to provide possible solutions based on good practices from countries around the world. In the first part, this chapter addresses

---

[1] In-service professional development refers to those training activities for VET teachers which take place while teachers are employed by a VET provider. They usually take place during working hours, so they replace some of the planning, teaching or assessment activities performed by VET teachers. On the other hand, pre-service professional development refers to those activities taking place during teachers' initial training period.

[2] A number of competing, partially overlapping and often fluid pieces of terminology are included in "work-based learning". These include work-related learning, work-integrated learning, workplace learning, work experience, job shadowing, apprenticeships, internships, service learning and part-time or temporary work placement (Musset, 2019). In this chapter, the focus is on in-service VET teachers who engage with WBL as part of their professional development.

the difficulties in providing VET teachers with access to WBL, followed by a section on how to strengthen the links between VET institutions and companies in order to tackle this challenge. Finally, the chapter addresses the question of how to provide high-quality industry placements by providing examples of key learning outcomes and quality assurance systems for WBL in VET.

Box 5.1. Definitions

Work-Based Learning

Work-based learning refers to a set of learning practices that differ from those that are school-based. WBL takes place in a real work environment, through participation in and/or observation of work, under the supervision of an employer. Consequently, WBL is a term that describes a variety of practices, including the training of people (whether formal, informal or non-formal) that takes place within any workplace. OECD Education Statistics (OECD 2018a, 2018b) defines programmes in which more than 90% of the content is spent in the workplace as "work-based" programmes. Programmes in which between 25% and 90% of learners time are spent in the workplace are "combined school- and work-based programmes". There are work-study programmes in which students/trainees receive earnings and combined school- and work-based programmes without systematic earnings. VET programmes in which the work-based component is less than 25% are defined as school-based programmes.

Apprenticeships

Apprenticeships are one particular form of work-based learning. Currently there is no internationally agreed definition of apprenticeships. However, apprenticeships typically involve a structured mix of (1) time spent at a workplace, during which apprentices develop skills and perform productive work, and (2) off-the-job training and education, which typically takes place in educational institutions and is overseen by public authorities (OECD, 2018a, 2018b). In most countries, apprentices spend more than 50% of their time in the workplace. Apprenticeships lead to formal, nationally recognised qualifications and provide a full set of knowledge, skills and competences to give access to a specific occupation recognised by employers.

Apprenticeship models, legally defined through agreements with employers and sometimes labour representatives and embedded in custom, differ across countries. Apprentice pay is also highly variable, with apprentices earning a very small share of a skilled wage in some countries and a much higher share in others. The status of apprentices also varies: in some countries, apprentices have a special contract, and terminating that contract ends the relationship of the apprentice with the employer, whereas in others apprentices are considered employees and sign an apprenticeship agreement in addition to an ordinary contract.

> **Box 5.1** (continued)
>
> *Professional Development for VET Teachers*
>
> Professional development activities are those that develop an individual's skills, knowledge, expertise and other characteristics as a teacher. In the VET context, it includes those activities aiming to develop teachers' pedagogical skills as well as their occupational skills and industry knowledge. Professional development can be provided in many ways, ranging from formal to informal learning. It can be made available through external expertise in the form of formal qualification programmes, courses, workshops or work-based learning, but also though collaboration between schools or teachers across schools (e.g. observational visits to other schools or teacher networks) or within the schools in which teachers work (OECD, 2009).

5.2   Ensuring Access to WBL

5.2.1   *Challenges*

According to the OECD TALIS 2018 (cf. OECD, 2019a, 2019b), more than nine out of ten upper secondary teachers (both VET and general education subjects) in countries with available data responded that they participated in professional activities, from qualification courses, online seminars or teacher networks to reading professional literature. On average, VET teachers in these countries spend about 3 h in these activities during their week in their job.

Whether they participate in these activities or not, teachers face a variety of challenges, and in particular they lack opportunities to update their industry knowledge and experience. Figure 5.1 shows that a significant share of VET teachers face barriers to access professional development, due to lack of support from their employers (mostly VET institutions), conflicts with their work schedule or costs of professional development. Even VET teachers who were able to participate in professional development still think that there are strong barriers that prevent them from accessing those opportunities. As Dalton and Smith (2004) observe, vocational teachers tend to think they are too busy to update their skills and knowledge unless in-service training is formally integrated as part of their job and recognised as part of their workload (OECD, 2010). Lack of support from senior leaders in VET institutions, shortages of professional development opportunities due to lack of funding or the nonexistence of inter-institutional collaborative networks for sharing good practice (Greatbatch & Tate, 2018) were also important barriers.

Many of the aforementioned challenges to participating in professional development activities for teachers in VET apply in particular to work-based learning opportunities. For instance, research on the development of occupational knowledge of teachers in further education colleges in England (Broad, 2013; Broad, 2015) describes this. According to this research, despite the need for VET teachers to
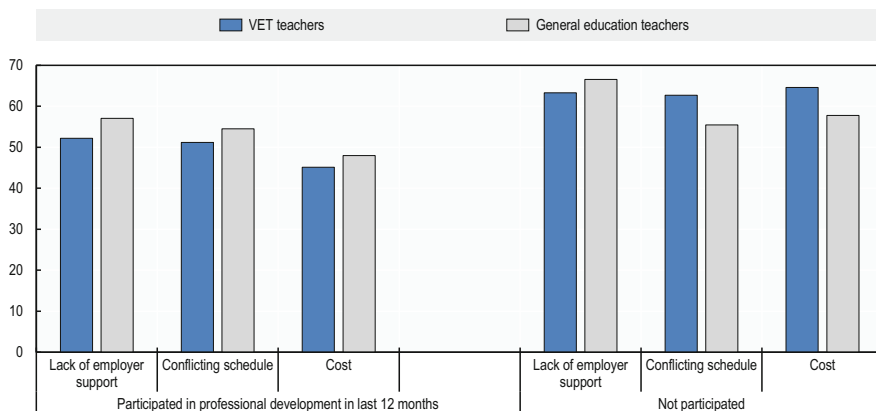
Fig. 5.1 Barriers to professional development amongst VET teachers. Remark: Percentage of upper secondary VET teachers who responded that they face the following barriers to participation in professional development. Note: The graph covers data from all countries for which data on vocational teachers was available, including the United Arab Emirates, Portugal, Vietnam, Denmark, Brazil, Alberta (Canada), Sweden, Turkey, Chinese Taipei, Croatia and Slovenia. Source: OECD TALIS, 2018a, 2018b

engage with the industry and improve their industry knowledge, many of them reported that they face barriers to accessing WBL, due to lack of funding and time. Only 10% of these teachers had secured an industry placement in an attempt to remain up-to-date. While most of them found it to be important, they perceived that it was less important to their employers.

The underlying issue is that many VET institutions may not fully support teachers in updating vocational knowledge as a necessary part of VET teachers' professional development. In Sweden, VET institutions are in charge of determining the content of teacher professional development as it is not regulated; it is often teachers who are responsible for updating their industry currency[3] (Andersson & Köpsén, 2019; Andersson et al., 2018; Fejes & Köpsen, 2014). In England, teachers have little control over the content of professional development activities as these activities are often funded by VET institutions and are mostly focused around organisational needs and less around industry currency – this leaves them frequently with few opportunities to update their subject-specific knowledge (Broad, 2013; Broad, 2015). Even in the case where industry currency activities are regarded as legitimate by VET institutions, in practice these activities may appear to offer limited developmental opportunities for VET teachers (Schmidt, 2019).

Timetables have a crucial impact on the ability of VET teachers to move between school and workplaces (Andersson & Köpsén, 2018). Issues related to time management are important to consider because a significant share of teachers feel that

---

[3] Industry currency refers to the competence of an individual to perform their job. The knowledge required in occupations does not remain static so workers need to continuously update their skills (Clayton et al., 2013).

conflicting schedule are an important barrier to participation in professional development due to the time spent in teaching, preparation and administrative work. Even when WBL is a mandatory part of professional development for VET teachers, they might still fail to meet the set policy requirements established regarding WBL. For instance, in Australia, VET teachers are required by law to regularly update their industry knowledge, but they reported difficulties in completing currency requirements due to competing pressures of time and teaching commitments. Unless there is systemic time where they can be released from work, it is difficult for teachers to have dedicated time for professional development activities, and they thus might face more difficulties in participating in WBL.

5.2.2 Policy Regulations and Institutional Organisation

The degree to which school and workplace learning are combined varies across different VET systems (Jeon, 2019). For example, VET systems in Sweden and South Korea are mainly school-based, while those in Germany and Switzerland are mostly based on dual VET schemes[4] and apprenticeships. Regardless of the system and degree of workplace learning, VET teachers should always remain up-to-date in their vocational field[5] and should also link industry standards to their classroom practice (Andersson & Köpsén, 2019).

The idea of investment in professional development activities for vocational teachers has gained popularity over the past few years and has been integrated into the principles of the European Quality Assurance Reference Framework for Vocational Education and Training (EQAVET). This network brings together EU Member States, the European Commission and social partners in developing and promoting quality assurance in European VET systems (cf. EQAVET, 2012). Amongst its ten indicators supporting high-quality VET systems, one is dedicated to investing in initial and continuous training for teachers and leaders. The indicator estimates (a) the percentage of teachers and trainers participating in accredited training programmes and (b) the total amount of funds annually invested per teacher in teachers' further education and training (EQAVET, n.d.).

---

[4] VET schemes refer to those VET programmes that are not apprenticeships, but which have a work-based learning (WBL) component.

[5] In this case, vocational field refers to vocational subject. Vocational subjects are characterised by a strong connection with the professional world. Teaching and learning in vocational subjects usually include workshops or laboratories, and teaching staff face the task of integrating classroom instruction and practice-oriented instruction. Vocational teaching often requires complex competences: many occupations (e.g. architecture, drafting) require visual competences; some (the conventional trades, technical occupations, some health fields) require manual skills; many require sophisticated interpersonal abilities such as cooperation and communication; and many occupations require applied and non-standard forms of reading, writing, mathematics and other general education subjects (OECD, 2005)

In order to ensure the participation of vocational teachers in professional development, it is important that countries give teachers rights for professional development or make it mandatory by legislation (OECD, 2021). Despite the lack of participation in training activities, many countries, especially in Europe, have some sort of guidelines and institutional mechanisms regulating teachers' professional development. However, these mechanisms do not always cover or specify industry placements. In Slovenia, professional development is both a right and a duty for teachers by law: each teacher is entitled to 5 days of professional development per year, and, for their participation in specific programmes, teachers receive points that are necessary for their career advancement (OECD, 2016). In Israel, teachers are required to take part in seminars where they are trained on new technologies that are being introduced into the school system, but there exist no formal opportunities for them to update their vocational knowledge. In practice, WBL is thus sometimes competing for resources with other aspects of teachers' professional development, such as pedagogical training. This risks giving a less important place to WBL or even overlooking it as an alternative. It is also essential that governments and VET institutions recognise its importance (Torii, 2018). To implement WBL for VET teachers, VET institutions need to ensure that VET teachers get time to effectively engage in work placements.

There are good country examples, such as Finland, where WBL is a mandatory part of VET teachers' professional development curriculum (see Box 5.1). Also in China, VET teachers are required to spend 1 month in industry each year or 2 months every 2 years to ensure their industry knowledge remains up-to-date (OECD, 2010). As an alternative approach to WBL, part-time work in the industry could balance out their teaching practice so that it remains up-to-date.

Box 5.2. Finland: Continuing Education in Teachers' Working Life Competences

In Finland, in-service professional development for VET teachers, which is defined by legislation and the teachers' collective agreements, is mandatory and mostly funded by local authorities and schools themselves. Besides a mandatory professional development period of at least 3 days per school year, VET teachers are encouraged to deepen their knowledge by engaging in Continuing Education in Teachers' Working Life Competences, created by the Finnish National Board of Education. This programme consists of four units:

– Workplace-oriented VET.
– Cooperation with working life and workplace operations.
– Learning and competence assessment.
– Sector-specific development and entrepreneurship.

During the "Learning a competence assessment" unit, VET teachers are expected to participate in work placements, which includes goal-oriented studying which should last at least 2 months to fit the programme requirements. After the successful completion of this programme, teachers are awarded a Diploma in Working Life Competence.

Source: Frisk, 2014, CEDEFOP, 2019

5.3 Strengthening the Links between VET Institutions and Industry

Strong partnerships between VET institutions and industry are at the foundation of VET systems. They play a crucial role in providing students with the opportunity to obtain first-hand work experience and to form networks that may facilitate their entry in the labour market (OECD, 2010). High-quality industry partnerships are not only beneficial for VET students but also vocational teachers in many ways. They help teachers find work placement opportunities for their students and allow them to adapt their teaching to better reflect current needs and changes in the labour market. Moreover, these partnerships allow teachers to stay in touch with the current work practice by interacting with experts in the field.

As mentioned before, WBL is globally acknowledged as a powerful learning tool and widely used and incorporated into VET programmes. WBL not only benefits those who participate in this type of training but also employers and VET institutions. Through WBL, employers cooperating with VET institutions can supply a workforce that is ready to work and does not need much orientation (Stephens, 2011). Research in Australia, using case studies in health and care professions, also suggest that WBL can encourage innovation in enterprises that offer work placements (Hodge et al., 2017). WBL also allows employers to build links with VET schools through which they can influence the teaching curriculum and benefit from recruitment opportunities (UNESCO-UNEVOC, 2013; ETF, 2018). Additionally, these partnerships may benefit VET institutions by facilitating the placement of VET students as part of mandatory work experiences. VET institutions also benefit from WBL through higher quality VET programmes and improved learning outcomes, further enhancing the relevance and responsiveness of VET (Musset, 2019).

These pre-existing benefits can be helpful in promoting WBL for vocational teachers. According to Hammer et al. (2019), companies that offer internships and apprenticeships for VET students are particularly suitable for teachers' industry placements. A study on Swedish VET teachers, by Köpsen and Andersson et al. (2018), showed that some teachers use student work placements as personal professional development opportunities. Before sending their students to the training company, teachers might visit the workplace and participate in training, sometimes

alongside their students. In some cases, they discuss the training plan for their students while also updating their own knowledge.

Effective links with the industry can also be built upon the professional experience of vocational teachers before they started their career in VET. Many countries require aspiring teachers to have a certain amount of relevant work experience as part of the qualification requirements for obtaining a teaching licence in VET (OECD, 2021). If maintained well, these pre-existing contacts might be useful in the future. However, in certain countries, such as Israel and Spain, teachers are not required to have prior work experience, which leads to a lack of practical experience and fewer links with the industry for VET teachers. In this regard, a report on the future of vocational teachers by the ILO (2015) highlighted the importance of strengthening the links between institutions and the industry in sectors where teachers lack industry experience.

However, it is not always easy to set up effective partnerships between VET institutions and industry, due to a number of constraining factors. These include a lack of training capacity, especially for small- and medium-sized companies, and a lack of dialogue between the government, VET institutions and industry (European Commission, 2017). Setting up industry placements requires time and resources from the company for the execution of these placements. Smaller companies who might not have the resources to deal with these processes, such as human resource development departments, might refuse to provide teachers with WBL opportunities because they cannot afford it (ETF, 2013).

Financial incentives are one way of encouraging employers to engage in partnerships with VET institutions. Financial subsidies, in the form of grants or reimbursements of training costs, are used only occasionally in the context of school-based vocational and general education programmes, but are the most popular tool being used to increase the number of apprenticeship places in EU countries (Musset, 2019; CEDEFOP, 2015). Evidence suggests that financial incentives might be especially helpful in countries where the majority of the enterprise structure is composed of small businesses, like Macedonia (ETF, 2013). Because of their size and limited resources, small- and medium-sized companies might be more hesitant to participate in WBL when facing high investment costs. They would therefore benefit from these incentives. However, research on apprenticeships and other WBL suggests that financial incentives only have a modest effect in many cases (OECD, 2018a, 2018b). This has to do with "deadweight" (i.e. apprenticeships that employers would have funded regardless of the relevant incentive) and distorted offers by employers who are interested in the financial aspect but not in the training (Kuczera, 2017). Thus these incentives can lead to bias and the participation of companies that do not have any real skill demand or that might not offer valuable WBL opportunities (European Commission, 2017).

In some cases, another challenge to setting up effective partnerships can be the reputation of the VET sector. Building essential partnerships is particularly hard in countries where the VET system, and technical education in general, has a low reputation. In many countries that have a shorter history of VET or a less-formalised VET system, especially countries of the global south, industries are still reluctant to

support technical education due to a mistrust in the VET sector and its quality (UNESCO-UNEVOC, 2012). In these cases, governments and local authorities are looking to establish public confidence in VET institutions. This is one of the strategies applied in China in an effort to boost vocational education and work-based learning (Zhang, 2019). The key for effective provision of work-based learning, but also for cooperation between schools and companies in general, is to make WBL attractive to both VET institutions and employers (OECD, 2018a, 2018b). It is important to ensure a win-win situation by matching the needs of different stakeholders with what they can offer (European Commission, 2017; Zhang, 2019).

To address the challenges of creating effective partnerships between VET institutions and industry, some countries have created intermediate bodies that help to organise industry placements. These not only facilitate the connection between institutions by matching VET teachers and companies but also help to create tailored experiences by allowing stakeholders to communicate their expectations and establish learning objectives. VET systems that have these types of "brokers" are more successful in building partnerships between the industry and VET providers (Choy & Haukka, 2009). In Germany, for example, the Chambers of Industry and Commerce (Industrie- und Handelskammer) arrange and organise short-term industry stays for VET teachers (IHK Potsdam, n.d.). Australia and Belgium also launched short-term industry placements for VET teachers, which are coordinated by multiple stakeholders (see Box 5.3).

Regulatory systems should incentivise VET providers and companies to engage in WBL and promote stakeholder partnerships by helping them connect willing industry partners with VET schools and showing them how to engage effectively (Torii, 2018). Governments play a key role in addressing structural issues and information barriers to make it easier for stakeholders to come together. The ETF (2018) has developed a set of principles of good governance for WBL, which are similar to the ones applied to the VET system more broadly. They stress the importance of open communication between stakeholders, including them all in the policy development process. This ensures that all parties are represented and have a voice when it comes to making decisions that affect them. It is also important to create clear responsibilities when designing policies in order to make sure that stakeholders can be held accountable. Additionally, decisions should be taken at the appropriate level and by the actors that are involved and affected by the policy. This means that policies might not all be taken at national level, but sometimes at a regional or sectorial level, reflecting the associated needs of the different interest groups. However, they also emphasise the fact that effective models differ widely in the way responsibilities and powers are distributed.

Box 5.3. Examples of Industry Placements for VET Teachers

In **Australia**, Teacher Placements in Industry is an initiative which supports school-industry partnerships through teacher work placements. It is open to all teachers, including VET teachers. The goal of the initiative is to allow teachers to engage with the industry in order to share their newly gained expertise in their school and contribute to the continuous development of the school curriculum. The total length of the work placement varies according to the situation, but usually does not exceed 6 months. Collaboration is an important part of the initiative. Prior to work placement, firms and schools negotiate a structured plan in which common objectives and specific tasks for the placement are determined. In order to support them during their work placement, each teacher is allocated a mentor, who is responsible for scheduling regular meetings. These meetings are used to discuss the programme progress, but they are also used as feedback and evaluation mechanisms. At the end of their work experience, all teachers are required to complete an evaluation questionnaire to assess the work placement.

In **Belgium**, an initiative Entr'apprendre, launched in 2015 by the Foundation for Education, aims to improve the skills transfer between companies and VET schools by promoting industry placements for VET teachers in the form of short-term internships. These internships, lasting between 2 and 4 days, have the goal of updating teachers' technical and occupational skills; they also seek to raise awareness for the operational realities of industries and to promote an entrepreneurial mindset in teachers. The initiative is integrated into the continuous professional development programme for VET teachers and coordinated by a working group consisting of VET institutions, sectoral federations, the inspectorate of education, professional training funds and companies. Internships are implemented through the Institute of Continuing Education for Teachers (IFC).

According to teachers participating in the programme, these internships have helped them update their vocational and technical skills. They also had had a positive impact on the cooperation between VET institutions and industry, by increasing trust between partners.

Source: European Schoolnet, 2017

There are many, sometimes very different, effective models promoting the cooperation between VET institutions and industry. In their final report on strengthening cooperation between industry and VET, the Council of European Employers of the Metal, Engineering and Technology-Based Industries (CEEMET, 2009) has pointed out the importance of diverse and flexible approaches to cooperation between VET institutions and industry, as well as the ability of institutions to adapt to changing work environments and labour market needs. While methods and good practices of models that have proven to be successful in their respective environments can be used as starting points when designing new policies, it is crucial

to adapt these learnings to individual contexts in order to provide teachers with the best WBL opportunities.

5.4　Ensuring High-Quality WBL

To ensure that VET teachers have the opportunity to access relevant and useful WBL as part of their in-service training, it is not enough to simply make WBL mandatory. Research on WBL for VET students has found that students' outcome in WBL programmes often depends on quality standards (Musset, 2019). In order to allow vocational teachers to benefit from WBL, industry stays need to be organised and planned to provide high-quality training, allowing for sustainable knowledge transfer.

For WBL to be of high quality, governments need to follow a different quality assurance approach to that of classroom-based VET, since governments do not have the same decision power over companies than over schools (ETF, 2018). Companies and schools are not subject to the same set of regulations and guidelines. This is why specific frameworks are necessary to make sure industry placements meet certain quality criteria. One important aspect of good quality workplace learning are well-prepared and qualified workplace trainers (Musset, 2019). These trainers make sure that the materials learned during the work placement are of high quality. To guarantee that workplace trainers have the necessary knowledge and skills, company screenings can be implemented prior to agreeing on any placements. Regulations requiring trainers to have some sort of formal qualification might be a good alternative (ETF, 2018). However, sometimes it can be challenging for companies to meet these requirements, especially for smaller companies which are less likely to have dedicated trainers (Hawke, 1998). In this regard, it might easier to require a certain amount of work experience or a relevant vocational qualification instead (ETF, 2018).

Besides making sure workplace trainers are qualified, efficient industry stays are often characterised by mutual agreements between VET institutions and companies which set out specific training outcomes. These clearly defined training outcomes act as quality assurance mechanisms and are used to help avoid teachers being allocated unskilled tasks and to prevent training being narrowly focused on form-specific skills and, as such, ensure that training opportunities meet minimum standards (OECD, 2010). It is important, though, that the goals set for VET teachers' work placements are proportional to their planned duration (Frisk, 2014). The work period should always be sufficiently long to achieve the intended goals. It is therefore important to adapt expected outcomes to the specific duration and scenario of each WBL opportunity. In many countries, these outcomes are discussed between all stakeholders before they are formalised in a contract. This shows the importance of legally binding documents as tools to control the quality and outcomes of the industry placement (OECD, 2010). Especially in student WBL scenarios, VET

institutions and employers are increasingly using legal arrangements to make sure expectations and learning content are met (EQAVET, 2012).

Effective partnerships between VET institutions and industry are crucial to achieve mutual arrangements and the quality assurance of WBL. They facilitate good cooperation and allow stakeholders to communicate their expectations and establish common training outcomes. Again, VET institutions and companies might get help from intermediary organisations such as trade associations and employers' chambers who can provide support in that matter. In addition to helping to arrange WBL, the Chambers of Industry and Commerce in Germany also accompany VET teachers by coordinating mutual expectations, organisational processes and the content of work placements (IHK Potsdam n.d.). While these services offer support to any kind of company and VET institution, it is smaller enterprises lacking formal training expertise who particularly benefit from such organisations (Musset, 2019).

5.5   Conclusion

VET teachers play an important role in shaping the future workforce. They are required to adapt to changing work environments and emerging needs in order to best prepare VET students for their future jobs. That is why it is crucial to support vocational teachers and provide them with quality WBL opportunities to ensure that their vocational competences match the current standards. WBL has proven to be a successful tool in the past and needs to be further developed and implemented in VET systems around the world.

However, VET institutions and VET teachers face a number of challenges when planning and implementing these industry placements. Integrating WBL into the curriculum for VET teachers' training and guaranteeing access to it is important, as well as establishing strong links between VET institutions and the industry, also making sure that mechanisms for quality assurance exist. In the end, teachers need to have the time and space to implement changes so they can transfer the knowledge they gained to classroom practice. Most importantly, none of the above is possible without a strong cooperation between all stakeholders involved in the process, including the government, VET institutions, VET teachers and social partners.

Evidence suggests that VET institutions are increasing their awareness on the topic of WBL and start to recognise the need for it as part of their in-service professional development strategy. However, while there is plenty of research and general acceptance on WBL for VET students, there remains room for improvement and questions to be answered when it comes to WBL for vocational teachers. For example, there is still a lack of data on VET teacher professional development and their participation in WBL. Such information would allow policy-makers to better understand the struggles facing VET teachers and how to target and improve industry placements. Furthermore, smaller enterprises often struggle more to offer work placements, and more needs to be done to understand how to address these problems in order to allow small companies to offer WBL opportunities to VET

teachers and benefit from them. Additionally, it would be worth exploring further ways to ensure quality work placements. All in all, more research needs to be done to answer these questions in order to fill the research gap in this topic and support policy-makers' decisions.

References

Andersson, P., & Köpsén, S. (2018). Maintaining competence in the initial occupation: Activities among vocational teachers. *Vocations and Learning, 11*, 317–344. https://doi.org/10.1007/s12186-017-9192-9

Andersson, P., & Köpsén, S. (2019). VET teachers between school and working life: Boundary processes enabling continuing professional development. *Journal of Education and Work (Routledge), 32*(6–7), 537–551. https://doi.org/10.1080/13639080.2019.1673888

Andersson, P., Hellgren, M., & Köpsén, S. (2018). Factors influencing the value of CPD activities among VET teachers. *International Journal for Research in Vocational Education and Training, 5*(2), 140–164. https://doi.org/10.13152/IJRVET.5.2.4

Broad, J. H. 2013. Doing it for themselves: A network analysis of vocational teachers' development of their occupationally specific expertise. Doctoral Thesis. Institute of Education. London: University of London.

Broad, J. H. (2015). So many worlds, so much to do: Identifying barriers to engagement with continued professional development for teachers in the further education and training sector. *London Review of Education, 13*(1), 16–30. https://doi.org/10.18546/LRE.13.1.03

CEDEFOP. (2015). *Stronger VET for better lives: Cedefop's monitoring report on vocational education and training policies 2010–14*. Publications Office of the European Union.

CEDEFOP. (2019). *Vocational education and training in Finland*. Publications Office of the European Union.

CEEMET. (2009). *Final report - strengthening cooperation between industry and vocational education and training*. Council of European Employers of the Metal Engineering and Technology-Based Industries.

Choy, S., & Haukka, S. (2009). Industrial attachments for instructors in TVET delivery. In R. McLean & D. Wilson (Eds.), *International handbook of education for the changing world of work* (Vol. 1, pp. 1367–1382). https://doi.org/10.1007/978-1-4020-5281-1_91

Clayton, B., Jonas, P., Harding, R., Harris, M., & Toze, M. (2013). *Industry currency and professional obsolescence: What can industry tell us? NCVER research report*. NCVER.

Dalton, J., & Smith, P. J. (2004). Vocational education and training in secondary schools: Challenging teachers' work and identity. *Journal of Vocational Education and Training, 56*(4), 507–521. https://doi.org/10.1080/13636820400200267

EQAVET. (n.d.) European quality assurance reference framework for vocational education and training. Accessed 07 June 2020. https://www.eqavet.eu/Eqavet2017/media/Materials-Reference-framework/Quality-Assurance-Framework-brochure-English.pdf?ext=.pdf.

EQAVET. (2012). *Quality assuring work-based learning*. European Quality Assurance for VET. https://www.eqavet.eu/Eqavet2017/media/Materials-Reference-framework/Quality-Assurance-Framework-brochure-English.pdf?ext=.pdf

ETF. (2013). *Torino process 2012: Western Balkans and Turkey*. European Training Foundation.

ETF. (2018). *Work-based learning: A handbook for policy makers and social partners in ETF partner countries*. European Training Foundation. https://doi.org/10.2816/018079

European Commission. (2017). *Business cooperation with vocational education and training providers for quality skills and attractive futures*. Publications Office of the European Union.

European Schoolnet. (2017). "Teacher placement initiatives - collection of best practices." .

Fejes, A., & Köpsen, S. (2014). Vocational Teachers' identity formation through boundary cross-ing. *Journal of Education and Work, 27*(3), 265–283. https://doi.org/10.1080/13639080.2012.742181

Frisk, T. (2014). *Guide for the implementation of vocational teacher' work placement periods*. The Finnish National Board of Education.

Greatbatch, D., & Tate, S. (2018). *Teaching, leadership and governance in further education*. UK Department for Education.

Hammer, K., Ripper, J., & Schenk, T. (2019). *Leitfaden Berufsorientierung: Praxishandbuch zur qualitätszentrierten Berufs- und Studienorientierung an Schulen*. Verlag Bertelsmann Stiftung.

Hawke, G. (1998). Learning, workplaces and public policy. In *Australian vocational education and training research association national conference* (pp. 16–17). University of Technology.

Hodge, S., Smith, R., Field, J., & Flynn, M. (2017). The contribution of VET student placement to innovation in host organisations. In *NCVER research report*. NCVER.

IHK Potsdam. n.d. Vom Lehrerpult an die Werkbank und zurück. https://www.ihk-potsdam.de/aus-und-weiterbildung/schule-wirtschaft-vernetzen/lehrkraeftepraktikum-3930280.

ILO. (2015). *Vocational teachers and trainers in a changing world: The imperative of high-quality teacher training systems*. International Labour Office.

Jeon, S. (2019). Potential of migrants: Cross-country analysis. In *Unlocking the OECD reviews of vocational education and training*. OECD Publishing. https://doi.org/10.1787/045be9b0-en

Kis, V. (2016). *Work, train, win: Work-based learning design and management for productivity gains*. OECD Publishing. https://doi.org/10.1787/5jlz6rbns1g1-en

Kuczera, M. (2017). Incentives for apprenticeship. In *OECD education working papers. No. 152*. OECD Publishing. https://doi.org/10.1787/55bb556d-en

Musset, P. (2019). Improving work-based learning in schools. In *Chap. 233 in OECD social, employment and migration working papers*. OECD Publishing. https://doi.org/10.1787/918caba5-en

OECD. (2009). *Creating effective teaching and learning environments: First results from TALIS*. OECD Publishing. https://doi.org/10.1787/9789264068780-en

OECD. (2005). *Education policy analysis 2004*. OECD Publishing. https://doi.org/10.1787/epa-2004-en

OECD. (2016). *Education policy outlook: Slovenia*. OECD Publishing. www.oecd.org/education/policyoutlook.htm

OECD. (2010). *Learning for jobs*. OECD Publishing. https://doi.org/10.1787/9789264087460-en

OECD. (2018a). *OECD handbook for internationally comparative education statistics 2018: Concepts, standards, definitions and classifications*. OECD Publishing. https://doi.org/10.1787/9789264304444-en

OECD. (2019a). *OECD Skills Outlook 2019*. OECD Publishing. https://doi.org/10.1787/df80bc12-en

OECD. (2018b). *Seven questions about apprenticeships: Answers from international experience. OECD reviews of vocational education and training*. OECD Publishing. https://doi.org/10.1787/9789264306486-en

OECD. (2019b). *TALIS 2018 results: Teachers and school leaders as lifelong learners* (Vol. I). OECD Publishing. https://doi.org/10.1787/1d0bc92a-en

OECD. 2021. Teachers and leaders in vocational education and training. OECD reviews of vocational education and training. OECD Publishing. 10.1787/59d4fbb1-en.

Schmidt, T. (2019). Industry currency and vocational teachers in Australia: What is the impact of contemporary policy and practice on their professional development? *Research in Post-Compulsory Education, 24*, 1–19. https://doi.org/10.1080/13596748.2019.1584431

Stephens, G. (2011). Teacher internships as professional development in Career & Technical Education. *Journal of Career and Technical Education, 6*(2), 68–76. https://doi.org/10.21061/jcte.v26i2.526

Torii, K. (2018). *Connecting the worlds of learning and work: Prioritising school-industry partnerships in Australia's education system*. Mitchell Institute.

UNESCO-UNEVOC. (2013). *Revisiting global trends in TVET: Reflections on theory and practice*. UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training.

UNESCO-UNEVOC. (2012). *Strengthening TVET teacher education - report of the UNESCO-UNEVOC online conference*. UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training.

Zhang, J. (2019). Exploration and reflection on school-enterprise cooperation in higher vocational colleges under the background of industry-education integration. *Open Journal of Social Sciences, 7*(1), 66–74. https://doi.org/10.4236/jss.2019.71006

Chapter 6
TVET Teacher Education and Training in International and Development Cooperation

Paul Comyn

Abstract TVET and skills development has been a longstanding element of the ILO's normative and technical cooperation work since its establishment in 1919. In addition to its normative role related to setting international labour standards governing the employment of teachers, the ILO's capacity building work in countries is typically delivered through ongoing technical advice and support provided by the office or through development cooperation projects. The scope of interventions ranges from the review and design of continuing education and professional development systems and programmes to the specific training of trainers in new technologies associated with the introduction of new curriculum or the refurbishment of workshops and laboratories. This article presents the ways in which the employment and professional development of TVET teachers and trainers features in the work of the ILO.

6.1 Introduction

According to the ILO Global Commission on the Future of Work, young people today face a world of work that is increasingly shaped by globalisation, automation, artificial intelligence and demographic change and which is reaching the limits of environmental sustainability (ILO, 2019c). The ILO Centenary Declaration for the Future of Work, adopted in June 2019, called for "strengthening the capacities of all people to benefit from the opportunities of a changing world of work through effective lifelong learning and quality education for all". (ILO, 2019a).

These key normative statements highlight the importance of education, training and lifelong learning in the broader work of the ILO which seeks to promote social justice through its focus on the concept of decent work.

P. Comyn (✉)
International Labour Organisation (ILO), Geneva, Switzerland
e-mail: comyn@ilo.org

The ILO supports international education goals through numerous decent work strategies, including combatting child labour, promoting social dialogue and freedom of association and developing skills and employability strategies and programmes. Education and lifelong learning are central strategies for preparing children and youth to meet these challenges. Education systems will have to continue to evolve to not only provide the technical skills to master and harness new technologies but also the critical skills and values to ensure that technologies and economic development remain human-centred and sustainable. Teachers, trainers, administrators and support personnel are the people who will have to deliver these ambitious education goals for the twenty-first century. This article therefore presents the ways in which the employment and professional development of TVET teachers and trainers features in the work of the ILO.

6.2   Relevance of TVET Within the Organisation's Overall Strategies

The ILO's tripartite structure, bringing together government, employer and worker representatives, provides an ideal framework and perspective to lead research, discussion and the development of principles to guide future action. Engaging these diverse perspectives brings a more holistic approach and understanding to research and allows for a broadly based dissemination of findings through partnerships with representatives of teachers and trainers, such as Education International, and their employers.

Through the Future of Work Initiative, the ILO is actively engaged in increasing attention for twenty-first-century skills, lifelong learning and the promotion of decent and sustainable work, including in the education sector. This initiative, as well other ILO centenary initiatives such as the women at work initiative, has attracted many actors in the international arena of development cooperation and has demonstrated the need for a broader engagement of organisations in the area of education and the future of work.

TVET and skills development has been a long standing element of the ILO's normative and technical cooperation work. Of the eight major outcomes in the 2010–2021 ILO programming framework (ILO, 2019d), outcome five is entitled "skills and lifelong learning to facilitate access to and transitions in the labour market". That outcome has three key outputs which highlight the areas of focus and the orientation of ILO strategies in this area. They are increased capacity of:

- The ILO constituents to identify current skills mismatches and anticipate future skill needs.
- Member states to strengthen skills and lifelong learning policies, governance models and financing systems.
- The ILO constituents to design and deliver innovative, flexible and inclusive learning options, encompassing work-based learning and quality apprenticeships.

The ILO's work in supporting teachers and trainers is mostly linked to the third output listed shown above and is typically delivered through work at the country level which is related to the ongoing technical advice and support provided by the office or to through development cooperation projects with funding from bilateral and multilateral development partners. The scope of work through this means of action ranges from the review and design of continuing education and professional development systems and programmes to the specific training of trainers on new technologies associated with the introduction of new curriculum or the refurbishment of workshops and laboratories.

The office also occasionally undertakes research into issues related to teachers and trainers and develops tools for trainers on specific topics (see for example ILO, 2013a, b, 2015a, b, 2019a, 2020a). In addition to this technical focus, the ILO also has a normative role and, together with UNESCO, promotes principles of quality teaching through two recommendations concerning teaching personnel, as well as the Joint ILO/UNESCO "Committee of Experts on the Application of the Recommendations concerning Teaching Personnel" (CEART). The major role of CEART is to monitor and examine reports from governments and by national organisations representing teachers and their employers, following an application to the ILO/UNESCO Recommendation Concerning the Status of Teachers, 1966 (ILO/UNESCO, 1966), and the UNESCO Recommendation concerning the Status of Higher Education Teaching Personnel, 1997 (cf. UNESCO, 1997).

In addition to these normative and technical assistance roles, the ILO also operates the International Training Centre in Turin, Italy (ITCILO). The centre runs a number of residential training programmes related to skills development including those which have a focus on the capacity development of teachers and trainers. These include:

- e-learning lab on digital TVET—modular content creation and e-pedagogy in TVET.
- e-learning lab on digital TVET—integrating a virtual campus into the TVET offer.
- Tools for quality apprenticeships in enterprises.
- Management course for consulting and training providers.
- Management of vocational training centres.

The programmes are run every year and form part of a suite of short courses that attract participants from a wide range of countries from all regions. Participants are, in the majority, from low- and middle-income countries. ITCILO also provides capacity building support to ILO country offices and has provided customised programmes including those targeting teachers and trainers in different countries and regions of the world.

6.3   Development Trends Affecting the ILO's Work
on TVET Teacher Education and Training

How and where skills are learnt is at the heart of TVET delivery and assessment strategies for developing a skilled and productive workforce. This dynamic, complex adult learning education sector develops both initial and ongoing technical and vocational capacities. However, the pervasiveness of digitalization and the continuous development of new technologies is reshaping the education and training sector, both creating new opportunities and producing tensions. These drivers create opportunities to introduce innovative and engaging pedagogies, broaden and deepen the scope of content provided and enable learning of new skills and capacities; but they also require reimagining the way education and training is delivered, the roles of the trainers and learners and the overall purpose of education and training.

The transforming world of work, led by technological innovations and advancements, has produced a demand for different skill sets appropriate to the high-tech, knowledge-based economy. The data shows, however, that many learners leave school unprepared for the modern and changing world of work. (ILO, 2019c) This context has presented the education and training sector with a number of challenging questions, including those related to teaching-learning models, programme and pathway design and the institutional management and governance arrangements required to prepare students for the new digital reality.

Teachers and trainers play a vital role in initiating and facilitating the learning process and, in an evermore digital world, are increasingly expected to integrate technology in the classroom. Enabling teachers to do so requires a comprehensive pre-service training in digital literacy, continuous professional development on new technologies and pedagogies and meaningful input on the integration of new technologies in classrooms, workshops and laboratories. However, teachers are often expected to become digital experts without this support. Furthermore, there is a growing anxiety about labour replacement and de-skilling resulting from the use of self-driven and collaborative learning technologies that have emerged through digitalization, raising questions about the status and nature of the profession.

In developing countries, fear of a digital divide with developed countries has led to investment in technology-based learning. In some cases, this has led to perceptions that technology could unfortunately be a substitute for qualified teachers and trainers, especially in remote or low-income settings.

In the ongoing discussions surrounding the future of work and persistent claims of skills match often reported by employers lies the issue of core or generic skills which are increasingly the focus of curriculum reform[1] (ILO, 2015b). Whilst it is not the place of this paper to consider the definitions or typologies of the different core skills frameworks, it is clear that their effective treatment in TVET and skill systems presents significant challenges to teachers and trainers. While most attention has

---

[1] Also known as key competencies, twenty-first-century skills and employability skills (ILO, 2015a).

hitherto been given to the role of general education in developing core skills, TVET and skills training have equally central roles to play in their development.

Developing core skills and ensuring lifelong learning for all presents major challenges for TVET and skill systems. It is particularly important to change learning practices in such a way as to equip learners with the skills to learn by doing, to work in teams and to think creatively and to develop reliable and efficient assessment methods so that the skills developed can be properly recognised and valued by employers. In an ILO report examining country experiences of core skills implementation, it was noted that in Europe, implementation of the Key Competences in schools and training institutions is a complex and demanding process and the presence of strong political commitment is not in itself enough to achieve the goal of effective core skills development (ILO, 2015a).

Several reports on the extent to which generic skills have been integrated into TVET systems have demonstrated that while various skills may be prioritised and identified in qualification or curriculum profiles, corresponding arrangements for delivery, assessment and reporting of these skills are often lacking. It further notes that a large number of countries are introducing reforms that explicitly use the Key Competences framework as a reference point and that whilst good progress has been made in adapting school curricula, there is still much to be done to support teachers' competence development, to update assessment methods and to introduce new ways of organising learning (ibid).

Beyond the pressing issues of digitalisation and core skills development, the enduring challenge of maintaining the practical skills of teachers and trainers remains. Policy-makers clearly need to continue to encourage employers to provide work-based experience and professional development opportunities for teachers and other staff, so they are aware of the latest skills, industry requirements and technologies.

Taken together, these major trends provide direction for the ILO's work in supporting the capacity development of teachers and trainers in TVET and skill systems.

6.4 Relevant Models of Capacity Development for TVET Teacher Training Supported by ILO

TVET learners vary in their maturity; life experience literacy and numeracy proficiency; educational attainment; social, cultural and work experience backgrounds; and personal attributes and expectations. Many learners, particularly in initial TVET, are accustomed to a classroom environment with written tests of their knowledge. In TVET, however, delivery and assessment methods focus more on the acquisition and demonstration of applied skills in real or simulated workplace settings.

The implementation of competency or outcome-based training involves a conceptual shift for teachers and trainers as well—towards learning facilitation and

coordinating classroom and workshop training with workplace experiences and with teachers and trainers in colleges and enterprises working together to produce competent graduates. Workplace supervisors, trainers and assessors play an important role in shaping the next generation of workers, particularly in apprenticeship schemes. Learning through practice (in authentic workplaces) is recognised as making a significant contribution to the initial and ongoing development of occupational competence. (ILO, 2015a).

The programme of learning (curriculum) guides the overall journey educators and learners take towards final assessment of competencies (for a qualification). In curriculum the structure and sequencing of modular/unitized learning describe what, where, when and how learning is undertaken, as well as the content and learning resources needed. In realising the curriculum, the use of adult education teaching methods fosters growth in autonomy and personal responsibility for learning; other generic/core/transferable skills and the attributes necessary for jobs and future work need to be integrated into teaching and learning strategies. Increasingly, simulations, augmented and virtual reality tools (AR/VR), online and blended learning delivery and assessment options are available and need to be considered and incorporated into TVET programmes. Whilst an advantage is that their use will expose learners to the use of digital skills transferable to workplaces, their adoption presents additional challenges to teachers and trainers.

Implementing curriculum also involves designing, using and adjusting delivery and assessment methods for the cohort of learners. Intended learning outcomes or statements of what a learner is expected to know, be able to do and understand at the end of a programme of learning have emerged as the educational vehicle for the achievement of competency in developed countries. One of the wonders of learning outcomes is that they shift teachers' focus from "what will I teach them" to "what will they learn"! However, their usefulness is not without contention, particularly in terms of how well underpinning knowledge is developed in a holistic way across a programme of learning (ILO, 2020b).

The ILO considers Biggs's constructive alignment an effective approach to implementing a curriculum featuring learning outcomes (see Fig. 6.1). According to Biggs, "the teacher's job is to create a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes. The key is that all components in the teaching and learning system – the curriculum and its intended learning outcomes, the teaching methods used, the resources to support learning, and the assessment tasks and criteria for evaluating learning – are aligned to each other and support achieving the intended learning outcomes". (Biggs, 2003, p. 76).

This model can be used to guide all stages of training from the unit or module level to qualification as a whole. Training plans for workplace practice, theoretical knowledge, the development of required core skills, strategies for using relevant pedagogies, technology, tools and blended learning can be integrated. Learning and teaching activities can be specifically designed to engage individuals and cohorts of learners. Importantly, formative and summative assessment tasks can be designed to measure iterative achievement of the learning outcomes.
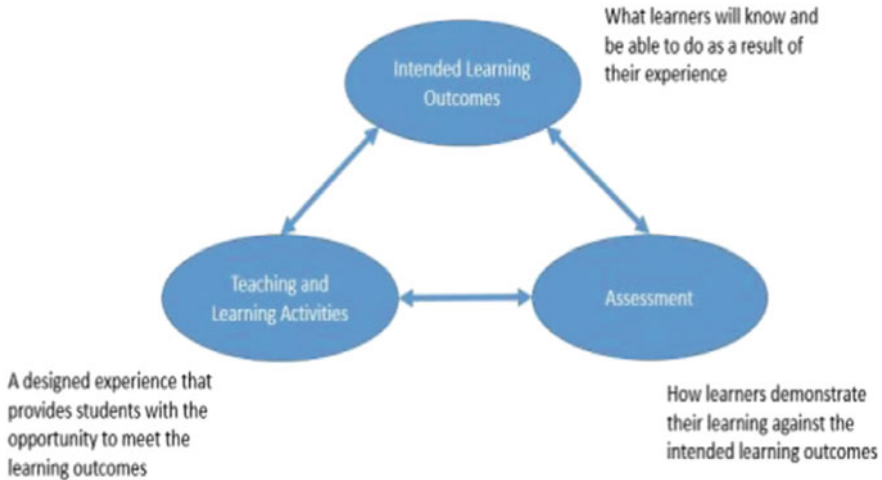
Fig. 6.1 Aligning teaching and assessment to curriculum objectives. Source: Biggs (2003)

- Biggs's model provides a useful way to frame some of the implementation challenges that continue to confront education and training systems. These include:
- Core/transversal skills—Where and how are they taught, gained and assessed and how they have the potential to crowd out technical skills if not delivered through integrated pedagogical approaches (ILO, 2015b).
- Work-based learning—How is work-based learning and apprenticeship effectively integrated with classroom learning, and how are learning outcomes achieved in different learning settings? (ILO, 2020c).
- Assessment—Competency based (focussed on "doing" rather than "knowing what or how to do"); recognition and validation of current skills and non-formal and informal learning, particularly for migrants and refugees; using reasonable adjustments for students with disabilities (ILO, 2015b).
- Knowledge—Implied or explicit in competency standards: How is it unpacked in curriculum and then in delivery and assessment? (ILO, 2020b).
- Technology—The use of technology in industry and in skills acquisition and learning and assessment strategies is increasing rapidly and significantly changing the TVET landscape. How does TVET delivery keep up-to-date with the latest developments in industry and education? (ILO, 2019a, b).

These key issues are addressed where possible through the different ILO interventions related to qualifications and curriculum and teaching, learning and assessment that aim to build the capacity of teachers and trainers through either pre-service or in-service training.

6.5   Actual Challenges Seen by the Organisation in Addressing Capacity Development for TVET Teachers

Implementing a modern competency-based TVET system requires appropriate capability building of TVET personnel. TVET trainers require appropriate professional development in effective and inclusive delivery of competency-based curriculum and in learner assessment against the specified learning outcomes. Basic, or core skills, to aid learner employability as well as technical skills related to specific jobs are covered in modern TVET teaching, learning and competency-based assessment which may involve workplace-based teaching and learning combined with or instead of TVET institution based. But challenges remain.

Appropriate professional development for TVET managers requires strategic change management and industry partnership building. The development cooperation work of the ILO generally adopts the following approach when working on the capacity building of TVET teachers and trainers in both institutions and enterprises. The steps to build an effective training delivery and assessment system are:

- Form a working group consisting of appropriate representatives including both industry and educational experts.
- Review existing models and practices of training delivery and assessment, and determine areas requiring strengthening to be more in line with policy priorities and good practice.
- Review qualification requirements and initial training programmes for TVET teachers and trainers, and align with policy priorities.
- Develop appropriate trainer and assessor capability building programmes bearing in mind resource constraints.
- Provide change management programmes for training providers to embed new ways of delivering TVET.
- Develop an implementation plan to improve TVET delivery and assessment practices, including via flagship or model TVET institutions as demonstration pilots, with appropriate monitoring and evaluation feedback loops.

To illustrate the approach taken by the ILO to suit the country context of Bangladesh, the following national framework for the training of TVET teachers and trainers was agreed upon, reflecting two credentials with certified partial programme options for the specialisations shown (ILO, 2012a, b):

- Certificate IV in CBT&A in TVET

  - Competency-Based Trainer
  - Competency-Based Assessor
  - Competency-Based Learning Material Developer

- Certificate V in Advanced CBT&A in TVET

– Assessment Designer
– Competency-Based Course Developer
– Master Trainer

The TVET Instructors and Assessors Assessment and Certification Programme in Bangladesh sought to raise the competence of the current pool of TVET Instructors and Assessors to the standard needed to support introduction of the National Technical and Vocational Qualifications Framework (NTVQF). To become a certified TVET Instructor under the NTVQF, the new standard required instructors to hold:

• An NTVQF Certificate or equivalent in each occupation being taught which is of a qualification level either equal to or higher than the level being taught
• The Certificate IV in Competency-Based Training and Assessment in TVET

To become a certified TVET Assessor under the NTVQF, the new standard required assessors to hold:

• An NTVQF Certificate or equivalent in each occupation being taught which is of a qualification level either equal to or higher than the level being taught
• Acquire the units of competencies required to be a CBT Assessor

More detail on the content and quality assurance arrangements for these programmes can be found in (ILO, 2010).

If there is no quality assurance system in place at the diagnostic stage of the analysis, then the ILO framework for assessing TVET teacher training systems may be useful. The ILO framework is based on an analysis of good practices that reveals that effective TVET teacher training systems include 4 essential pillars that, in turn, are composed of 12 key elements (cf. Fig. 6.2), as shown in the spider chart below (ILO, 2015a).

As seen in Fig. 6.2, the four pillars are structure and relevance, responsiveness and inclusion, innovation and progress and representation and communication.

The 4 pillars and 12 key elements in the spider chart serve as a self-assessment rubric against which TVET teacher training systems can be assessed and thereby areas for interventions identified. It can be used to evaluate the strengths and weaknesses of TVET teacher training in a national context, institutional context or a variety of other settings by policy-makers, researchers, practitioners and others.

The steps to take to improving the effectiveness of TVET providers include:

• Reviewing each element of the framework and evaluating it on a scale from one to ten with ten being the highest rating.
• Recording the rating for each element on the spider chart (Fig. 6.2), with a score of ten being on the outer perimeter of the spider chart.
• Identifying areas for targeted improvement strategies. These will be the key elements that rate closer to the centre of the chart.
• Determining what actions need to be taken to strengthen target areas and to develop active monitoring and evaluation to help ensure actions taken yield positive returns.

Fig. 6.2 Self-diagnostic of TVET teacher training systems. Source: ILO (2015a)

A common core challenge for all TVET providers is appropriate industry link-ages. A joint OECD/ILO report examined via case studies across nine countries' best practices in how national policies are being designed in a way that leverages local leadership in fostering business-education partnerships and the implications they present for the roles of teachers and trainers including the role of work-based learning in their programmes (OECD & ILO, 2017).

The need to focus on the entrepreneurial skills of teachers and trainers to broker these partnerships is also linked to the common challenge of ensuring TVET teachers have up-to-date technical knowledge and practical skills, as well as aca-demic teaching qualifications. With regard to private TVET providers operating with private funding, an additional challenge is collecting reliable data on the role of teachers and trainers therein and their specific skills development needs. This is increasingly important in many developing countries as the size of the informal economy continues to grow and efforts to expand private training markets continue.

These issues reflect ongoing and growing demands on capacity building models for teachers and trainers in TVET and skill systems that have to remain flexible and responsive to change.

6.6 Conclusions/Outlook

Since its inception in 1919, the ILO has had a long history of work in the field of TVET and skills development, both as a normative organisation and as an active technical agency in the field of international development (ILO, 2019a). Throughout this period it has shown strong support for the work of teachers and trainers across all education sectors and has promoted the concept of decent work in the field of education and training. Central to the concept of decent work is the idea that all employees have access to adequate education and training, both prior to and during their professional careers, so they can pursue employment of their choosing with the skills and abilities to ensure they can deliver the highest quality learning experiences.

Capacity building of teachers and trainers working in the TVET and skill sector remains a priority for the ILO, and the organisation remains committed to ensuring that the professional development needs of the education and training workforce are addressed through its technical cooperation projects, its normative work and through the range of courses available at the International Training Centre in Turin.

The ILO actively promotes the introduction of competency- or outcome-based education and training to ensure that the demonstration of practical skills and the development of an underpinning of knowledge and attributes are addressed in the delivery and assessment of learning. As such, we recognise the additional burdens that this shift places on teachers and trainers, along with the demands associated with the impact of technology on the growing importance of core skills achievement. The ILO approach to the capacity building of teachers and trainers in the TVET and skills sector is focused on developing the technical capacity of teachers and trainers and on providing the opportunities for them to develop the necessary skills. Consequently we work with our constituent partners – governments and workers' and employers' organisations – to ensure that suitable funding is provided for that to take place, that opportunities for professional development are available and that teachers and trainers are involved in the decision-making that affects their professional practice.

References

Biggs, J. B. (2003). *Teaching for quality learning at university*. Open University Press/Society for Research into Higher Education.

ILO. (2010). *Minimum competency standards for TVET instructors in Bangladesh*. https://www.ilo.org/dhaka/Whatwedo/Publications/WCMS_120558/lang%2D%2Den/index.htm

ILO. (2012a). *Handbook of good human resource practices in the teaching profession*. https://www.ilo.org/wcmsp5/groups/public/%2D%2D-ed_dialogue/%2D%2D-sector/documents/publication/wcms_187793.pdf

ILO. (2012b). *Bangladesh NTVQF fact sheet for trainers and assessors*. https://www.ilo.org/wcmsp5/groups/public/%2D%2D-asia/%2D%2D-ro-bangkok/%2D%2D-ilo-dhaka/documents/publication/wcms_233255.pdf

ILO. (2013a). *Enhancing youth employability: What? Why? and How? Guide to core work skills*. http://www.ilo.org/wcmsp5/groups/public/%2D%2D-ed_emp/%2D%2D-ifp_skills/documents/publication/wcms_213452.pdf

ILO. (2013b). *ILO policy guidelines on the promotion of decent work for early childhood education personnel*. https://www.ilo.org/sector/Resources/codes-of-practice-and-guidelines/WCMS_236528/lang%2D%2Den/index.htm.

ILO. (2015a). *Vocational teachers and trainers in a changing world: The imperative of high-quality teacher training systems*. https://www.ilo.org/employment/Whatwedo/Publications/working-papers/WCMS_383787/lang%2D%2Den/index.htm

ILO. (2015b). *Assessing skills in the informal economy: A resource guide for small industry and community organizations*. https://www.ilo.org/skills/pubs/WCMS_343183/lang%2D%2Den/index.htm

ILO. (2019a). *The ILO centenary declaration for the future of work*. https://www.ilo.org/ilc/ILCSessions/108/reports/texts-adopted/WCMS_711674/lang%2D%2Den/index.htm

ILO. (2019b). *A global overview of TVET teaching and training: Current issues, trends and recommendations*. https://www.ilo.org/sector/activities/sectoral-meetings/WCMS_675275/lang%2D%2Den/index.htm

ILO. (2019c). *The report of the ILO global commission on the future of work*. https://www.ilo.org/global/publications/books/WCMS_662410/lang%2D%2Den/index.htm

ILO. (2019d). *ILO programme and budget for 2020–2021*. https://www.ilo.org/wcmsp5/groups/public/%2D%2D-ed_norm/%2D%2D-relconf/documents/meetingdocument/wcms_719163.pdf

ILO. (2020a). *Skills for employment policy brief - Distance and online learning during the time of COVID-19*. International Labour Organisation. https://www.ilo.org/skills/pubs/WCMS_743485/lang%2D%2Den/index.htm

ILO. (2020b). *Competency based training (CBT). An introductory manual for practitioners in the MENA region*. Beirut: International Labour Organisation Decent Work Team for the Arab States.

ILO. (2020c). *Apprenticeship toolkit. Vol. 2: resources for practitioners*. https://www.ilo.org/skills/pubs/WCMS_607466/lang%2D%2Den/index.htm

ILO/UNESCO. (1966). *Recommendation concerning the status of teachers*. https://www.ilo.org/sector/Resources/sectoral-standards/WCMS_162034/lang%2D%2Den/index.htm

OECD, & ILO. (2017). *Engaging employers in apprenticeship opportunities. organisation for economic cooperation and development and international labour organisation*. http://www.oecd.org/industry/engaging-employers-in-apprenticeship-opportunities-9789264266681-en.htm

UNESCO. (1997). *UNESCO recommendation concerning the status of higher education teaching personnel*. https://brill.com/view/book/edcoll/9789047422174/Bej.9789004164543.1-760_065.xml?language=en

Chapter 7
VET Teachers and Trainers' Competence in Creating Inclusion and Excellence: European Policy Agenda, Approaches and Challenges

Irene Psifidou and Slava Pevec Grm

Abstract Building on the work of Cedefop, this article presents the EU policy agenda and central activities related to VET teachers and trainers as well as linkages to the European strategies for vocational education and training (VET), approaches and models of VET teacher and trainer professional development in the member states (MS). The main challenges for VET teachers and trainers are outlined with an emphasis on the challenges which arise from their evolving role, from the greater autonomy they have been given and from their involvement in curriculum and assessment reform especially when it is based on learning outcomes approaches. High-quality professional development is essential for teachers and trainers to be able to keep pace with the rapidly developing demands of their job as well as technological advancements in their specific field, digital tools for teaching and learning, helping learners develop key competences and providing more individualised support to evermore heterogeneous groups of learners. Teachers and trainers also need to design and/or apply new curricula, respond quickly to emerging individual and labour market needs and ensure close links between the different learning venues in VET. They are also expected to use the European tools that help make people's skills more visible. The article concludes with reflections on the shaping of future policies.

I. Psifidou · S. P. Grm (✉)
Department of Systems and Institutions, European Centre for the Development of Vocational Training, CEDEFOP, Thessaloniki, Greece
e-mail: slava.pevec-grm@cedefop.europa.eu

95

7.1   Introduction

The foundation for cooperation between vocational education and training policies in Europe was laid down in the Treaty of Rome and further strengthened with the Copenhagen process and declaration on enhanced cooperation in vocational education and training (VET). This and all subsequent declarations, communiqués and conclusions (see Sect. 7.2.1) acknowledge the central role of VET in equipping people with knowledge, skills and competences for the labour market, further learning and active citizenship. The Commission's proposal for a Council recommendation on VET for sustainable competitiveness, social fairness and resilience (Council of the European Union, 2020a, b) is further embedded in the wider context of the ongoing implementation of the European Pillar of Social Rights strengthening principle 1 on education, training and lifelong learning and the new European Skills Agenda for sustainable competitiveness, social fairness and resilience as well as other policy initiatives.

In these times of unpredictable changes and challenges caused by the ageing of the population, transitions to the green and digital economies and the crisis caused by COVID-19, Europe is aiming to modernise the Union policy on VET, further confirming the central role of VET in the lifelong learning continuum, supporting youth employability as well as adults in need of continuous up- and reskilling. Well-trained and motivated teachers and trainers, who will constantly be supported in the acquisition of new skills and competences needed to master new challenges, are key agents who help make this vision a reality.

Against this background, and building on the work of Cedefop, the article presents, in Sect. 7.2, the EU policy agenda and main activities related to VET teachers and trainers, including the role and activities carried out by Cedefop; Sections 7.3 and 7.4 elaborate on the evolving roles of VET teachers and trainers and discusses some challenges arising from them; Section 7.5 brings in some evidence from Cedefop's policy monitoring on countries' policy responses to overcome such challenges. The article concludes with the authors' reflections for shaping future policies.

7.2   VET Teachers and Trainers in the EU Policy Agenda

7.2.1   EU Policy Background

The central role of VET teachers and trainers/mentors in companies/firms[1] and the need for investment and for a systematic and holistic approach to their professional

---

[1] For the purpose of this article, the working definition of a teacher working in an institution offering initial vocational education and training (ISCED level 3—UNESCO-UIS, 2012) is a person who is acknowledged as having the status of a teacher (or equivalent) according to national legislation and

development has been recognised in the policy discourse and policy documents since the very beginning of the increased cooperation on VET in 2002.

The Copenhagen declaration (Council of the European Union and European Commission, 2002) referred to giving attention to the learning needs of teachers and trainers within all forms of vocational education and training and the Maastricht communiqué (Council of the European Union and European Commission, 2004) emphasised promoting VET teachers' and trainers' continuous competence development. Next, the Helsinki communiqué (Council of the European Union and European Commission, 2006) pointed to highly qualified teachers and trainers who undertake continuous professional development in improving the attractiveness and quality of VET, and the Bordeaux communiqué (Council of the European Union and European Commission, 2008) referred to increasing investment in the initial and continuing training of those involved in vocational education and training: teachers, trainers, tutors, guidance officers and teachers' mobility from one system to another and from one country to another. Later, the Bruges communiqué (Council of the European Union and European Commission, 2010) invited member states to invest in and improve initial and continuing training for VET teachers and trainers by offering flexible training provision which enables them to acquire the right set of competences, deal with the increasing heterogeneity of learners, use new learning methods and make the most of new technologies. Subsequently, the Riga conclusions (European Commission; Latvian Presidency of the Council of the European Union and Ministry of Education and Science Republic of Latvia, 2015) called for systematic approaches to and opportunities for initial and continuing professional development (CPD) of VET teachers and trainers/mentors in both school and work-based settings, in order for them to fulfil their role. This includes digital skills and innovative teaching methods. Cooperation and partnerships among stakeholders are seen as a way to support this development. Finally, the European framework for quality and effective apprenticeships (Council of the European Union, 2018) stressed that teachers and trainers should be supported in updating their skills, knowledge and competences so that they can train learners using the latest teaching and training methods as well as in line with labour market needs.

In 2020, when education and training institutions faced extended closures due to the global pandemic, the new Council conclusions on European teachers and trainers for the future (Council of the European Union, 2020a) recognise teachers and trainers at all levels and in all types of education and training as an indispensable driving force for education and training and also acknowledge their commitment during the still ongoing COVID-19 crisis. Their subject-related and pedagogical expertise, as well as their commitment, enthusiasm, job satisfaction and self-confidence, have an impact on learners' learning outcomes, progress and well-being. Teachers and trainers "have a crucial role in preparing individuals of all backgrounds and ages to live, learn and work in the world of today, as well as in

---

practice, while an in-company trainer/mentor is anyone who fulfils one or more activities linked to the (theoretical or practical) training function at the workplace.

creating and leading future changes. In the context of constant social, demographic, cultural, economic, scientific, environmental and technological changes, the world of education and training is changing, and so is the occupation of teachers and trainers, with increasing demands, responsibilities and expectations put before them. Continuous innovations and challenges have an effect not only on the competences required, but also on teachers and trainers' well-being and the attractiveness of the teaching profession" (Council of the European Union, 2020a, p. 1).

The new Council recommendation on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience (Council of the European Union, 2020b) calls for more investments in the skills and competences of teachers and trainers. Further, the Council recommendation emphasises that increased quality of VET will only be possible with well-trained and motivated teachers and trainers. Staff in VET needs to be supported in developing skills and provided with tools to master new technologies, to work in multicultural environments and to understand changing labour market needs. Motivation, career progression and well-being of teachers and trainers in VET are key to increase attractiveness of their profession. The so-called hybrid teachers—a type of personnel who are working part-time in a company and part-time as a teacher in a vocational school—have a potential to contribute to stronger cooperation arrangements between VET schools and companies in a more structured and frequent manner. Hybrid teachers can bring the necessary innovation to school-based environment and can address the growing shortage and ageing population of vocational teachers. The concept provides interesting career perspectives for individuals and provides benefits to both schools and companies, among others by sharing the salary costs (ibid).

Finally, the recent Osnabrück declaration on VET (European Commission and German Presidency of the Council of the European Union, 2020) as an enabler of recovery and just transitions to digital and green economies highlights the vital need to empower VET teaching and training staff to be proactive lifelong learners in a context of rapidly changing technology and skill requirements.

The abovementioned policy documents emphasise that good quality VET also contributes to the inclusion of vulnerable groups and thus highlight the key role teachers and trainers play in preventing premature departure from VET and provide opportunities for dropouts to re-enter VET. Moreover, the current crisis caused by COVID-19 has reinforced these ideas by putting an unprecedented challenge before teachers and trainers at all levels and in all types of education and training. They have been required to rapidly move from face-to-face to predominantly distance learning and, to a large extent, exclusively virtual teaching. In such exceptional circumstances, teachers and trainers have shown impressive commitment, creativity and peer collaboration and made significant efforts to ensure that both learning and learners' progress continue, including by providing support for their well-being. Undoubtedly, this pandemic has put greater emphasis on the role of VET teachers and trainers in the policy discourse at the global level.

7.2.2   *Cedefop's Role*

Within this policy context and European policy cooperation programmes in education and training (Council of the European Union, 2009) and in particular with regard to enhanced cooperation in VET, Cedefop has played an important role in supporting the European Commission, member states and social partners in designing and implementing the EU policy agenda through evidence-based policy-making for VET teachers and trainers' continuous professional development and European cooperation in this area. The work of Cedefop in this area can be summarised by the following functions:

- Monitoring developments in the member states and providing evidence and data, such as related publications and thematic country reports.
- Providing technical papers and guiding principles, such as the report "Guiding principles for professional development of trainers in VET", and contributing to the report "High-performance apprenticeships and work-based learning: 20 guiding principles[2]" (European Commission, 2016).
- Organising conferences and policy learning fora on the professional development of teachers and trainers in VET; for example, the second policy learning forum focused on how to build stronger bridges between school and workplace so that teachers and trainers benefit in their professional development and can better support learners in innovative and effective ways.
- Collaborating in other EU instances and processes, such as the ET2020 Working Groups on VET Innovation and Digitalisation, which produced the report "Teachers and Trainers Matter - How to support them in high-performance apprenticeships and work-based learning: 12 Policy pointers" (European Commission, 2018). These policy pointers, summarised in Fig. 7.1, were developed to inspire the member states to further improve and, more importantly, to monitor professional development for teachers and trainers.
- Developing tools and tips for supporting VET teachers and trainers to timely reach dropouts and early leavers from education and training and help them reintegrate back into it and to more effectively support at-risk learners so that they remain in education and training. A reflection tool for VET providers proposes concrete steps to help them understand the current patterns of early leaving from education and training (ELET), to analyse the action needed to tackle this problem and to develop an action plan to improve the institutional approach. It proposes questions for reflection, a screening tool to assess the current institutional approach needed to prevent ELET and a template for developing an action plan, which can be used as part of an individual or group exercise. Further, VET practitioners may use Cedefop's evaluation plan for the monitoring and

---

[2]Twenty principles are grouped in four clusters: national governance and social partners' involvement; support for companies, in particular SMEs, offering apprenticeships; attractiveness of apprenticeships and improved career guidance; and quality assurance in work-based learning.
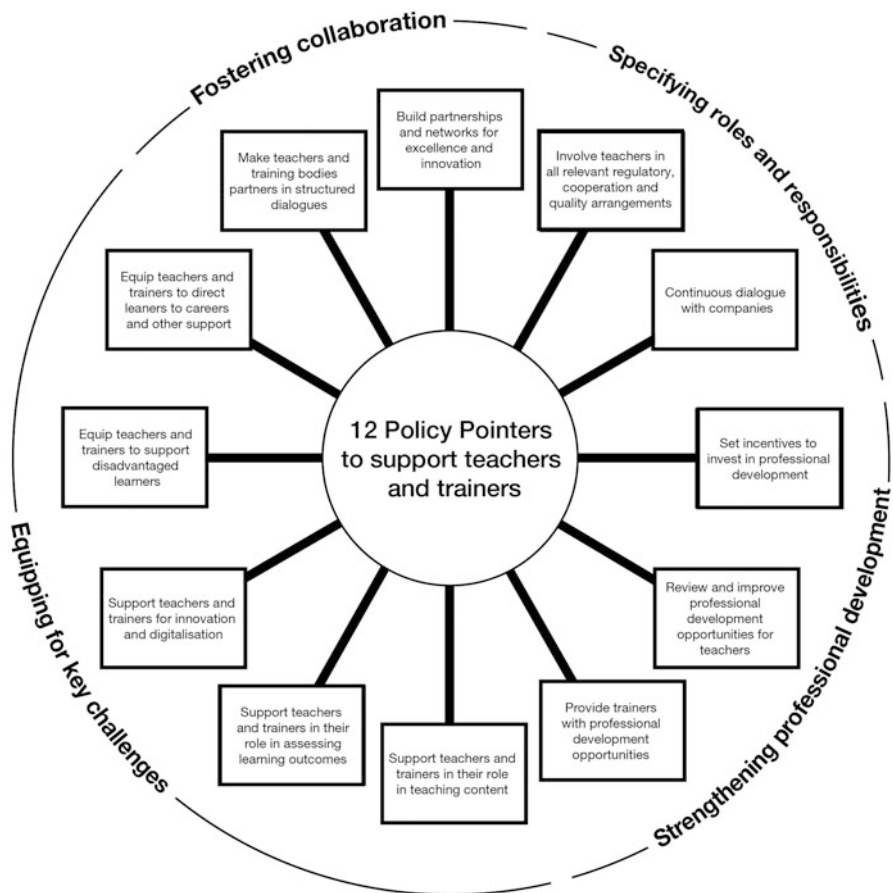
Fig. 7.1 12 Policy pointers to support teachers and trainers. Source: European Commission (2018)

evaluation of specific policies and measures to be used by learning providers who are not experts in the field of evaluation. They can use the plan when developing their monitoring and evaluation approach (see Box 7.1).

Box 7.1 Cedefop's VET Toolkit for Tackling Early Leaving
In 2017, Cedefop launched the VET toolkit for tackling early leaving from education and training, with a view to providing practitioners and policy-makers with practical support in designing, implementing and evaluating effective policies and practices. This phenomenon is a pressing issue in Europe, resulting in considerable costs for individuals and society, and a constant preoccupation for VET teachers and trainers. Students who drop out are at greater risk of becoming NEETs (young people not in education,

Box 7.1 (continued)

employment or training) and socially excluded. Despite success in reducing the numbers of people who leave education and training institutions with, at most, a lower secondary education certificate, early leaving still affects one in ten young adults in the EU; in some countries and different regions within the same country, the figure is much higher. Cedefop has been leading research work since 2010 in order to support the European Commission, EU member states and social partners to reach the EU strategic objective of lowering the rates of early leavers to less than 10% by 2020.

In 2019, a new enriched version of this toolkit was launched in Cedefop's Brussels-based policy forum, organised jointly with the Lifelong Learning Platform under the Romanian Presidency. Currently the VET toolkit counts more than 250 resources including good practices, quick wins, effective intervention approaches inspired by VET practices, data, reflection and evaluation tools helping thousands of VET practitioners and policy-makers in Europe tackle early leaving at every stage, from identifying timely learners at risk to successfully reintegrating early leavers back to education and training.

Source: www.cedefop.europa.eu/TEL-toolkit

Cedefop continues developing online tools and expanding their focus to other vulnerable groups. In 2021, the VET toolkit for empowering NEETs was launched (https://www.cedefop.europa.eu/en/tools/neets). Through such resources, Cedefop will offer additional support to VET teachers and trainers in preventing early leaving, increasing youth employment and implementing pathways for upskilling.

In light of further support for policy developments in the field of VET teachers and trainers' professional development and well-being, Cedefop is also working on a feasibility study for launching a pan-European survey of VET principals, teachers, in-company trainers and learners in initial VET (ISCED level 3), which will bring more insights and fill important research gaps. This will then support evidence-based policy-making in Europe with a focus on four main areas of interest including:

- VET schools' principals, teachers and in-company trainers' evolving role and challenges (including challenges raised during COVID-19)
- Their skill needs and qualifications including access to quality continuous professional development
- Their career progression, well-being and job satisfaction
- Pedagogies and learning environments used in school-based and work-based IVET

Based on the outcomes of the feasibility study, Cedefop will assess the feasibility and practicability of launching a pan-European survey.[3]

---

[3] See Cedefop webinar: Making excellence inclusive: towards a new Cedefop survey of VET teachers and trainers at https://www.cedefop.europa.eu/en/events-and-projects/events/making-excellence-inclusive-towards-new-cedefop-survey-vet-teachers-and-trainers.

7.3 The Evolving Role of VET Teachers and Trainers

It is well known that teachers and trainers in VET work in the context of innovation and significant technological and societal changes challenging education and training systems across Europe and the globe. They are often required to respond to new developments and changing labour market needs and to consider technological evolution across enterprises. They must be flexible and innovative in order to keep up with technological advancement in their fields and to promote learning that can simulate or take place in real working environments.

Working in linguistically and culturally diverse classrooms and learning environments, with learners from a variety of socio-economic backgrounds and with different needs, including special education needs, teachers and trainers need to safeguard good educational outcomes and inclusiveness, prevent dropouts and support early leavers to qualify in upper secondary education through VET.[4]

In the face of an ageing population and with lifelong learning becoming an imperative for all, and especially for low-skilled adults, VET teachers and trainers have an important role in empowering individuals to undertake learning for upskilling and reskilling. This requires teachers and trainers to work with flexible programme structures and apply learner-centred approaches which are adjusted to the needs of adults.

In the context of changing and emerging jobs and great uncertainty about current social, political and environmental developments, VET teachers and trainers have the responsibility of teaching not only professional skills to prepare learners to successfully perform future jobs but also the key competences[5] needed to foster their social responsibility and civic engagement, as well as to support their personal growth and human values.

In all these learning contexts (initial VET, continuous VET and adult learning more broadly), teachers and trainers can be agents for innovation and for ensuring greater quality in VET. But in order to fulfil their multiple roles, arrangements must be in place to help them become familiar with modern pedagogical and adult learning approaches, as well as to equip them with the right mix of skills and experience they need to deal with current and emerging needs.

---

[4] One of EU targets for 2020 in education and training is to decrease the share of 18- to 24-year-olds having attained ISCED level 0–2 and not receiving any formal or non-formal education or training in the 4 weeks preceding the survey below 10%.

[5] As defined in the Council Recommendation of 22 May 2018 on key competences for lifelong learning.

7.3.1 Dynamic Working Context and Increased Diversity of Students

With the advancement of digitalisation, methods and means of teaching and learning are changing fast. This was particularly the case due to COVID-19. In many countries, school closures seem to have functioned as catalysts for the digitalisation of the schools and the educational sector in general, including the administrative procedures. This crisis makes it clear that digital learning formats do have their limits and thus cannot replace or bring the same social benefits as the physical space of schools and workplaces, especially for learners at risk (Cedefop, 2020a; Psifidou, 2020a).

However, new digital technologies provide new ways of organising and carrying out learning and teaching processes that allow for greater learning flexibility, including open, online and blended learning. The integration of artificial intelligence (AI) (e.g. "intelligent tutoring systems") and virtual reality (VR) in the learning process potentially offers greater personalised and inclusive learning approaches which are tailored to the needs of individual learners. However, the actual effectiveness of such tools on the quality of learning and teaching is not known yet. While using AI in education could generate new insights into how learning happens, it also implies new roles for VET teachers and trainers and poses important ethical questions for education and training institutions.

Further, as a result of more migration and international mobility, learning environments are composed by evermore heterogeneous groups of learners. This greater diversity of learners originates, among other factors, from their diverse ages, abilities, different socio-economic backgrounds, special (education) needs and cultural, ethnic and language backgrounds. Thus, adopting learner-centred approaches is increasing in importance in classrooms with heterogeneous levels of ability and other learning environments (Cedefop, 2015a; Psifidou, 2020b).

7.3.2 Changing Skills Needs and Requirements

Over the next few years, VET teachers and trainers will be required to help shape quick and flexible responses to emerging needs, related to changing demands requirements of the labour market and technological developments and to the need to develop basic, digital and entrepreneurial skills for new target groups, such as adults with reskilling and upskilling needs, migrants and refugees. Additionally, new political priorities and cultural changes must be considered.

According to Cedefop's European skills and jobs survey (Cedefop, 2015b, 2018), the work of teaching professionals is significantly comprised of non-routine and autonomous tasks and requires a continual need for learning. Thirty-five percent of teaching professionals said that their job "always requires learning new things", compared to 28% for other professional occupational groups and 21% for the entire

adult workforce of the EU. Teaching professionals' jobs also has significantly higher skill needs compared to other EU adult workers. About 51% of teaching professionals said that they experienced changing technologies at their workplaces in recent years, a number which is significantly higher compared to other adult EU workers (43% EU average for all adult workers). The survey also shows that the jobs of teaching professionals require a higher level of digital skills, something that has become essential during the COVID-19 pandemic and the resultant school closures and distanced online learning. About 23% of teaching professionals think that when they started their job, their skills were lower than their jobs required, showing the importance of CPD. Indeed, teaching professionals are more likely than other EU adult workers to say that they enjoy learning for its own sake.

Following the expansion of work-based learning and apprenticeships in companies of different sizes, including SMEs, new flexible learning pathways are created. There may be an increase in the need for hybrid professionals—teachers and trainers who work in both VET institutions and companies. There is also a need for closer collaboration between VET teachers and trainers, particularly for in-company trainers and mentors and career counsellors who are supporting and guiding learners towards multiple learning pathways (Psifidou, 2020c).

Additionally, Cedefop estimates that there are around 128 million adults with a potential need for upskilling or reskilling across the EU.[6] Integrated and well-tailored pathways which would permit these people to acquire or upgrade basic skills at different points in life are increasingly used to prevent skill gaps and skill shortages. Besides occupational skills training, teachers and trainers should help them to improve basic as well as career management skills that allow them to make appropriate learning and working choices throughout their lives.

In the EU, teaching generally requires a tertiary qualification. The most common minimum requirement for teaching at the primary level is a bachelor's degree. In order to teach at the lower secondary level, half of the EU systems have set the minimum qualification as a master's degree, while in upper secondary schools, a master's degree minimum qualification is required in most EU countries. Completing higher levels of education and training can provide prospective teachers and trainers with a more comprehensive set of competences, including those needed to develop professional autonomy in their teaching practices. This can in turn contribute to greater job satisfaction, as well as to a greater perception of value of and respect for the profession (European Commission, 2019).

While the pedagogical competences of VET school teachers are generally considered adequate, although they do require constant updating according to Cedefop evidence (Cedefop, 2016a), evidence from most countries points to a growing need for VET teachers to be better able to keep up with the realities of changing needs of industry and the labour market. This includes countries with well-established

---

[6]Cedefop's calculation is based on Eurostat's labour force survey 2016, CSIS 2015 and OECD PIAAC 2012 and 2015. More information is included in Cedefop (2020b); see also Cedefop and ETF (2020b).

apprenticeship systems. To achieve this, cooperation and partnerships between VET institutions and labour market actors are important in ensuring the quality and relevance of learning (see Sect. 7.5.2). Members of the Thematic Working Group on VET coordinated by the European Commission with the support of Cedefop concluded in their 12 policy pointers that teachers and trainers need support including specifying roles and responsibilities, strengthening professional capacity, being equipped for key challenges and fostering collaboration (see Fig. 7.1). In particular, members of this group identified the need for more support for teachers and trainers in the following areas (European Commission, 2018)[7]:

- Developing the content of teaching and learning for students of diverse abilities and applying new curricula
- Assessment of learning outcomes and key competences
- Innovation and digitalisation
- Supporting disadvantaged learners
- Career guidance and other professional support

VET school principals and teachers, as well as in-company trainers, should thus have access to varied and flexible training which is suited to VET and their own needs, as well as professional development opportunities which are embedded in real work contexts and tasks. Further, the role of leadership in schools and companies is crucial for providing the necessary support to and enhancing the motivation of teachers and trainers to take part in professional development. School leaders, apart from often having the responsibility for the CPD of their staff, also play an essential role in creating collaborative cultures and practices that stimulate cooperation and peer learning: among teachers in the school, with other schools and learning providers, with companies that provide work-based learning and with local communities.[8]

7.3.3   Greater Autonomy and Involvement in Education and Training Reforms

As a result of the increased autonomy of VET teachers and schools which was observed over the past decade, teachers and trainers are increasingly autonomous in selecting teaching approaches, methods, techniques, contents and forms of work. With the implementation of learning outcomes and (national) standards for knowledge, skills and competences (Cedefop, 2016b, 2017), VET teachers and trainers have greater involvement in the development and implementation of education and

---

[7]These areas are part of the third group of policy pointers "equipping teachers and trainers for key challenges" (policy pointers 6–10).

[8]European Vocational Skills Week 2019: VET for All – Skills for Life Conference, Concept note of Session 5. "Changing role of teachers and trainers", Helsinki, 17 October 2019.

training reforms, especially in relation to curriculum design and when deciding on appropriate vocational pedagogies (Psifidou, 2011; Cedefop, 2012, 2015a).

Assessment criteria and methods should be also aligned with the intended learning outcomes in order to provide learners with quality feedback which can guide and improve further learning and close any potential gaps between intended and achieved learning outcomes (Psifidou, 2012). Classroom-based formative assessment (assessment for learning) is increasingly gaining ground in European classrooms. There is more and more emphasis towards individualistic and constructivist learning approaches (Cedefop, 2015a, 2016b).

Cedefop's research shows that translating learning outcome-related policies and frameworks into classroom reality and pedagogical practices requires appropriate tools and capacities to be developed at the national and institutional levels. Although practices at the institutional level can be encouraged by national policies and strategies, their establishment depends on many other factors, such as strategical priorities of institutions, the commitment of headmasters to improving the quality of teaching and learning collaboration among teachers and with industry and the capacity to manage complex institutional change. The educational outcomes are not only results of teaching, but the active learning, engagement and experience of students and teachers is a crucial aspect. In order to apply such learning and assessment methods, teachers and trainers/mentors need to be well trained and equipped with appropriate skills and methodologies. All relevant Cedefop research emphasises the importance of education and training reforms needing to be coordinated with changes in initial (and in-service) teacher education programmes (Cedefop, 2012, 2015a, 2016b).

7.4 Challenges for VET Teachers and Trainers' Profession and Their Well-Being

7.4.1 Ageing VET Teachers and Attractiveness of the Profession

As the roles of VET teachers and trainers are becoming increasingly complex and the teaching populations are ageing, teacher shortages remain a persistent problem in many EU countries. Thus, making their profession more attractive is vital.

In some countries, teacher salaries are generally low, but evidence shows that wages are not the only key factor in reducing the attractiveness of the teaching profession. According to TALIS (OECD, 2019), teachers in the EU generally have high intrinsic motivation and are highly committed to their profession. Most of them chose the profession out of a desire to contribute to students' development and society and are generally satisfied with their job. On the other hand, EU teachers in some European countries are less satisfied with their social status and working conditions. This can apply to those VET teachers who lack societal recognition

and equal employment opportunities compared to general education teachers. This can impact their satisfaction and well-being (Misra, 2011). Teachers face an increasing workload, often bearing increasing administrative tasks, and are not able to devote enough time to teaching and to supporting students. High student/teacher ratios add further pressure to their daily work.

Even in countries where the teaching profession is highly esteemed, attracting teachers to certain occupationally oriented subject areas is still problematic. Attracting professionals with higher education to teach professional subjects or attracting in-company trainers from enterprises to the teaching profession in VET schools, while it is expected to help improve VET's relevance, raises challenges in many countries. In the latter case, these challenges mainly concern (Cedefop & ETF, 2020a):

- Quality assurance: ensuring that the certification and quality of training of in-company trainers, for example, is equivalent to that of teaching professionals
- Incentives: ensuring that in-company trainers focus on the acquisition of key competences of learners, as opposed to predominantly firm-specific skills
- Accountability: resolving the whom are in-company trainers accountable to: the parents, the schools or the company

Misra (2011) points out that many European member states lack attractive recruitment and training policies in order to attract and encourage workers from industry to become VET school teaching professionals. For instance, Slovakia demonstrates the need to rethink measures to attract people in their middle years who have a relevant history in business to work in VET schools. Not only competitive wages but also flexibility in terms of their engagement are urgently needed (Vantuch & Jelínková, 2016). Countries are now addressing this challenge (see Sect. 7.5).

Many countries have moved towards more extrinsic performance assessment measures by linking teachers' assessment and, in some cases, even their pay, with indicators of learners' performance outcomes. As a result, teachers' dissatisfaction has risen because this undermines their primary motivation to do their job, which tends to be intrinsic motivation (Cedefop, 2015b, 2018).

7.4.2 Teachers and Trainers' Well-Being and Job Satisfaction

Evidence shows that competent and motivated VET teachers and trainers can embrace new challenges and reforms and ensure quality and effective learning experiences for both young and adult learners. Understanding teachers and trainers' well-being is central not only to supporting their professionalism and retention but, equally, impacts teaching quality, classroom environment, student performance and well-being and teachers' and trainers' capacity to embrace and introduce change.

However, well-being and job satisfaction are difficult to measure, or even to detect. A major challenge is the lack of VET-specific data as the main data sources tend to refer to the general teacher population. Factors influencing well-being and job satisfaction include both structural career elements, such as salaries and career advancement opportunities, and personal factors, including age and work experience, education level and aspirations and gender. Professional attitudes, teaching practices, quality and the coherence of initial education, induction and CPD of teachers and trainers are also crucial for their well-being. The balance between teaching and other types of responsibilities and demands (e.g. administrative tasks, projects) should also be considered (Psifidou, 2020c).[9]

According to Cedefop's European skills and jobs survey, teaching professionals are generally more likely to be satisfied with their job and have less job insecurity than other comparably skilled adult workers (Cedefop, 2015b, 2018). The teaching profession, as a result of its heavy dependence on strong interpersonal communication and social interaction, is also generally one with a lower potential risk of being replaced by digital machines. Teachers are self-motivated to follow this profession since they have intrinsic incentives such as their passion to teach and educate; they are less likely to choose their job because of the wage, but they are more likely than other workers to select it because of the higher job security and flexible work hours. Hence, when the intrinsic elements and satisfaction of their job are compromised, the job satisfaction of teachers can be negatively affected (Cedefop, 2015b, 2018).

7.5 Countries' Policy Responses to Overcoming Challenges

7.5.1 Improving Recruitment Procedures and Ensuring Continuous Professional Development[10]

In the light of the abovementioned challenges and according to Cedefop's monitoring data on Riga medium-term deliverables (MTD) in 2015–2019 and more specifically to MTD 5—Initial and continuous professional development of VET teachers, trainers and mentors (cf. Cedefop and ETF, 2020a, pp. 70–75), countries are taking actions to tackle challenges and provide opportunities for VET teachers, trainers and mentors. This is one of the five Riga MTDs[11] where reform implementation has been

---

[9]Drawing from round-table discussion on "VET Teacher well-being and job satisfaction" during Cedefop-ReferNet Plenary meeting, 6 February 2020.

[10]The current chapter draws from the monitoring of Riga conclusions published at a joint Cedefop-ETF publication (2020a). The authors of these articles use the same wording found in the publication on purpose while reporting on country developments and examples as this wording has been approved by all parties.

[11]These are: MTD 1—Promoting work-based learning in all its forms, with special attention to apprenticeships; MTD 2—Developing quality assurance mechanisms in VET and continuous information and feedback loops; MTD 3—Access to VET and qualifications for all; MTD 4—

	Actions on access	Actions on CPD
Teaching professionals in VET schools	(a) (re)defining entry requirements and/or entry procedures (Czechia, Greece, Spain, Croatia, Italy, Cyprus, Luxembourg, Hungary, Malta, the Netherlands, Austria, Portugal, Romania, Slovakia, UK-Wales)	(a) introducing/updating requirements (as in Belgium (fr), Bulgaria, the Netherlands, Cyprus), programmes and courses (Croatia, Denmark, Greece, Italy, Lithuania, Norway, Slovenia, UK-England); developing innovative learning approaches (Spain, Portugal) and support measures (Belgium (de), the Netherlands, Norway)
	(b) upgrading/updating pre-service and/or initial in-service teacher training programmes (Belgium, Bulgaria, Denmark, Germany, Estonia, Ireland, France, Croatia, Italy, Cyprus, Luxembourg, Latvia, Malta, the Netherlands, Austria, Romania, Slovakia, Finland, UK)	(b) introducing opportunities for teacher visit/traineeship/working in company and for cooperation with in-company mentors (Czechia; Denmark, Norway, Slovenia)
		(c) introducing career development opportunities for teachers, including in terms of reaching leadership positions (e.g. Czechia, Spain)
	(c) introducing/upgrading measures to attract new teachers, including attracting experts from the world of work (e.g. UK-Scotland)	(d) supporting VET school leaders and their professional development (Estonia, Cyprus, UK-England)
Mentors and trainers in companies	(a) re/defining the requirements to become a mentor/trainer, including developing standards/profiles (as in Belgium (fr), France, Luxembourg, Hungary, Poland)	(a) setting up plans or framework guidelines for the continuing training of in-company mentors and trainers (Belgium (fr), Greece)
	(b) introducing/updating training programmes (whether optional or compulsory) to become an in-company trainer (Bulgaria, Estonia, Greece, Slovenia, Finland)	(b) developing programmes and courses (Czechia, Estonia, Croatia, Latvia, Lithuania)
	(c) introducing/updating measures to increase the availability of qualified mentors/trainers in companies (France)	(c) opening up learning opportunities through school visiting schemes (Norway, Slovenia).

Fig. 7.2 Actions on MTD 5—Initial and continuous professional developments of VET teachers, trainers and mentors. Source: Authors drawn from Cedefop and ETF (2020a, pp. 70–75)

the most advanced. By September 2019, 81% of the actions taken in the reporting period had reached the full-scale implementation stage. Another 5% were still in the pilot phase, and 9% were undergoing legislative processes.

As presented in Fig. 7.2, the actions on MTD 5 can be divided first by profession, where it has been noted that measures supporting the development of VET teaching and training professions have addressed VET school teachers and trainers more (69%) than in-company trainers and mentors (28%). Secondly, these actions are also classified in two main categories: measures regarding access to each profession (39% of actions) and measures on continuing professional development (CPD) for each profession (58% of actions) (Cedefop and ETF, 2020a, p. 70).

Strengthening key competences; and MTD 5—Initial and continuous professional development of VET teachers, trainers and mentors.

In regard to actions on access, countries are redefining VET teachers, trainers and mentors' entry requirements, including developing competence standards/profiles and updating pre-service and/or initial in-service training to address new needs with regard to new challenges they face. Countries report that teacher training programmes do not always take sufficient account of the characteristics and demands of VET. The evidence showed, in particular, the need to update pedagogical/ didactical competences and to better link theory and practice. Some countries looked for ways to address teacher shortages and make teaching more attractive by increasing salaries (as, for instance, in Iceland, Latvia and Slovakia), developing career opportunities and attracting professionals from industry. Despite the work done in this respect, further attention is required on this area in the future.

In regard to actions on CPD, most countries have introduced programmes and courses, built career development opportunities and promoted work placements in companies to keep teachers updated on the industry, labour market and technological developments. A relatively limited number of countries have introduced specialised programmes to prepare VET school leaders and principals for their role, which often includes making decisions about teacher professional development. With the development of apprenticeships and work-based learning, in most of the countries, there is a growing need for more employees from companies who can act as trainers/ mentors. Few developments which focused on their training were reported.

Attracting people to the teaching/training profession is only one side of the coin. Providing the conditions and supporting them to remain committed and competent throughout their teaching/training life is another challenge. Growth, development and recognition are essential.

According to TALIS (OECD, 2019), teachers who said that continuing professional development (CPD) had a positive impact on their teaching also displayed higher levels of job satisfaction and self-efficacy. Moreover, CPD can increase student achievement, reduce achievement gaps among students and even counter professional burnout. Mentorship programmes also strengthen teacher competences and professional identity and enhance peer cooperation, which all contribute to teacher well-being. Opportunities for career development is an important factor in helping teachers remain motivated and not feel locked into one position.[12]

Several countries are systematically monitoring and evaluating the CPD processes of teachers (e.g. Denmark, Germany, Norway, Portugal, Slovenia and the UK) (Cedefop & ETF, 2020a, p. 74). However, many of the initiatives that address professional development for teachers and in-company trainers are carried out through EU-funded projects. It is important that successful practices derived from these programmes be mainstreamed in the future, in order to form systematic and holistic policies for VET staff professional development.

Finally, policies which seek to structure access to mentoring and training roles in companies as well as to ensuring the continuing professional development of

---

[12]Drawing from: ET2020 Working Group Schools (2020 forthcoming). Supporting teacher and school leader careers.

trainers/mentors in enterprises continue to be developed. This trend is mainly linked to the need to complement the reform of apprenticeship and other forms of workplace-based learning.

During the current pandemic, digital delivery, which allows for the offering of professional learning opportunities online for teachers and trainers, has become the norm. Although this approach offers flexibility in terms of time and place and although during the health crisis it has been the only possibility to teach, it is still a novelty with unknown effects. In the current circumstances, online modules for equipping VET teachers and trainers with digital skills are necessary. Some countries are training teachers, trainers, coaches and mentors to develop teaching and training material (European Commission, 2020), to acquire knowledge on effective e-learning methodologies, and to carry out virtual evaluation. Some platforms offer demonstrations and online training to users. Information and guidance about organising distance learning has been made available for teachers, trainers, learners, enterprises and parents in several EU countries, including guidance in how to support learners at risk (Cedefop, 2020a).

7.5.2   Fostering School-Business Cooperation

VET teachers and trainers can play a pivotal role in building trust between the worlds of education and work, which is essential in learning settings involving different environments. To achieve this, they must collaborate closely together primarily at local level. Strong partnerships and networks and co-creation of knowledge and expertise can be effective ways for teachers and trainers to address new tasks and challenges and develop new learning pathways, environments and formats.

Cedefop's evidence[13] shows that stakeholders referred to several benefits that a school-business partnership can offer. It enables the pooling of resources for better and more cost-effective continuous professional development. VET teachers from schools and centres may keep their technical knowledge relevant and up-to-date, while company-based trainers may develop their pedagogical skills (e.g. by spending time teaching in schools). Such a collaboration widens the curriculum, promotes excellence, fosters innovation and helps to mitigate any persisting negative images of apprenticeships and VET.

School-business cooperation can be organised through a variety of methods, including the creation of special centres or through tandem trainings, where VET teachers and trainers are trained together (European Commission, 2018). However, there are some requirements for the successful implementation of school-business

---

[13] Drawing from Cedefop's Second policy learning forum: Unlocking the potential of learning at the workplace by, and for, teachers and trainers in VET, 9–10 Aril 2019, Thessaloniki, Greece.

partnerships, such as the need for structural changes and financial and non-financial incentives to be present. Several countries, such as Slovenia, have made structural changes in their curriculum documents to support innovations at providers' levels and cooperation between schools and companies. According to the current guidelines for VET programmes, less prescriptive national VET framework curricula are introduced and further operationalised at the provider level including opening up the 20% of the curriculum to be adapted to the needs of local environment and employers. Schools in close cooperation with local employers may plan the learning objectives, content and teaching process for this 20% of the curriculum entirely independently (Knavs & Šlander, 2019, p. 24).

7.6 Conclusion and Reflections for the Future

Well-trained and motivated teachers and trainers/mentors are key agents in implementing complex reforms in vocational education and training in order to deliver tangible results for learners of all ages and equip them with the relevant knowledge, skills and competences for work, further learning and personal fulfilment. The new Council recommendation on VET for sustainable competitiveness, social fairness and resilience (Council of the European Union, 2020b) sets a vision for VET to address the challenges Europe will be facing in the coming years.

As discussed in this article, teachers' and trainers' challenges and roles are changing quickly. Policy-makers need to understand these changes to be able to support them. At the time of this writing (January 2021), only fragmented evidence is available at the European level. Cedefop aims to fill these research gaps by launching a pan-European survey on VET teachers, in-company trainers and learners in initial VET (ISCED level 3), which will bring more insights to support evidence-based policy-making in this field in Europe. The survey will also address the changing roles and emerging needs of VET principals and headmasters and examine their preparedness for managing complex changes at institutional level. These changes can only occur if change and management capacities are developed at the institutional level. According to the latest Cedefop-ETF monitoring of the Riga conclusions, a relatively limited number of countries have introduced specialised programmes to prepare VET school leaders for their role, which often includes making decisions about managing and ongoing support of teacher professional development (Cedefop & ETF, 2020a).

In the coming years, further research and support to trainers in light of the developing upskilling pathways across Europe and focus on continuous VET (CVET) and lifelong learning is needed. The main policy focus so far has been mainly on IVET and trainers in apprenticeship-type schemes. Due to changes in society and in the labour market, CVET (and consequently, those who implement it) is going to be an important player in increasing growth, company innovation and productivity as well as in supporting the European social agenda. The next decade might see more reflection about and work on trainers in CVET, as well as employees

in companies who support learning at the workplace of other employees. The need to upskill the low-skilled and older employees increases the proportions of on-the-job training and leads to a situation where more employees in companies will take on the responsibility for training as part of their everyday duties.

References

Cedefop. (2012). Curriculum reform in Europe. In *The impact of learning outcomes*. Publications Office of the European Union. https://www.cedefop.europa.eu/files/5529_en.pdf

Cedefop. (2015a). *Vocational pedagogies and benefits for learners. Practices and challenges in Europe*. https://www.cedefop.europa.eu/files/5547_en.pdf

Cedefop. (2015b). *Skills, qualifications and jobs in the EU: The making of a perfect match? Evidence from Cedefop's European skills and jobs survey*. Publications Office. Cedefop reference series; No 103. https://www.cedefop.europa.eu/en/publications-and-resources/publications/3072

Cedefop. (2016a). *Briefing note – Professional development for VET teachers and trainers*. https://www.cedefop.europa.eu/files/9112_en.pdf

Cedefop. (2016b). *Application of learning outcomes approaches across Europe; a comparative study*. Publications Office. Cedefop reference series, No 105. http://www.cedefop.europa.eu/en/publications-and-resources/publications/3074

Cedefop. (2017). *Defining, writing and applying learning outcomes: A European handbook*. Publications Office. https://doi.org/10.2801/566770.

Cedefop. (2018). *Insights into skill shortages and skill mismatch: Learning from Cedefop's European skills and jobs survey*. Publications Office. Cedefop reference series; No 106. https://www.cedefop.europa.eu/files/3075_en.pdf

Cedefop. (2020a). *Digital learning gap during COVID-19 for VET learners at risk in Europe. Synthesis report based on preliminary information on seven countries provided by Cedefop community of ambassadors tackling early leaving from VET*. https://www.cedefop.europa.eu/en/news-and-press/news/coronavirus-distance-learning-increases-dropout-risk-vulnerable-learners

Cedefop. (2020b). *Empowering adults through upskilling and reskilling pathways. Volume 1: Adult population with potential for upskilling and reskilling*. Publications Office of the European Union. Cedefop reference series; No 112. https://www.cedefop.europa.eu/en/publications-and-resources/publications/3081

Cedefop, & ETF. (2020a). *Enhancing European cooperation in VET: Outcomes of the Riga cycle. Progress in common priorities for 2015–2020: Final report*. Publications Office. Cedefop reference series; No 115. https://www.cedefop.europa.eu/en/publications-and-resources/publications/3084

Cedefop, & ETF. (2020b). *The importance of being vocational challenges and opportunities for VET in the next decade*. Discussion paper. https://www.cedefop.europa.eu/files/4186_en.pdf

Council of the European Union. (2009). *Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training ('ET 2020')*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009XG0528(01)&from=EN

Council of the European Union. (2018). *Council recommendation of 15 March 2018 on a European framework for quality and effective apprenticeships*. Official Journal of the European Union, C 153, 2.5.2018, pp. 1–6. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018H0502%2801%29

Council of the European Union. (2020a). *Council conclusions on European teachers and trainers for the future*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=uriserv:OJ.C_.2020.193.01.0011.01.ENG

Council of the European Union (2020b). *Council recommendation on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020H1202(01)&from=EN

Council of the European Union and European Commission. (2002). *The Copenhagen declaration: Declaration of the European Ministers of vocational education and training, and the European Commission, convened in Copenhagen on 29 and 30 November 2002, on enhanced European cooperation in vocational education and training*. https://www.cedefop.europa.eu/files/copenahagen_declaration_en.pdf

Council of the European Union and European Commission. (2004). *Maastricht communiqué on the future priorities of enhanced European cooperation in vocational education and training: Communiqué of the European Ministers of vocational education and training, the European social partners and the European Commission, convened on 4 December 2004 in Maastricht*. https://www.cedefop.europa.eu/files/communique_maastricht_priorities_vet.pdf

Council of the European Union and European Commission. (2006). *The Helsinki communiqué on enhanced European cooperation in vocational education and training: Communiqué of the European ministers of vocational education and training, the European social partners and the European Commission, convened in Helsinki on 5 December 2006 to review the priorities and strategies of the Copenhagen process*. https://www.cedefop.europa.eu/files/helsinkicom_en.pdf

Council of the European Union and European Commission. (2008). *The Bordeaux communiqué on enhanced European cooperation in vocational education and training: Communiqué of the European Ministers of vocational education and training, the European social partners and the European Commission convened in Bordeaux on 26 November 2008 to review the priorities and strategies of the Copenhagen Process*. https://www.cedefop.europa.eu/files/3972-att1-1-The_Bordeaux_Communique.pdf

Council of the European Union and European Commission. (2010). *The Bruges communiqué: Communiqué of the European Ministers for vocational education and training, the European social partners and the European Commission, convened in Bruges on 7 December 2010 to review the strategic approach and priorities of the Copenhagen process for 2011–2020*. http://www.cedefop.europa.eu/EN/Files/bruges_en.pdf

European Commission. (2016). *High-performance apprenticeships & work-based learning: 20 guiding principles*. https://op.europa.eu/en/publication-detail/-/publication/8f010ea2-265b-11e7-ab65-01aa75ed71a1

European Commission. (2018). *Teachers and Trainers Matter - How to support them in high-performance apprenticeships and work-based learning: 12 Policy pointers*. https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8131&furtherPubs=yes

European Commission. (2019). *European education and training monitor 2019*. Publications Office of the European Union. https://ec.europa.eu/education/sites/education/files/document-library-docs/volume-1-2019-education-and-training-monitor.pdf

European Commission. (2020). *Fight against COVID-19*. https://ec.europa.eu/social/vocational-skills-week/fight-against-covid-19_en#1

European Commission and German Presidency of the Council of the European Union. (2020). *Osnabrück declaration: On vocational education and training as an enabler of recovery and just transitions to digital and green economies*. https://www.cedefop.europa.eu/files/osnabrueck_declaration_eu2020.pdf

European Commission; Latvian Presidency of the Council of the European Union and Ministry of Education and Science Republic of Latvia. (2015). *Riga conclusions 2015: On a new set of medium-term deliverables in the field of VET for the period 2015–2020, as a result of the review of short-term deliverables defined in the 2010 Bruges Communiqué*. https://www.izm.gov.lv/images/RigaConclusions_2015.pdf

Knavs, S., & Šlander M. (2019). *Vocational education and training in Europe – Slovenia. Cedefop ReferNet VET in Europe reports 2018*. https://www.cedefop.europa.eu/en/publications-and-resources/country-reports/vocational-education-and-training-europe-slovenia-2018

Misra, P. K. (2011). VET teachers in Europe: Policies, practices and challenges. *Journal of Vocational Education & Training, 63*(1), 27–45.

OECD. (2019). *TALIS 2018 results, volume I: Teachers and school leaders as lifelong learners*. OECD Publishing. https://www.oecd.org/education/talis-2018-results-volume-i-1d0bc92a-en.htm

Psifidou, I. (2011). The fading paradox in teacher education and training policies in Europe. In *Teacher education in modern era, trends and issues* (pp. 273–291). University of Crete and the Pedagogical Institute of the Greek Ministry of Education. http://blogs.sch.gr/kkiourtsis/files/2011/05/ebook_englsih_final.pdf

Psifidou, I. (2012). Empowering teachers to focus on the learner: The role of outcome-oriented curricula in six European countries. In M. Ginsburg (Ed.), *Preparation, practice, and politics of teachers: Problems and prospects in comparative perspective*. Sense Publishers.

Psifidou, I. (2020a). Digital gap during COVID-19 for VET learners at risk in Europe. In *1st online international educational conference From the 20th to the 21st century in 15 days: The sudden transition of educational practices to digital environments, Views-Perceptions-Scenarios-Perspectives- Suggestions*. Online event, University of the Aegean.

Psifidou, I. (2020b). New roles for VET Teachers and Trainers. In *DGVT online meeting "Paving the way for a better future VET – towards 2030.*

Psifidou, I. (2020c). Challenges and support for VET Teachers and Trainers. In *Croatian presidency conference teachers and trainers for the future: Towards the 'new normal'*. Online event, Ministry of Science and Education.

UNESCO-UIS. (2012). *International standard classification of education: ISCED 2011*. UNESCO Institute for Statistics.

Vantuch, J., & Jelínková, D. 2016. *Supporting teachers and trainers for successful reforms and quality of vocational education and training: Mapping their professional development in the EU – Slovakia. Cedefop ReferNet thematic perspectives series*. http://libserver.cedefop.europa.eu/vetelib/2016/ReferNet_SK_TT.pd

Internet

www.cedefop.europa.eu/TEL-toolkit

Chapter 8
Support for Europe's Neighbours to Improve the Professional Development of Vocational Teachers and Trainers: The Experience of the European Training Foundation

Julian Stanley

Abstract Over the last 15 years, a consensus has developed around the fact that that the quality and character of teaching is a critical driving force for changes and improvements in skills provision. Professional development is often regarded by policy-makers as the preferred tool to bring about this and other desired changes in education. Thus, improvements in the provision and effectiveness of professional development have enjoyed a high profile in national and international educational reform strategies, and the professional development of teachers has often been a key element of national improvement plans and donor actions.

This article reflects on the experiences of the European Training Foundation (ETF) in addressing this agenda with regard to TVET amongst the countries that neighbour Europe. Drawing on this experience, the author evaluates the usefulness of the different tools and models for understanding problems and informing actions. He takes into account the different perspectives of international, national and local actors. This review explores some of the persisting tensions within professional development reform, such as that between local innovation, on the one hand, and the establishment of systemic norms and enduring institutions, on the other. In addition, this review considers how a series of development initiatives can be made coherent and how a particular development agency may be able to cooperate with other actors and stakeholders.

J. Stanley (✉)
European Training Foundation, ETF, Turin, Italy
e-mail: Julian.Stanley@etf.europa.eu

8.1   Introduction

The European Training Foundation (ETF) is an external agency of the European Union with the mission "to help transition and developing countries harness the potential of their human capital through the reform of education, training, and labour market systems, in the context of EU external relations policies" (ETF, 2020). The Agency was founded in 1990, and, over the last 30 years, it has supported countries bordering the EU in improving their vocational education and training systems, analysing their skills needs and developing labour markets. Over this period, many of these countries have been transformed from largely planned to open, mixed economies and have developed open, multilevel systems of governance. Service sector employment now predominates. Countries which were supported by the ETF in the 1990s have graduated to become members of the EU; countries in Southeast Europe have become candidate members. The ETF's staff of circa 130 employees includes experts—many of whom have been active in these developments and can draw on the experience of 30 years of support and transition. The ETF's approach to development has been shaped by the European project, bringing together economic, political and social objectives. In the past, the ETF actively supported EU projects such as Phare and Tempus. Over the course of many years, ETF has contributed to the development and adoption of European methodological tools outside of the EU, such as the European Qualification Framework, learning outcomes, skills forecasting and employer surveys. In terms of policies and strategies, ETF's goals and priorities have been historically shaped by the evolving EU VET policy statements and declarations: Lisbon, Copenhagen and Bruges (European Parliament and Lisbon, European Council, 2000; European Commission, 2002; European Union (Belgian Presidency), 2010). In the recent past, ETF's development priorities have been framed by the ET 2020 Objectives (Council of the European Union, 2009) and by the Riga Conclusions in 2015 (EC et al., 2015). The ETF has supported the development of human capital amongst Europe's neighbours in the context of the European project. Consequently, issues relating to this project, such as governance, mobility, the sharing of frameworks and concepts, monitoring, convergence and inclusion, have always been influenced by the ETF's particular approach, whether it was addressing labour markets or teacher development.

8.2   Relevance of Technical Vocational Education and Training (TVET) and Teacher Professional Development for the ETF

Currently, the ETF supports 29 partner countries in four regions: Eastern Europe, Southeastern Europe, Southern and Eastern Mediterranean and Central Asia. The ETF's mission is contributing to human capital development, defined as "work that supports countries to create lifelong learning systems providing opportunities and incentives for people to develop their knowledge, skills, competences and attitudes throughout their lives to help them find employment, realise their potential and

contribute to prosperous, innovative and inclusive societies" (ETF, 2020). Such a wide definition permits a wide scope for objectives and activities but also includes TVET. Over the years the ETF itself has defined the best kind of contributions it could make, taking into account the policies of the EU and those of its partner countries and the constraints of its own budget and expertise. Over the last 10 years, these activities have addressed, fairly continuously, the following related domains:

(a) Skills and employment needs analysis
(b) System governance, including stakeholder engagement
(c) Social dialogue and private sector participation
(d) Qualification systems and quality assurance
(e) Work-based learning
(f) Teacher training
(g) Entrepreneurial learning and core competences
(h) Career guidance

To summarise, ETF addresses TVET as part of its mission to develop human capital. The ETF aims to support systemic development of human capital, for example, focusing on reforms which are intended to have pervasive results, such as the establishment of qualification frameworks, outcomes-based curricula, and skills sector councils. The ambition of bringing about system change has encouraged the ETF to prioritise interventions that address policy-making and policy-makers. This has resulted in the following interconnected types of activity:

- Monitoring of policy to track progress with relation to both EU and national objectives
- Creation of robust evidence to inform policy
- Policy dialogue, to test and extend policy generation, taking into account developmental history
- Supporting the development of the capacity of decision-makers, experts and institutions who shape policies
- Supporting EU Directorates, Delegations and bodies in actions relevant to human capital development, for example, programming development aid

However, the ETF operates within the context of the EU's external relations policy which means that ETF expertise is also deployed to complement the work and resources of EU Delegations and of other EU development projects. Consequently, the ETF has the opportunity not only to address policy-making but also to support the programming and occasionally the evaluation of large-scale development projects.

The ETF has followed EU policy statements (European Commission, 2013) and international research (OECD, 2005) in viewing teacher development as a lever for educational improvement. The ETF has mobilised experts in teacher development who have sought to support Europe's neighbours in reforming their systems of teacher and trainer professional development. ETF has also tended to focus on continuing rather than initial teacher professional development, and, in addition, it has sought to work closely with national reform strategies, so that ETF's initiatives

towards teacher professional development have been linked to other reforms, such as curriculum or qualification reforms. This is perhaps because ETF has, over time, placed emphasis on working through policy dialogue to achieve enduring "systemic change", rather than technical assistance. Further, initial teacher education is, in most countries, the domain of higher education and therefore more difficult to influence than continuing education which is seen as part of the TVET system.

To support the ETF's work in this domain, we distinguish four types of activity:

1. Projects

Prior to 2001, the ETF served primarily as an agency for administering EU projects. During this phase, teacher development was sometimes a focus, for example, within projects in the Tempus, Phare, Tacis and CARDS programmes (European Training Foundation, 2004). Subsequently, from 2007 to 2009, the ETF initiated a series of action research projects in Southeast Europe dedicated to exploring and promoting horizontal or peer learning for adult professionals, in particular for teachers (Nielsen, 2011). The ETF LEARN project included teacher training, a community of practice, evaluation and the promotion of an improved model for teacher professional learning. A similar philosophy underpinned a multi-annual programme of trainings and meetings that the ETF supported in five Central Asian countries—with a particular focus on building and sustaining a community of practice for Vocational School Directors (ETF, 2016). Neither of these projects directly addressed "systemic change"; however, in both cases the activities were intended to help prepare for large-scale reform proposals—which might then receive backing from national decision-makers, possibly with support from foreign donors.

2. Support for Policy Development

Some of the ETF's partner countries have themselves prioritised particular policies for teacher or trainer professional developments, and they have negotiated assistance from the ETF. For example, the ETF provided support for design, piloting and legislation to bring about the establishment of school-based professional development coordinators in Albania (ETF, 2019a, b) and to design and establish training for supervisors of work-based learning in Montenegro. In the past, this kind of work has usually taken the form of technical expertise: national or international experts are tasked with evaluating and analysing needs, writing norms, drafting tools or training modules. These have usually been small-scale interventions; however as policy development can be slow, they have usually lasted a few years.

3. Monitoring

Parallel to these processes, the ETF has sought to integrate the issues of teachers and their professional development into an analytical review of the development of each country's education and training system. Starting in 2000, after the Copenhagen and Accession Processes, the ETF frequently contributed to the monitoring of reform of TVET systems, including teacher development, in particular regions and countries. From 2010 onwards, teaching and professional development became one dimension of the analytical framework that structured the ETF's own

comprehensive, international policy monitoring exercise, the Torino Process. This large-scale, 18-month monitoring exercise follows a 2-year cycle and currently involves 25 countries. Incorporating research into educational performance, such as that published by the OECD (OECD, 2005), the Torino Process included the quality of teachers and their performance as important elements of the education and training system which help explain educational outcomes. The Torino Process is intended to mobilise decision-makers and stakeholders in participating countries to gather, analyse and reflect upon policies and their implementation. It includes regional and international analyses that are intended to support policy sharing and learning. Between 2015 and 2000, the ETF worked closely with Cedefop (European Centre for the Development of Vocational Education) to monitor the progress of member states and candidate countries with regard to the five Medium-Term Objective (MTO) defined in the Riga Conclusions. The fifth MTO addresses the professional development of teachers, trainers and mentors. The monitoring tracked policy formation and implementation and the results were reported in a report published in 2020 (Cedefop & ETF, 2020).

4. Programming

The ETF is routinely consulted by various EU institutions with regard to the design of educational support programmes, for example, in relation to the Education Eastern Partnership (EAP) and Instrument for Pre-Accession Assistance (IPA) programmes of support for Eastern and Southeast Europe, respectively, but also in relation to educational development aid for Central Asia, Turkey and the South and Eastern Mediterranean. The ETF offers advice on priorities, targets and modalities, drawing upon the experience that it has built up through both projects and systemic monitoring. As the ETF has relatively limited resources, it cannot fund substantial teacher training programmes of training itself. However, as an advisor to officials working in Directorate General (DGs) Enlargement and to other DGs and EU agencies it has, to some degree, been able to inform how multimillion-Euro development budgets are deployed.

In summary, the ETF has chosen to address teacher development in TVET because it has become a policy priority for the EU, which is supported by a consensus amongst experts and researchers. The ETF has tried to keep an overall focus on system and policy-level issues, but has nevertheless regularly taken the opportunity to conduct bottom-up action research and pilot projects and, when the opportunity arose, to provide advice to other EU agencies supporting wider educational reforms that include teacher development.

In the last couple of years, the ETF has undertaken a strategic review with a view to defining its aims for the next 7 years (ETF, 2020). The ETF will continue to define its mission as contributing to the development of human capital; however, the new strategy places a greater emphasis upon a broad understanding of human capital that encompasses key competences, informal and lifelong learning as well as vocational education and training. There is a renewed emphasis upon making use of and sharing applied knowledge, know-how and innovation in order to encourage improvements in education and training systems. This is accompanied by a readiness to collaborate

with a greater range of national and international partners, to work through networks and to exploit the potential of digital and other educational innovations.

8.3 ETF's Framework for Systemic Development of Professional Movement

One challenge faced by the ETF has been to maintain a focus on strategic and system-wide issues of teacher development while, at the same time, responding to particular needs and taking advantage of opportunities for reform and improvement as they arise. In this section, we explore how the ETF has tried to develop a systematic review of continuing professional development (CPD) provision but also how it has sought to make this review serve the inevitably piecemeal, incremental process of reform.

The ETF has worked to articulate a set of principles that could be operationalised to evaluate the operation of a system of professional development for vocational teachers and trainers. The current thinking on this operationalisation is set out in ETF's Position Paper on CPD (ETF and Stanley, 2016a, b). The principles or building blocks are drawn from a review of scientific research, policy syntheses and practical studies into teacher development and teacher development systems, including those conducted by OECD, Eurydice, ILO, UNESCO and European Union institutions (see Table 8.1).

These principles provide a functional framework—they define the functions that one would expect to find in a fully functioning professional development system. For example, we can expect that there will be some kind of regulatory framework that defines rights, duties and procedures and some kind of strategy that defines, over the midterm, how the system will improve and develop. While it is perhaps obvious that there should be some process of needs identification and analysis, it is equally important that there is a fair and efficient process whereby training opportunities are allocated to particular schools and teachers. Similarly, it is widely understood that providers of teacher training have a certification of quality assurance, but it is less well understood that the system of professional development should be dynamic and responsive so that training organisations and training offers are renewed to meet the changing training needs of vocational teachers.

In order to test out and apply this framework, the ETF designed and carried out a comparative study of professional development systems. The methodology included interviews, a literature review and a teacher and trainer survey. The study was carried out in seven countries in 2015 and was followed by national workshops to validate and disseminate findings. Revised national reports were published in 2016 followed by a comparative report later in the year (cf. ETF and Stanley, 2016a, b).

This research exercise was repeated in 2018 across nine countries. Final versions of the reports were published in 2020. The research is intended to help policy-makers to review the impact of current policies and also to inform policy-making. As

Table 8.1 Building blocks to establish a world-class CPD system

Building block	Elaboration
Legal framework	Legal framework should empower stakeholders and secure consistent, inclusive, equitable and coherent provision which can be adapted to changing needs. While CPD can be made mandatory, this is not necessary in order to generate implementation, e.g. Scandinavia
Governance	Systems of governance should be designed to make decision-making responsive, inclusive, equitable, transparent and based on evidence. Subsidiarity and multilevel approaches are ways of improving governance.
Identifying and communicating the needs and priorities that CPD will address	Needs and priorities should feed into the design of the offer in a timely manner to ensure that CPD is responsive to local variations, to change and to policy-making
Distribution of CPD offer to organisations and to individual teachers and trainers	Allocation (and design) of CPD should take account of individual, organisational and system needs, including those of end-users (leaners, employers)
Quality assurance (QA) of programmes and providers	QA may include systems of accreditation in relation to providers, programmes and certification
Provision and design are sufficient, fit for purpose, responsive, equitable and efficient	Provision can be improved through investment, collaboration, capacity building, competition, innovation and evaluation. Design may be supported by professional standards or a competence framework for teachers and trainers
Funding is adequate in relation to policy commitments and efficiently channelled and monitored	The costs of CPD need to be shared in a manner that recognises social and private costs and benefits. Funding methods should support efficiency
Recognition, accreditation and valorisation of CPD: Users understand how CPD will help them to reach their goals	CPD is valued by teachers and trainers because it serves to improve their own professional performance and is externally recognised, for example, in relation to career progress, professional status, salary or through formal accreditation
Evaluation and information	The impact of CPD should be made clear and should inform decision-making at national, organisation and individual levels. Planning and reform should be informed by knowledge of current and past provision, including data on distribution

Source: ETF and Stanley (2016a, b)
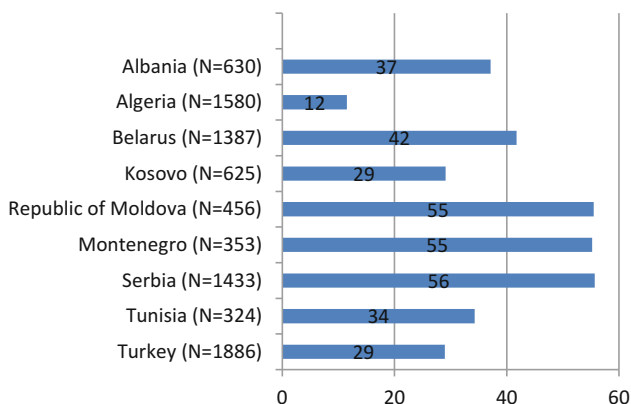
Fig. 8.1 Percentage of all surveyed vocational teachers that completed at least 30 h continuing professional development over the last 12 months ($N = 8674$). Source: ETF et al. (2021)

part of the dissemination of the findings, stakeholders in each country were invited to prioritise and evaluate the practicability of recommendations. In the final version of the reports, those recommendations that are judged most urgent and most practicable are highlighted. In this way each report not only reports on the extent to which the CPD system is complete and functioning effectively, but also offers an indication of how key stakeholders want to move the system forward.

The comparative report includes indicators on how well CPD systems in different countries are performing (ETF et al., 2021). These include a simple measure of participation (i.e. the percentage of vocational teachers that participated in any kind of professional development over the last 12 months) and also a measure that takes into account the duration of professional development. This is important because the research shows that some countries, such as Tunisia, Moldova and Algeria, dedicate a relatively large amount of training to a relatively small proportion of teachers, namely, to beginning teachers who are undergoing training to meet an initial formal qualification.

The following chart (see Fig. 8.1) shows the percentage of vocational teachers in each country that completed at least 30 h of training over the last 12 months. This kind of analysis, based on representative samples, can and does inform the decisions of policy-makers and donors when setting priorities and designing action plans.

However, some caution is needed with regard to operationalisation. The principles offer a framework for review and diagnosis rather than a blueprint for design. Analysis of different TVET systems reveals that they may have quite different processes and institutions that perform equivalent functions. For example, in Belarus and Tunisia, there are central national TVET teacher training agencies which, for the most part, are monopoly providers of CPD for TVET teachers. In other countries, such as Serbia and Albania, national agencies act as regulators, while CPD is provided by other actors, for example, businesses, universities, NGOs, etc. System improvement usually starts from the status quo, not from a blueprint, so the operative

question is to evaluate how well national institutions are working and how they might be improved. In this case, it is a matter of both understanding the processes by which training offers are made and also evaluating whether in fact these offers do meet the needs of TVET teachers and the wider TVET system.

Working with local researchers, government departments and agencies over 5 years, the ETF has helped to build capacity for evidence gathering and exploitation. The ETF has been able to improve the robustness of the methodology and the completeness of the information. In order to initiate policy dialogue, it is necessary to have a discussion which is informed by a detailed and up-to-date understanding of how institutions and processes are intended to operate and how they really operate and to include measures of performance which are credible for stakeholders in this discussion. Surveys of teachers and principals offer reasonably reliable indicators of the extent to which TVET teachers are participating in different kinds of CPD, and policy-makers and practitioners are thus able to judge how well their system performs in comparison to similar and different systems and, furthermore, how well the system is performing over time. So for example, ETF's analysis suggests that while Belarus and Tunisia share a similar institutional model of provision, the national TVET training agency in Belarus delivers more CPD than that in Tunisia. On the other hand, Serbia's system of multiple providers raises interesting questions for the monopoly provider in Belarus. Policy discussions can also be informed by feedback on implementation: Montenegro achieved the same level of participation as Serbia (55%) in 2018—however, the comparative survey shows that Montenegro made greater progress over time and participation increased between 2005 and 2018 from 29% to 55%, while in Serbia it remained unchanged.

Feedback from participants suggests that these studies have stimulated policy discussions and, over time, are contributing to more critical, better informed policy-making. However, the influence of research upon policy-making is not straightforward. It is not easy to sustain the discussions about policy that are stimulated by the reports. The policy agenda is often overly full, and, of course, the reform is constrained not just by lack of evidence but also by the lack of resources and governance issues. One important lesson from ETF's work has been that it is desirable to try to engage stakeholders and practitioners in policy discussions about TVET professional development. If vocational teachers and trainers, principals and employers are represented in the review of implementation and the formulation of policy, then more weight will be given to their interests and perspectives. This is true not only at national but also at local and institutional levels.

8.4 ETF's Demonstration Projects

From 2015 to 2017, the ETF supported 14 demonstration projects which were designed to support policy implementation in the region of Southeast Europe and Turkey. The approach was to identify small-scale CPD initiatives that were helping to implement existing national policies for CPD for TVET. The ETF supported the

initiatives through expertise, small-scale funding, marketing and evaluation. The demonstration projects were sometimes led by education ministries, but in most cases they were led by other actors: teachers, private training organisations and educational researchers. In all cases, the projects were expected to build partnerships between stakeholders to encourage a collaborative approach to CPD provision and also to encourage greater stakeholder contribution to policy implementation.

> A demonstration project is a short-term, small-scale practical activity, which is designed to demonstrate exemplary modes of practice to practitioners and, at the same time, to inform policy-makers on how and whether particular policies may be implemented or improved (ETF, 2019a, b).

The projects each received only €10,000 of funding for 1 year of work and the beneficiaries usually numbered from 50 to 100 teachers distributed across 5 to 10 vocational schools. Perhaps the most remarkable success of the demonstration projects was the manner in which some of them mobilised the leadership, creativity and energy of teachers. The projects were able to identify teachers who were ready and able to set up communities of practitioners—groups of teachers with shared ideas about how they want to change their practice and a readiness to collaborate to make this happen. For example, in one region in North Macedonia and another in Turkey, projects headed by teachers put into place local systems of teacher training, digital content development and cloud-based sharing. These enabled hundreds of teachers to teach and collaborate digitally using two open source learning management systems (Moodle and Sakai) (ETF, 2019a, b). Professional development was one dimension of this community of practitioners; however, there are other dimensions: in these projects the community was empowered because it possessed some resources of its own, as well as effective leadership, support from management and peers and a shared readiness to innovate.

The projects that, at least in the short run, had most influence on policy were those that coincided with a key policy change and which took place at the right moment in the policy cycle. For example, a scheme for supporting schools to set up placements in industry for teachers in Montenegro aligned closely with national priorities so that, after the pilot, it could be rolled out nationally and then given formal accreditation.

The project was evaluated, confirming that demonstration projects were most successful when:

1. CPD activities are extended over time (at least 6 months), embedded in schools or training centres and directly linked to teaching practice;
2. projects are coordinated with the political cycle so that they visibly enact a declared policy which gives status and relevance to the project and accompanies the decision-making process;
3. national ministries or agencies authorise and contribute to the project but ownership is shared with practitioners and training institutions that are motivated to make implementation succeed;

4. CPD activity is recorded and shared through training materials, guidance and tools so that the new practice is shared and open to discussion and criticism;
5. teachers and trainers have the opportunity to grow professionally, to work collaboratively and to act as mentors and peer educators;
6. projects are supported by and through formative evaluation, so that new approaches are tested and revised (ETF, 2019a, b).

The demonstration projects provided evidence of how small-scale projects can act as pathfinders for larger reform. They provide concrete examples that inspire and reassure policy-makers and practitioners. They help to ensure that innovation and reform builds on and responds to existing realities and mentalities—so that objectives are credible and teachers, principals and trainers are not overly challenged. Nevertheless, there are difficulties with sharing and replicating the success of such initiatives. Projects are time-consuming to set up and administer. There is an inherent risk that by selecting and supporting the most dynamic and ambitious teachers or schools, projects could contribute to an increase in inequality education. Teachers and trainers are often relatively poorly paid, and some are not motivated to take on additional tasks or to change the way they work, particularly if they do not believe that this additional work will benefit their careers. Professional development, communities of practice and opportunities for innovation can increase motivation for many, but structural changes to careers, salaries, management and professional ethos are also necessary. With these caveats in mind, the demonstration projects provide evidence that opportunities for projects to develop CPD will help to bring about effective policy implementation providing that projects are pertinent to policy, that policy is responsive and that implementation can be designed so that, over time, many other beneficiaries will have opportunities to exercise leadership and innovate. The European Commission aims, through its ET 2020 educational working groups, to provide a shared vision for professional development and to gather and disseminate good practice examples of professional development that helps to realise this vision. Indeed, three of the ETF's demonstration projects featured as good practices in the European Commission's recent guidance on teacher professional development, Teachers and Trainers Matter (ETF, 2020; European Commission, 2018).

8.5 Professional Development and COVID-19: Responding to a Crisis

In 2020 the world was convulsed by the appearance of COVID-19—leading to the shutdown of the much of the world's education and training activity along with much of the economy. Through dialogue with its partner countries, the ETF identified three priority areas where policy-makers and practitioners were seeking information, advice and practical solutions in April 2020. These areas were assessment, digital and online learning and training and support for teachers.

ETF immediately conducted a mapping exercise to find out how its 27 partner countries were responding: what strategic and regulatory decisions had been taken, what support and training was being provided, what modes of distance learning were in operation and what levels of participation were being achieved. Drawing on this mapping, in conjunction with what was already known about professional development and support in these countries, the ETF has embarked on a series of webinars and publications that are intended to accelerate policy learning—helping policy-makers and stakeholders to become aware of alternative strategies and to inform evaluation about whether enough is being done and about what has been achieved (SVT, 2020).

The Mapping Report provides a snapshot for the state of play in the implementation of digital learning in the TVET sector in May 2020 (ETF, 2020). It confirms that the lockdown of schools and colleges has resulted in an extraordinary amount of professional learning for many school teachers, which has enabled perhaps half of them to switch from classroom teaching to teaching digitally at a distance. We know that online CPD, support from peers and open learning have assisted teachers to make these changes. In some countries perhaps 50% of school teachers have transformed their mode of teaching in just 8 weeks. However, the ETF's report is cautious about quality, impact and participation. In most countries, vocational education and vocational teachers have not been priorities. Most vocational teachers in many countries have received little training or support for digital and online teaching, and they are also not currently providing distance vocational learning to their students. Tools and procedures to support practical learning at a distance are only beginning to emerge. COVID-19 has led to a massive disruption of work-based TVET worldwide—but in most of the countries where ETF operates, it has been completely halted. Professional development for managers and supervisors of work-based learning will be essential to permit safe, productive and educational participation for interns and apprentices.

ETF is addressing the crisis by helping to share success stories, making experience and expertise more widely available, encouraging collaboration and drawing attention to the needs of teachers and learners. However, over time ETF aims to learn from the crisis and to help countries to prepare for the mid and long term. With this in mind, ETF is launching a pilot project to develop a tool to improve needs assessment in relation to digital competences for TVET teachers and trainers. The pilot will build on the DigiComEdu Framework of Competences (FUCCI, 2016). The exercise will be carried out in partnership with a number of countries to ensure that the tool is adapted to each context and is practicable for practitioners.

8.6 Conclusion and Next Steps: Pedagogical Innovation— Research and Experimentation

This account of the ETF's activity towards supporting the continuing professional development of vocational teachers and trainers shows that the ETF has sought to develop and operationalise models of systemic development, employing policy discussion and review, to bring about incremental improvements to policy and implementation. Parallel to these developments, ETF has tried to assist implementation by stimulating small-scale improvements and innovations, with a view to mobilising actors and finding new pathways. These have worked in a more piecemeal way, but they have demonstrated the potential advantages that come from empowering teachers, encouraging partnerships and bringing in new actors. In a few cases, demonstration projects have served to advance national developments in CPD, and, in almost all cases, they have fed into national-level policy discussion. The ETF has also responded to particular one-off requests for expertise and advice in relation to policies and actions addressing the professional development of teachers and trainers which arise from particular countries and particular EU institutions. Most recently, the ETF has joined national and international governments and institutions to address the challenge of COVID-19 and to try to learn from the crisis.

Currently, European Union VET policy statements tend to situate the professional development of VET teachers as part of a larger, systematic programme of support and institutional development. The European Union's Education and Training 2020 VET Working Group's forthcoming publication on innovation and digitalization in VET builds on the experiences of EU member states, associates and candidates, to place teaching and learning at the heart of Europe's strategy to exploit the potential of innovation and digitalization (ETF, 2020; European Commission, 2020). According to the report, training for TVET teachers is critical for promoting appropriate pedagogies, andragogies and learning technologies across different learning environments. However, the report argues that formal training is only one way to reshape and support teaching and learning and that other dimensions include organisational change, leadership, networks, quality assurance, partnerships and so on. Similarly, the EU's recent statement on teachers, which explicitly relates to teachers of academic and vocational programmes of all ages, treats CPD as part of a programme of support that addresses status, well-being, motivation, engagement with employers and professional autonomy. This connected and systemic approach places particular emphasis on teachers' voices and reflection and research in shaping continuing professional development. Further, it calls for a variety of training models for teachers (Council of the European Union, 2020). Similarly the European Commission's European Skills Agenda for sustainable competitiveness, social fairness and resilience places training for TVET teachers within the context of the development of centres of vocational excellence. Likewise, the ETF has, for some time, sought to address the CPD of VET teachers and trainers in the context of institutions, labour markets and governance. The ETF wants to provide policy

advice for teachers in the context of joined-up support to the development of VET systems, actions which are coherent, sustainable and contextualised.

In its strategy for 2027, the ETF has set itself the ambitious goal of becoming a knowledge hub for the domain of human capital development and has identified the sub-theme of innovation in vocational teaching and learning as one of three priorities (cf. ETF, 2020). The ETF has designed a 3-year programme to bring this about: creating new learning. This programme envisages a systematic review and interrogation of the current state of knowledge and practice in relation to key dimensions of teaching and learning with a particular focus on TVET and lifelong learning: pedagogies, educators, environments, curriculum and technologies. This research will help to develop a comprehensive and systematic understanding of the purpose, character and benefits of different kinds of innovation with relation to different learning contexts and different phases of lifelong learning. It will be accompanied by a critical analysis of the pathways and ecologies of existing and emerging innovations in vocational teaching and learning—in order to help to bring about knowledge, know-how, tools and more capability for successful and worthwhile innovation.

Of course, the ETF will still have to reconcile systemic and particular approaches to professional development. However, by focusing on innovation to address new skills and lifelong learning, it will be able to concert its efforts in relation to a driver that has the potential to unite actors and stakeholders. By integrating research into the professional development of TVET teachers into a larger research programme relating to other dimensions of teaching and learning, the ETF aims to increase the range and the effectiveness of the solutions and improvements that it can promote. With more resources and a multi-annual programme, the ETF plans to explore more thoroughly and widely which solutions and improvements are relevant to vocational teachers and learners in different schools and workplaces in different countries, what benefits they have, under what conditions.

Lastly, the ETF intends to collaborate with other development agencies, research and national and international training institutes, in the development, organisation and application of knowledge about innovation in teaching and learning. The ETF does not anticipate a universal model or a simple set of principles for excellent professional development for vocational teachers, but rather a network of practices and communities. These communities will be held together by shared, developing scientific knowledge and shared experiences and dialogue. However, the practices and communities must continue to be distinctive because they must adapt to the needs and purposes of the economies and communities that they serve.

References

Cedefop, & ETF. (2020). *Enhancing European cooperation in VET: Outcomes of the Riga cycle*. Riga.

Council of the European Union. (2009). *Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training ('ET 2020')*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009XG0528(01)&from=EN

Council of the European Union. (2020). *Teachers and trainers for the future*. Council of the European Union (2020/C 193/04). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=uriserv:OJ.C_.2020.193.01.0011.01.ENG

EC, EU, & MESRL. (2015). *Riga Conclusions on a new set of medium-term deliverables in the field of VET for the period 2015–2020, as a result of the review of short-term deliverables defined in the 2010 Bruges communiqué*. https://eu2015.lv/images/notikumi/VET_RigaConclusions_2015.pdf

ETF. (2016). *A sense of community*. Live and Learn. https://issuu.com/etfeuropa/docs/live_learn_issue35/12.

ETF. (2019a). *Continuing professional development for vocational teachers and principals in Albania 2018*. ETF. Available: https://openspace.etf.europa.eu/sites/default/files/2020-01/Albania%20CPD%20survey%202018_rev_0.pdf

ETF. (2019b). *European Training Foundation, Stanley J. The Power of Demonstration: Supporting reform of professional development for vocational teachers and trainers*. https://www.etf.europa.eu/sites/default/files/2019-10/the_power_of_demonstration.pdf

ETF. (2020). *ETF strategy. 2027*. https://www.etf.europa.eu/sites/default/files/document/ETF%20STRATEGY%202027%20FINAL.pdf

ETF, & Stanley, J. (2016a). *Continuing professional development for vocational teachers and trainers in the Western Balkans and Turkey.pdf* [Internet]. ETF. https://www.etf.europa.eu/sites/default/files/m/CA7155C1B6FEA545C125829D005082D6_CPD_Western%20Balkans%20and%20Turkey.pdf

ETF, & Stanley, J. (2016b). *Position paper on continuing professional development for VET teachers and trainers*. ETF.

ETF, Stanley, J., & Jansova, E. (2021). *Understanding vocational teachers—An international study*. ETF. https://www.etf.europa.eu/en/publications-and-resources/publications/listening-vocational-teachers-and-principals-results-etfs

European Commission. (2002). *Declaration of the European Ministers of Vocational Education and Training, and the European Commission, convened in Copenhagen on 29 and 30 November 2002, on enhanced European cooperation in vocational education and training*. http://libserver.cedefop.eu.int/vetelib/eu/pub/commission/dgeac/2003_0026_en.pdf

European Commission. (2013). *Supporting teacher competence development*. https://ec.europa.eu/assets/eac/education/experts-groups/2011-2013/teacher/teachercomp_en.pdf

European Commission. (2018). *Working Group on Vocational Education and Training. Teachers and Trainers Matter: How to support them in high-performance apprenticeships and work-based learning.12 policy pointers*. European Commission. https://op.europa.eu/en/publication-detail/-/publication/eab2140b-67d3-11e9-9f05-01aa75ed71a1/language-en

European Commission. (2020). *VET Working Group. Innovation and digitalization: A report of the ET 2020 Working Group on Vocational Education and Training (VET). Eight insights for pioneering new approaches*. https://ec.europa.eu/social/BlobServlet?docId=23274&langId=enET

European Parliament, & Lisbon European Council. (2000). *Presidency conclusions—23 and 24 March 2000*. https://www.europarl.europa.eu/summits/lis1_en.htm

European Training Foundation. (2004). *Ten years of the European training foundation: 1994–2004*. EUR-OP.

European Union (Belgian Presidency). (2010). *Communiqué of the European Ministers for Vocational Education and Training, the European Social Partners and the European Commission, meeting in Bruges on 7 December 2010 to review the strategic approach and priorities of the Copenhagen process for 2011–2020*. https://www.cedefop.europa.eu/files/bruges_en.pdf

Fucci, M. (2016). *Digital competence framework for educators (DigCompEdu)* [Internet]. EU Science Hub - European Commission. https://ec.europa.eu/jrc/en/digcompedu

Nielsen, S. (2011). *European Training Foundation. Learning from "Learn": Horizontal learning in a community of practice in South-Eastern Europe*. Publications Office.

OECD. (2005). *Attracting, developing and retaining effective teachers—Final report: Teachers Matter*. OECD. https://www.oecd.org/education/school/attractingdevelopingandretainingeffectiveteachers-finalreportteachersmatter.htm

SVT. (2020). *Supporting vocational teachers under the lock-down*. Open Space. https://openspace.etf.europa.eu/blog-posts/supporting-vocational-teachers-under-lock-down

Internet

https://ec.europa.eu/eu/social/main

Chapter 9
International Framework for a Master's Degree for the Professionalisation of TVET Teachers: Potentials for International Development Cooperation

Frank Bünning and Ulrike Schmidt

Abstract The paper describes the fundamental elements of the international framework curriculum for a master's degree for teachers and lecturers in Technical and Vocational Education and Training (TVET). Based on this framework, the structures of an international master's degree for TVET at Magdeburg University are explained. On the basis of international degree structures, the authors explain how the framework curriculum enhances international development cooperation in TVET and supports the development of TVET key staff, demonstrated with examples from the German Development Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ) and GIZ TVET Academy.

9.1 International Context

Ongoing globalisation and resultant changes in the qualification requirements of skilled workers require a unique framework for initial TVET teacher qualification as well as a system for their further education and training.

In contrast to in-service TVET teacher[1] education and training, the approach of pre-service training—whether at the bachelor or higher academic level—has only been implemented in very few countries in the world. These are countries where systems, existing institutions and qualified staff with relevant expertise and knowledge allow for the offering of an initial TVET teacher qualification at an academic

---

[1]The paper uses the term "teacher" for all teaching staff in TVET.

F. Bünning (✉)
Faculty of Humanities, Otto-von-Guericke University Magdeburg, Magdeburg, Germany
e-mail: frank.buenning@ovgu.de

U. Schmidt
Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ GmbH, Bonn, Germany

level. In the majority of countries, however, pre-service training is not an existing reality, as a direct result of the aforementioned necessary institutional and human resource structures which often do not exist. A lack of funds or a lack of awareness of the usefulness of pre-service training also should be mentioned, but these are mostly not the reason why an establishment of initial TVET teacher qualification has been prevented (cf. Subrahmanyam, 2020).

The "global shortage of quality TVET personnel" arises out of several weaknesses in the system, such as the low esteem of the profession, the lack of available career pathways, non-functional recruitment systems and poor salaries (ADB, 2014; Rawkins, 2018). Countries that are going through a TVET reform process will have to consider putting a recognised and systematic initial and further TVET teacher qualification in place, on account of the fact that corresponding functional mechanisms, for instance, appropriate salaries, also have to be updated.

As an approach to an internationally recognised basis for a TVET teacher training system, a framework for initial TVET teacher training can be introduced. This can then lead to higher quality through joint qualification programmes and cooperation among TVET stakeholders throughout the world. This enables countries to learn from each other, so that best practice examples can be adopted and adapted according to the requirements of each country. This offers advanced opportunities to enhance the quality of TVET in general and to provide attractive career pathways for TVET teaching staff. This article describes the objectives of the "international framework curriculum for a teacher's and lecturer's master degree for TVET" proposed by UNESCO for the international recognition of degrees in TVET teacher qualification. Additionally, the description of a model master's degree course and the framework for curricula are presented, in addition to organisational requirements. The field of TVET has been an area in which cooperative international degree programmes are still rare, whereas, in other domains, such as business administration and modern sciences such as bioengineering, the cooperative delivery of degree programmes has been practised more frequently. The master's degree for TVET teacher training which has been implemented at Otto von Guericke University in Magdeburg represents an example of how the UNESCO standard framework curriculum can be successfully realised.

This article, further includes perspectives on approaches to TVET teacher education and training from the position of German development cooperation. It is well described how institutional linkages can be harnessed and anchored for a more sustainable process of qualifying pre- and in-service TVET teachers and lecturers with the aim of improving their future-oriented, central roles in the TVET system.

9.2 International Framework for a Master's Degree for TVET Teachers and Lecturers

9.2.1 Objectives of the Framework Curriculum

Ongoing debates about TVET teacher training centres and the quality of their delivery reveal that the professional development of TVET teachers is pivotal in guaranteeing the economic performance and competitiveness of a country in the world market. Therefore, "education, training and human resources development has become of outstanding importance for a sustainable and competitive development [. . .]" (UNESCO-UNEVOC, 2005). These quality criteria can be found in the model master's degree course described in the framework, which offers a basis for supporting higher education institutions when they establish master's degree programmes in TVET education and teacher training. Furthermore, due to its international alignment, the framework curriculum provides a basis for potential international scientific cooperation. Another important objective defined in the international framework curriculum is to provide a basis for the international exchange among students, lecturers and scientists from diverse countries which allows them to work together on developments in TVET. Additionally, the international recognition of student credits is enhanced since the model master's course provides a basis for transferable modules and the respective credit points (UNESCO, 2004). This can lead to a better harmonisation of master's degree courses in TVET teacher training at the regional and international levels.

9.2.2 Structure of the International Framework Curriculum

The framework curriculum defines the modules as well as their contents. Furthermore, it sets the criteria for passing a module. The framework curriculum provides for five areas of study. These comprise studies in education, TVET and vocational disciplines, studies of the vocational discipline and its didactics, specialised studies, the master's thesis and practical studies as well as internships.

The first area, studies in education, TVET and vocational disciplines, encompasses 39 credit points in total. This study area is further divided into basic studies and advanced studies. Foundational studies are included in module 1, which deals with fundamental knowledge, theories and structures of education as well as TVET and human resources development (HRD), and module 2, which explores shaping TVET in connection with the vocational discipline. The advanced studies consist of module 3 and 4. Module 3 includes teaching and learning in exemplary fields of practice, and module 4 deals with the management and evaluation of TVET and workforce development.

The second area in the curriculum, covering the vocational discipline and its didactics, encompasses 18 credit points in total. It is also divided into basic and

advanced studies. Module 5 covers the fundamentals of the vocational discipline I, and module 6 focusses on vocational didactics in the discipline I at the advanced stage.

The third area, specialised studies, is comprised of modules 7 and 8 and has a volume of 36 credit points in total. Both modules offer the possibility of specialisation in the vocational discipline (module 7) and in vocational pedagogy (module 8).

The master's thesis, for which 15 credit points are granted, will be developed based on a topic selected by the student. For the period of practical studies as well as for internships, students earn 15 credits. The aim of the practical studies is the planning and organisation of learning, teaching and training (UNESCO, 2004).

9.3 Master's Degree Course in TVET According to the International Framework Curriculum

9.3.1 Description of the Master's Degree Course

The target group for an internationally recognised master's degree course are students with an undergraduate degree (comparable to bachelor's degree) in vocational education. This means that teachers, trainers and lecturers are given the opportunity to earn an internationally recognised master's degree, which enhances their knowledge of a special vocational discipline and its pedagogy and will give them the opportunity to pursue a well-respected career path. The degree issued to graduates will be a Master in Technical and Vocational Education and Training (TVET) with a length of study of 90–120 credits, based on national regulations, with one credit point for each 25–30 h workload. In order to take part in this master's course, students have to have earned a degree equivalent to the competencies gained at the bachelor's degree level. The framework curriculum encompasses 12 vocational disciplines which can be covered differently throughout the course of study. Thereby, one topic can be incorporated into another vocational discipline depending on regional and national requirements. An example of a specific vocational discipline is the area of "production and manufacturing", which offers manufacturing, mechanical engineering design, supply/environmental engineering and automotive engineering as possible areas of study (UNESCO, 2004).

9.3.2 Organisational Requirements

In order to be able to implement the framework curriculum, certain organisational requirements have to be met. A central principle in the framework curriculum is that the master's degree course has to be offered by a higher education institution or a consortium of such institutions. Furthermore, a certain amount of research capacity

and capabilities have to be in place. The same holds for the qualification of the teaching personnel at the delivering academic institutions (universities). Additionally, several occupational disciplines or domains should be offered at an organisational entity or faculty. A further requirement of this framework is that international research cooperation has to be incorporated into the course (UNESCO, 2004).

9.3.3   Implementation According to the Proposals of the International Framework Curriculum

The course of study is based on the "international framework for a master degree for TVET teachers and lecturers" (UNESCO, 2004) published by UNESCO and can partly be completed in studies abroad offered by international partner universities of the Otto von Guericke University. This academic profile focuses on the design of vocational training processes and includes modules in vocational didactics, curriculum and media development, vocational training management and vocational training evaluation. Practical studies offer the opportunity to deepen the knowledge acquired in these different fields. Within the framework of optional compulsory modules, it is possible to specialise in content-related focus areas, for example, in organisational development and human resource management, education planning, in-company vocational training or in international vocational training management.

Otto von Guericke University in Magdeburg awards a Master of Science (M.Sc.) degree, while the possibility of a "dual degree" can be realised through various cooperations with international partner universities in such a way that two separate master's certificates can be obtained ["Master of Science (M.Sc.) in International Technical and Vocational Education and Training" from Otto von Guericke University in Magdeburg and another international degree from a cooperating university].

Since Otto von Guericke University Magdeburg cooperates with international partner universities, students have the opportunity to add another optional semester abroad to their studies. This contributes to further international cooperation through studies at one of the partner universities of the Otto von Guericke University Magdeburg and gives students the opportunity to learn in a different cultural environment as well as to obtain additional credit points.

The master's programme in International Technical and Vocational Education and Training consists of 120 CPs[2] earned through courses and exams. These are divided into the following fields of study:

---

[2] 1 CP corresponds to 30 h of work.

- A compulsory element of 70 CPs
- An elective element in an area of specialisation of 30 CPs
- Master's thesis which earns 20 CPs

In the subject-specific courses of study, the semester-related course load can only vary by a maximum of 3 CPs, provided that these are compensated for in the other semesters.

Modules:

Core studies:

- Basic principles of in-company vocational training and vocational didactics
- Structures and theories of vocational education
- Didactics of learning and teaching
- International comparative VET
- Management and evaluation of vocational education
- Curriculum and media development
- Practical studies

Specialisation (3 out of 4 modules)

- Organisational and human resources development
- Vocational training for sustainable development
- Methods of vocational training
- Further specialisation modules within the course offering

Master's thesis.

9.4 TVET Teacher Education in German-International TVET Cooperation

9.4.1 Organisational Framework and Background

On the basis of the challenges and opportunities for TVET teacher qualification presented in Chap. 1, GIZ, the German implementing agency for international development cooperation, has been commissioned by the Federal Ministry for Economic Cooperation and Development to support the planning and implementation of pre- and in-service TVET teacher education and training within the framework of international development cooperation in TVET. Currently GIZ runs 80 regional, bilateral or global programmes for development in TVET and/or employment (GIZ, 2020) and has recently established a TVET Academy as part of its Academy for International Cooperation. The TVET Academy implements activities for the sustainable professionalisation of TVET personnel, ranging from subject-related didactics and modern methods for teaching and learning to greening TVET, as well as TVET and digitalisation and Industry 4.0, management of TVET institutions and cooperation between TVET and the business sector.

The GIZ TVET Academy and the Otto von Guericke University's Faculty of Humanities are collaborating in a consortium, the UNEVOC Centre "TVET for Sustainable Development", pursuing the mission of promoting quality in TVET worldwide. It includes a third partner, the Fraunhofer Institute for Factory Operation and Automation, or IFF, in Magdeburg and was established in 2011 as one of only two UNEVOC Centres in Germany (Stolte, 2020).

The organisational structures described above allow the delivery of joint academic training programmes within the framework of development cooperation. The degree programme Master of Science (M.Sc.) in "International Technical and Vocational Education and Training" at Otto von Guericke University in Magdeburg, described in Chap. 3, represents a particular point of reference which can be drawn upon for further international development in the professionalisation of TVET teachers. In this regard, the UNEVOC Centre, "TVET for Sustainable Development", as per its mandate, promotes an international standard, using modular courses which offer the opportunity for credit accumulation and which lead to the acquisition of a master's degree in TVET. A master's-level degree will qualify graduates for relevant positions in the TVET system, such as for teaching and TVET management.

At present, the implementation of the initial (pre-service) training for TVET teaching staff in particular—oriented towards the international state of the art—is not widespread, especially in low- and lower middle income countries, although its key role for improving the effectiveness of TVET systems is acknowledged in the international discourse and a considerable number of countries have developed or adopted policy frameworks and strategies for the initial as well as further education and training of teachers for TVET (Subrahmanyam, 2020).

In the following sections, a practice example for the professionalisation of TVET personnel which has been implemented by the UNEVOC Centre Magdeburg will be described.

9.4.2 TVET Teacher Training Programmes in Development Cooperation

Besides in-service short-term[3] training programmes for TVET teachers, GIZ and the Otto von Guericke University Magdeburg developed programmes such as the International Leadership Trainings (ILTs), which are based on the modular structure described above. When it is implemented under the framework of GIZ bilateral TVET programmes, an ILT offers TVET personnel the opportunity to upgrade their competences for their future teaching, management and administrative tasks and responsibilities in the TVET sector of their countries. The ILT "Master Trainer in TVET" programme focuses on the target group of TVET teachers, whereas the ILT

---

[3] Short-term training programmes refer to individual non-academic training measures for in-service TVET teachers, usually with a workload not more than 180 h.

"TVET professionals" does not only focus on selected TVET teaching personnel but also on management staff and administrative personnel in TVET decision-making institutions (e.g. ministries, councils).

The format of ILT is based on the concept that competences must be consolidated by combining knowledge, skills, experiences and values. As the sustainable success of competency-driven further training is closely linked with the learning and working environment and work processes, practical studies and internships are an integral part of the ILT. In this manner, TVET professionals were enabled to observe, learn and share specific forms of work processes and practical experiences within a real-life setting and to exchange ideas with German colleagues and partners from the same sector or trade. This allowed the participating TVET professionals to reflect on their current situations and on the requirements in their home counties and institutions. The practical training sequence has been tailored to the individual work environment of the target group and was complemented with "on-the-job" support and coaching in their home countries after completion of the course programme, with the goal of supporting the transfer of new approaches.

The ILT approach maintains a strong orientation towards working processes and the related demands for new qualifications, skills and competencies of workers. Within specific modules, it creates opportunities to compare, learn from and adapt to international experiences as well as to transfer these to the framework conditions and requirements in the home country.

The overall objective of the ILT "Master Trainer in TVET" is to increase the competencies of teaching staff in TVET institutions and, thus, to improve TVET provision as well as the dissemination of modern approaches in TVET teaching in general, by training and qualifying professionals who will act as multipliers. Through the individual development of a practical project that can be transferred to their home environment, the ILT approach entails the empowerment of professionals acting as multipliers to trigger positive change in their working environment, so as to actively contribute to transforming processes in teaching within their home institutions or other TVET institutions.

The modular structure allows for flexibility in responding to the needs of different target groups of TVET. ILT modules—through their adoption of and orientation towards the international UNESCO standard framework curriculum—covers topics such as:

- Basics of vocational education and its didactics
- Practical training and didactics or subject-specific professionalisation
- Structures and theories of vocational education
- Vocational education, labour market and economy
- Management basics of vocational education institutions
- Didactics of vocational education
- Didactics of a vocational specialisation
- Teaching and learning methods
- Curriculum and media development
- Practical studies or internships

- International comparative vocational education
- Practical project (that can be transferred to own working environment)

Since this training programme is linked to the academic modular structure of the M.Sc. in "International Technical and Vocational Education and Training" from Otto von Guericke University, graduates from ILTs have gained credit points for the completion of single modules, which enables them to further proceed towards a full master's degree. Offering this opportunity, International Leadership Trainings can be considered as one steppingstone on a further career pathway for participating TVET teaching personnel from partner countries as well as for them to become able to act as multipliers.

ILTs have been piloted and implemented within the framework of several GIZ bilateral programmes, among others, in the programme "Support to TVET" in Myanmar, "Private Sector Development" in South Caucasus and for "Promotion of TVET" in Lao P.D.R.

9.4.3 Future Potential for International TVET Teacher Education

The experiences with leveraging the potential of the UNESCO's "international framework curriculum for a master degree for TVET teachers and lecturers" show the value of unlocking this further potential for modular structured in-service or pre-service training approaches to be offered to (future) TVET teachers. If institutionalised at a university, training modules bear university credits, and the completion of all relevant modules could lead to a full degree in TVET teaching as described above. For the implementation of such a qualification approach in GIZ partner countries, collaboration between a local university and a German university that offers or will offer credit degree programmes in TVET, which are designed on the basis of the UNESCO "international framework curriculum for a master degree for TVET teachers and lecturers", should be initiated.

When a local partner university with a focus on the qualification of TVET personnel needs to be identified, the acting bilateral GIZ programmes can support responsible partner institutions, e.g., in using the approach of a criteria-based university screening. The universities from the two partner countries which have been given this mandate can then take on the role of cooperatively developing and implementing the master's degree programme or even single modules that might be pre-accredited as short courses (which will need to be verified in individual cases as accreditation regulations vary among different universities and countries). A multiplier approach will facilitate the resultant qualification of university lecturers.

An MoU between an international university and the university in the partner country can, in the future, lead to a sustainable cooperation and joint development of TVET teacher and lecturer qualification, possibly culminating in their beginning Ph. D.'s, as well as in the joint provision of study programmes in TVET teaching. In the

role of facilitating the process and supporting local political and implementing partners, the German development cooperation can thus promote anchoring a professional career pathway, not only for pre-service TVET teaching and lecturing personnel in the local system but also for in-service TVET personnel. As an aspect of lifelong learning, this modular approach can also be harnessed for the sustainable in-service qualification of teachers. The institutional framework conditions should then allow the in-service TVET teachers to participate in these education and training activities in a consistent and structured way. Earning a master's degree after the completion of all modules can here be one incentive alongside the improvement of other framework conditions such as the potential for better remuneration.

The GIZ TVET Academy already supports the tailor-made development of master's degree modules, considering the recent challenges brought on by COVID-19, by transferring training content, material and delivery into online and blended learning formats. As a result, online-based and blended learning units for the TVET teacher qualification at the master's level will be developed and piloted in three different partner countries in Asia, Eastern Europe and Africa, using the emerging synergies to increase quality in the participating countries.

9.5 Résumé and Perspective

Internationalisation and global developments demand a timely cooperation that is better tailored to national specific conditions and requirements than ever before. However, the varying structures and practices in TVET at the national and global levels make international cooperation challenging.

The implementation of the UNESCO "international framework curriculum for a master degree for TVET teachers and lecturers" provides an impetus and guidelines for joint degree structures and, thus, can be seen as a milestone in international TVET cooperation. This article illustrates how this international framework curriculum is conveyed into tangible structures of pre- and in-service training for TVET teachers as well as how this can offer career pathways. The potential of international development cooperation is emphasised in this article as an increasing need for the development and establishment of internationally recognised structures for a pre-service and in-service professionalisation of TVET teaching staff has been identified. In this regard, explicit experiences around the implementation of international academic degree programmes in TVET—based on UNESCO's international framework curriculum—are currently being leveraged by the GIZ TVET Academy and the Otto von Guericke University in Magdeburg.

The multi-national master's degree programmes in TVET and further (in-service) education initiatives described in the article exemplify how the international dimension can contribute to strengthening higher educational institutes' competitiveness in a national or international context. It shows, as well, that local institutions must build ownership of these programmes and empower their personnel for the delivery of in- and pre-service TVET teacher education. Together with cooperation and

development partners, German development cooperation in TVET intends to support bilateral as well as regional cooperation processes and thus facilitate change processes that involve international standards for the improvement of TVET personnel development in the countries benefitting from these programmes.

In summary, through the collaborative development and delivery of degree courses for TVET teaching personnel, their professionalisation—oriented towards internationally endorsed standards and qualification frameworks—can become state of the art and, at the same time, local institutions can be empowered to establish registered education and training modules.

References

ADB. (2014). *Innovative strategies in technical and vocational education and training for accelerated human resource development in South Asia*. Asian Development Bank. Available: http://hdl.handle.net/11540/1429

GIZ. (2020). *Project data*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. https://www.giz.de/projektdaten/index.action;jsessionid=7EC67C1C3239822FF2F95DBD8D612730?request_locale=en_GB

Rawkins, C. (2018). *A global overview of TVET teaching and training: Current issues, trends and recommendations*. International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/%2D%2D-ed_dialogue/%2D%2D-sector/documents/meetingdocument/wcms_675275.pdf

Stolte, H. (2020). *Technical and vocational education and training for sustainable development*. UNEVOC Centre. http://www.unevoc-magdeburg.de/

Subrahmanyam, G. (2020). *UNESCO-UNEVOC study on the trends shaping the future of TVET*. UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training. https://unevoc.unesco.org/home/UNEVOC+Publications/lang=en/akt=detail/qs=6396

UNESCO. (2004). *International framework curriculum for a master degree course for TVET teachers and lecturers*. Meeting Documentation. United Nations Educational, Scientific and Cultural Organization, Beijing Office.

UNESCO-UNEVOC. (2005). *UNESCO international meeting on innovation and excellence in TVET teacher/trainer education*. UNESCO-UNEVOC, International Centre for Technical and Vocational Education and Training. https://unevoc.unesco.org/fileadmin/user_upload/pubs/Hangzhou-MeetingReport.pdf

Part II
Case Studies of Selected Countries That Are in the Process of Developing TVET into an Important Pillar of Education

Chapter 10
Training and Professional Development for VET Teachers in Vietnam

Nguyễn Quang Việt and Nguyễn Thị Kim Chi

Abstract With a population of 97 million people, and a labor force of 55 million, Vietnam needs a more robust vocational education and training (VET) system to support its economic development ambitions. Over the past decade, the strongly school-based VET system in Vietnam has made important efforts to build greater industry linkages and be more responsive to market demands. Nevertheless, shortcomings related to the quality of VET teachers are hindering progress in the VET sector. Most VET teachers lack practical skills and industry exposure, and many find it difficult to correct their skills deficiencies as a result of limited further training options and insufficient industry linkages at their own VET institutes. Against this background, and with the assistance of international development cooperation, selected VET institutes have endeavored to raise their teachers' qualifications to industry standards in specific occupations as well as to take on the role of regional centers in order to provide training for peer VET institutes in their technical and/or geographical areas.

10.1 Introduction

Prior to 1987, under the centrally planned economy, the training of workers and technicians in Vietnam was planned for by the central government in order to cater to state-owned enterprises, and the concept of labor supply and demand mismatch did not exist (Hoang Ngoc Vinh, 2002). As the country moved towards a market-oriented economy, several deficiencies came to light as the VET sector struggled to meet the demands of the market and thus fulfill its role as an instrument for

N. Q. Việt
National Institute of Vocational Education and Training (NIVT), Hanoi, Vietnam

N. T. K. Chi (✉)
Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Hanoi, Vietnam
e-mail: chi.nguyen@giz.de

147

promoting economic development (Euler, 2018). While enrolments in VET have increased considerably in the last decade, from ≈1.5 M new enrolments in 2012 (NIVT, 2014) to ≈2.2 M in 2018 (NIVT, 2020), there is ample room for improvement both in terms of quality and access to VET. The share of trained workers within the working aged population was estimated to only be ≈22% (NIVT, 2020) (≈12 M persons). Meanwhile, the World Economic Forum ranked Vietnam 115th of 140 countries for its quality of VET and 104th of 140 for its ease of finding skilled employees (World Economic Forum, 2018). The significant skills gap between VET graduates' performance and industry requirements reflects unfavorably on the system's strong focus on school-based training delivery and inadequate industry linkages.

As the VET sector strives to be more demand-driven, the need to improve capacity for VET teachers is becoming apparent. In its 2017 VET sector review, the Ministry of Labour, War Invalids and Social Affairs (MoLISA) acknowledged that VET teachers are "inadequate" in terms of quantity and "short of professional and pedagogical skills" (Asian Development Bank, 2020) in terms of quality. In the same way that VET is seen by many as a "last choice education" for youth, the VET teaching profession also fails to attract highly qualified professionals, especially those with industry experience. The lack of industry involvement at VET institutes further exacerbates the problem as VET teachers are denied the chance to keep current with industry developments. The combination of a low status of VET and low salaries for instructors has long perpetuated the "vicious cycle of low status and low quality" (Euler, 2018) among VET personnel in Vietnam.

The Vietnam VET Development Strategy 2011–2020 prescribed a list of nine solutions to bring about quality reform to the VET sector, of which two were further prioritized as "breakthrough solutions" and one as a "key solution." The "development of VET teachers and managers" was identified as one of the two "breakthrough solutions" (Prime Minister, 2012), signalling a recognition of its paramount impact on the quality of the whole VET system.

Within this context, this paper provides a review of major policies regulating the training of VET teachers in Vietnam and presents existing models of pre-service and in-service VET teacher training. The paper will also analyze a case study of a further training model for VET teachers which received international development assistance to obtain lessons learnt and recommendations for further developments.

10.2   The VET Sector in Vietnam: Structure and Governance

The vocational education and training (VET) system is an integral part of the national education system in Vietnam and is mainly comprised of three levels of qualification: elementary, intermediate, and college VET programs. Elementary VET programs are offered at vocational training centers (VTCs) and last from

3–12 months. Intermediate VET programs are offered at secondary VET schools and last either 1–2 years for upper secondary graduates (Grade 12) or 2–3 years for lower secondary graduates (Grade 9). College-level programs are offered at VET colleges for a duration of 2–3 years. Higher-level VET institutes (e.g., colleges) can offer lower-level VET programs (e.g., intermediate and elementary VET). On the 8-level Vietnamese National Qualifications Framework (VQF), VET programs range from level 1 (elementary VET) to level 5 (college). As of end of 2018, there are a total of 1948 VET institutes operating in Vietnam, ≈65% of which are state-owned (NIVT, 2020).

The Vietnamese VET system recognizes two modes of delivery, formal and continuing VET. Formal VET programs are defined as full-time, classroom-based training while continuing VET includes part-time, flexible programs, as well as in-service, correspondence, or guided self-study training. Both modes of delivery lead to degrees/certificates issued by VET institutes, as opposed to the informal mode of learning in family workshops or craft villages.

Since the end of 2016, MoLISA became the sole state management agency for VET in Vietnam, taking over a system previously overseen by both MoLISA and the Ministry of Education and Training (MoET). Nevertheless, VET governance in Vietnam is complex, as VET institutes are also run by other ministries, provincial governments, trade unions, mass organizations, and private investors (cf. Fig. 10.1).

10.3   Qualifications Requirements for VET Teachers

10.3.1   Types of VET Teachers

The VET law stipulates three categorizations of VET teachers. The first categorization classifies teachers by the nature of their teaching tasks and includes (1) theory teachers, (2) practical teachers, and (3) integrative teachers, i.e., those who provide both theory lessons and practical lessons. The second categorization specifies different denominations of VET teachers according to the level of VET institutes that they belong to, whereby those working in VET centers and secondary VET schools are called "teachers," while those working in VET colleges are referred to as "lecturers." A third categorization further organizes the range of VET teaching job titles into "teacher," "main teachers," and "senior teachers" and "lecturers," "main lecturers," and "senior lecturers" (National Assembly, 2014). The concept of in-company trainers does not exist (yet) in the 2014 VET law.

In this paper, VET teaching personnel at all the three levels, i.e., elementary, intermediate, and college, are referred to as "VET teachers."
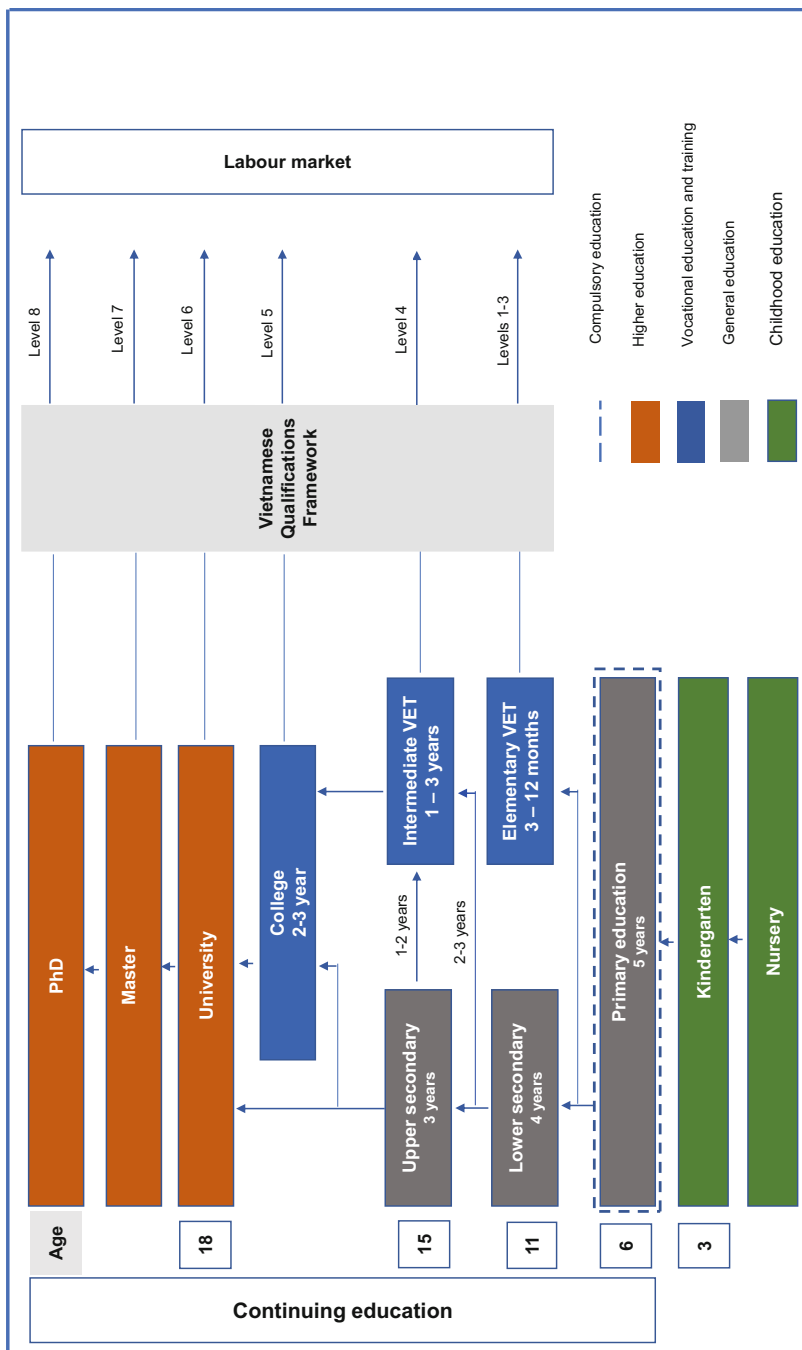
Fig. 10.1 VET in the Vietnamese education system. Source: Prime Minister (2016a, b), MoLISA, Embassy of Denmark in Hanoi and Danish Ministry of Education (2019), UNESCO-UNEVOC (2018)

10.3.2   Qualifications Requirements for VET Teachers

The VET law and subsequent normative documents define the requirements for VET teachers according to the level of VET programs that they deliver (i.e., elementary, intermediate, or college). For the intermediate and college levels, further requirements are specified for theory teachers, practical teachers, and integrative teachers.

Building on the most fundamental requirements stipulated in the VET law, in 2017, MoLISA issued Circular 08/2017/TT-BLDTBXH (MoLISA, 2017b) to prescribe an elaborate set of standards for VET teachers that comprise three major areas: (1) professional competencies (occupational competencies, foreign language proficiency, computer literacy), (2) pedagogical competencies (pedagogical qualifications, competencies in lesson planning and delivery, curriculum development, testing and evaluation, etc.), and (3) career development and scientific research. Nonetheless, the qualifying requirements for entry into the profession are, arguably, occupational qualifications and pedagogical qualifications.

With regard to occupational qualifications, in order to teach elementary-level VET programs, teachers must possess an *intermediate-level degree or higher* in a relevant field of study or a national occupational skills (NOS) certificate level 1 or the equivalent. To teach theoretical lessons at the intermediate and college levels, teachers must possess a *bachelor's degree or* higher from a relevant university program. Practical teachers at both the intermediate and college levels are required to have a *college-level degree or equivalent* in a relevant field of study or a NOS certificate—level 2 for intermediate-level teachers and level 3 for college-level teachers. "Integrative teachers" are required to meet the combined requirements applicable for both theoretical and practical teachers (cf. Fig. 10.2).

With regard to pedagogical requirements, VET teachers are required to possess either a higher education degree in teacher training or earn a VET pedagogy certificate through 160 h, 320 h and 400 h to teach elementary-, intermediate-, or college-level VET programs, respectively. Higher education degrees in teacher training are obtained through 3–4 years of college-level or bachelor's courses offered by universities of technology and education (UTE) or by the faculties of technology and education of various universities across the country. Training providers of VET pedagogy certificates include UTEs and the faculties of technology and education available at an estimated 45 universities and colleges nationwide (Asian Development Bank, 2020).

The abovementioned requirements for VET teachers, especially the occupational requirements, show a strong focus on higher education degrees at the expense of industry experience. In fact, the majority of VET teachers are recruited as they graduate from universities, colleges, and secondary VET schools – where practical training is rather limited. Very few VET teachers came from industry. (Asian Development Bank, 2020). The Vietnam VET Report 2018 shows that out of a total of 86,910 VET teachers nationwide, 60.15% (52,275 persons) hold a bachelor's degree or a college-level degree, 31.7% (27,550 persons) hold a master's degree or higher, while teachers with intermediate-level degree and other qualifications made
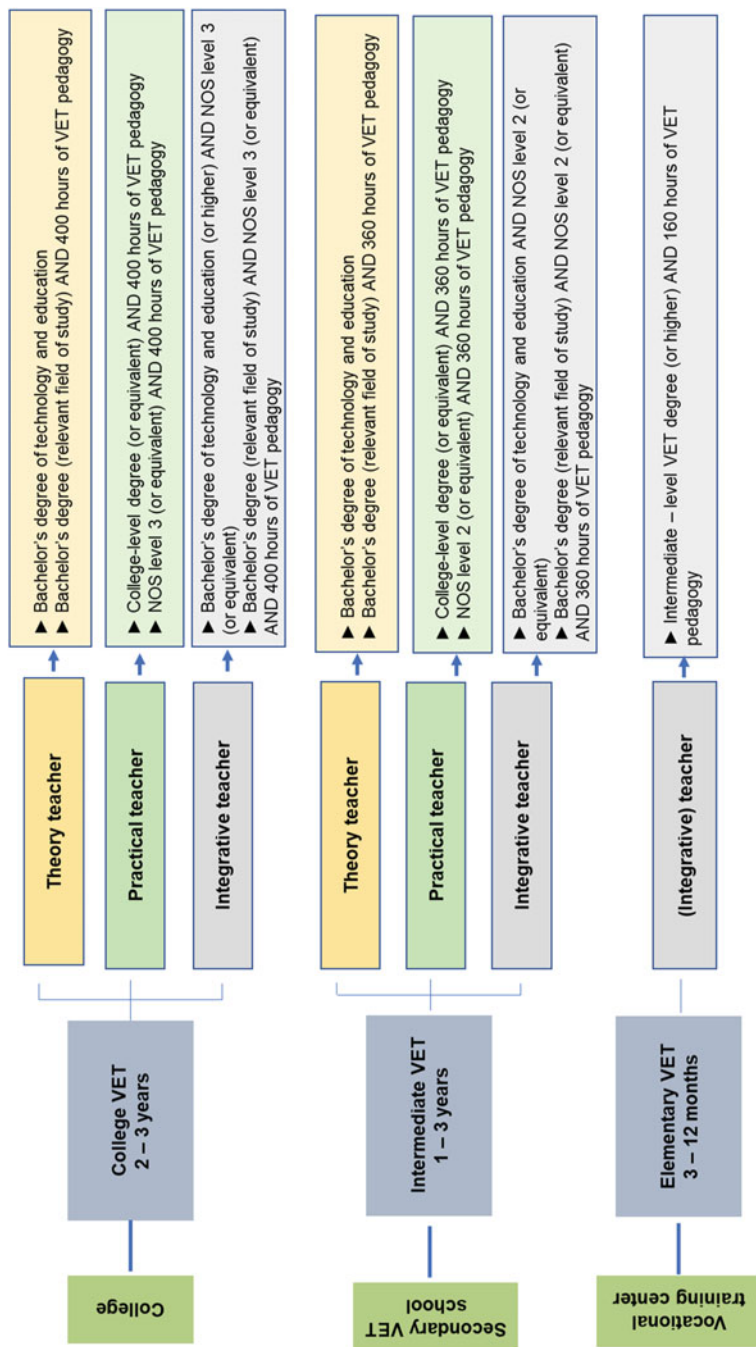
Fig. 10.2 Qualification requirement for VET teachers. Source: MoLISA (2017d)

up 8.15% (7085 persons) (NIVT, 2020). Meanwhile, the number of teachers with a NOS certificate is small, totalling at only over 16% (11,692 persons) in 2017 (NIVT, 2019).

It should also be noted that while the possession of a NOS certificate is identified as a qualifications requirement for practical and "integrative" VET teachers arguably to ensure the quality of their practical skills and knowledge of the world of work, the NOS system itself has serious limitations, especially in terms of its connection to the VET sector. Firstly, by the end of 2018, only 193 sets of NOS standards (NOSS) were developed, and industry participation in the development of NOSS is inadequate (NIVT, 2020). Secondly, while the three training levels of the VET system are being aligned with the eight levels of the VQF (Prime Minister, 2016a, b), there is not (yet) any referencing mechanism to align the five levels of NOS to the VQF. Thirdly, the alignment of learning outcomes to NOS and VQF is being prescribed by MoLISA as a quality assurance standard for elementary VET programs (MoLISA, 2017c) only and not (yet) for intermediate- and college-level programs (Asian Development Bank, 2020).

By the end of 2018, an estimated 70% of VET teachers in Vietnam have the occupational qualifications required to work as practical and integrative teachers (NIVT, 2020).

10.4 Pre-Service Training for VET Teachers

10.4.1 Pre-Service Training Pathways to the VET Teaching Profession

The aforementioned requirements for VET teachers correspond to three main pathways to join the VET teaching profession:

1. The possession of a higher education degree in VET teacher training
2. The possession of a university/college/intermediate-level degree in a relevant field of study and a VET pedagogy certificate
3. The possession of a NOS certificate (or equivalent) and a VET pedagogy certificate

10.4.1.1 Bachelor's Degree in Technology and Education

The bachelor's degree of technology and education is arguably the most mainstream higher education degree in VET teacher training in Vietnam. These degree programs

are offered at Universities of Education, and the faculties of Technology and Education at various universities nationwide.[1]

Universities of Technology and Education (UTE) have traditionally been the most prominent pre-service training for VET teachers through their undergraduate programs in technology in education. There are six UTEs across the country, namely, the UTEs in Ho Chi Minh City and Vinh Long in the south, the UTEs of Da Nang and Vinh in the center, and the UTEs of Nam Dinh and Hung Yen in the north. Founded in the 1960s and early 1970s as VET institutes to train technical workers for public enterprises, these UTEs were gradually upgraded into VET teacher training colleges and eventually universities with a strong focus on VET teacher training. Nevertheless, in recent years, undergraduate programs in VET teacher training have lost much of their flagship status within UTEs as these universities have shifted their priority more explicitly to non-teaching programs to cater for industry rather than VET institutes. The bachelor's program for technology in education at the Vinh Long UTE was allocated only 20 enrolments for the 2020 intake, which is by far the lowest number among all of its undergraduate programs (Vinh Long University of Technology and Education, 2020). Similarly, the Hung Yen UTE expects only 30 enrolments in its undergraduate program of technology and education for the 2020 intake, 10 to 15 times fewer than its more popular engineering programs (Hung Yen University of Technology and Education, 2020).

In addition to UTEs, a few other regular universities also run undergraduate VET teacher training programs in occupational fields where they have a competitive advantage. Examples include the bachelor's program of agricultural technology and education available at the Vietnam National Academy of Agriculture or the bachelor's program of STEM education available at the School of Engineering Pedagogy under the Hanoi University of Science and Technology. Universities of Education—the main training provider of teachers for the general education system—also have faculties of Technology and Education to train VET teachers.

Technology and education graduates are traditionally intended to fill teaching jobs in the VET sector (i.e., VET institutes) and the general education system. Within the general education system, they can teach VET-related subjects, e.g., agricultural and industrial techniques, to familiarize students, mainly in lower and upper secondary schools, with the world of work. At the same time, the prospect of finding employment with enterprises has been low because of the gap between their skillset and industry requirements.

In recent years, teacher training programs at many UTEs are being aligned much more closely with industry demand and are thus improving their graduates' employment prospects. One approach is to allow VET teacher training students to select a primary technical specialism among its other training programs (e.g., B.A in car technology) and complete the VET pedagogy training simultaneously. The arrival of

---

[1]Universities in Vietnam are under the state management authority of the Ministry of Education and Training (MoET).

double degree programs also made it easier for students to graduate with a dual qualification geared both towards industry jobs and the VET sector.

10.4.1.2   University/College/Intermediate-Level Degree and a VET Pedagogy Certificate

This pathway allows prospective VET teachers to complete a degree program in a relevant field of study, e.g., the bachelor's program of water technology at the University of Construction and top it up with a VET pedagogy certificate to start their teaching career at VET institutes. Through this pathway VET institutes can recruit prospective teachers among their own graduates and offer them the VET pedagogy training needed for the profession.

10.4.1.3   NOS Certificate (or Equivalent) and a VET Pedagogy Certificate

Out of the 193 sets of National Occupational Skills Standards (NOSS) that were developed, 191 were promulgated, and 82 sets of NOS assessment tests were available by the end of 2018. These assessment tests include multiple choice questions and practical skill examinations to evaluate the level of knowledge and skills required for the performance of occupational tasks at specific levels of NOSS (Asian Development Bank, 2020). There was a total of 41 NOS assessment agencies nationwide by end of 2018, all of which located in universities and VET institutes. No companies had applied for NOS assessment licenses yet. NOS assessments are currently only available up to level 4 of the 5 levels of NOSS, while assessors can conduct assessments up to level 3 only (NIVT, 2020).

As mentioned earlier, most VET teachers entered the profession with a higher education background rather than having an industry background and/or equipped with NOS or other occupational certificates.

10.4.2   Pre-service VET Teacher Training: Course Structure

Bachelor's programs in technology and education include two main streams: 4-year training for Grade 12 graduates and 2-year training for those with a 3-year college degree. The latter account for only very few enrolments.

Although it varies greatly between different training providers, the course structure of these 4-year degree programs is generally organized into three main components: general subjects, foundation subjects, and specialized subjects. Each of these components contains both subjects geared towards the technical occupation (e.g., electrical engineering) and those aimed at building VET pedagogy knowledge and skills. General subjects are mostly theoretical knowledge taught in year 1 and year

2 and include (1) compulsory subjects prescribed by MoET, e.g., politics and law; (2) humanities and social sciences; and (3) natural science. Foundation subjects provide students with basic knowledge and skills related to the profession that they wish to specialize in, e.g., technical drawing with AutoCAD or education studies. Specialized subjects convey knowledge and skills that students are likely to use in their professional practice upon graduation. A total of 135–170 credits (1 credits = 15 class hours) are taught over the course of 4 years (cf. Fig. 10.3).

The shares of pedagogical subjects and technical subjects within the curriculum differ between training providers. A quick review of three training programs[2] at the UTEs of HCMC, Vinh Long and Vinh shows that subjects related to VET pedagogy account for 15–18% of the curriculum, while those related to the technical occupation account for 52–68%. The remaining number of credits are allocated to subjects that are either made compulsory by MoET (e.g., politics, basic legal knowledge, etc.) or aimed at building additional skills for students, e.g., entrepreneurship (cf. Fig. 10.4). The amount of credits allocated for practical sessions vary between 20 and 25% of the curriculum, of which practical pedagogy accounts for only 4–8 credits (≈3–5% of the curriculum).

10.5 In-Service Training for VET Teachers

VET teacher professional development in Vietnam faces a dual challenge. On the one hand, since industry experience is not a qualifying requirement for VET teaching jobs, most VET teachers entered the profession with a higher education degree that typically equips its graduates with theoretical rather practical knowledge and skills. On the other hand, existing VET-industry linkages at most VET institutes are not sufficiently developed to cater for teachers' needs to keep current with industry developments. Available data from MoLISA (NIVT, 2018) and the National Institute of Vocational Education and Training (NIVT, 2019) show that cooperation activities between the private sector and VET institutes are overwhelmingly centered around students' internships with little or no room for teachers' development. For teachers trained outside the network of UTEs, deficiencies in teaching methodology and curriculum development are an additional common flaw.

---

[2]The review was conducted by the authors of this paper to calculate the share between pedagogy and technical training of the three curricula.
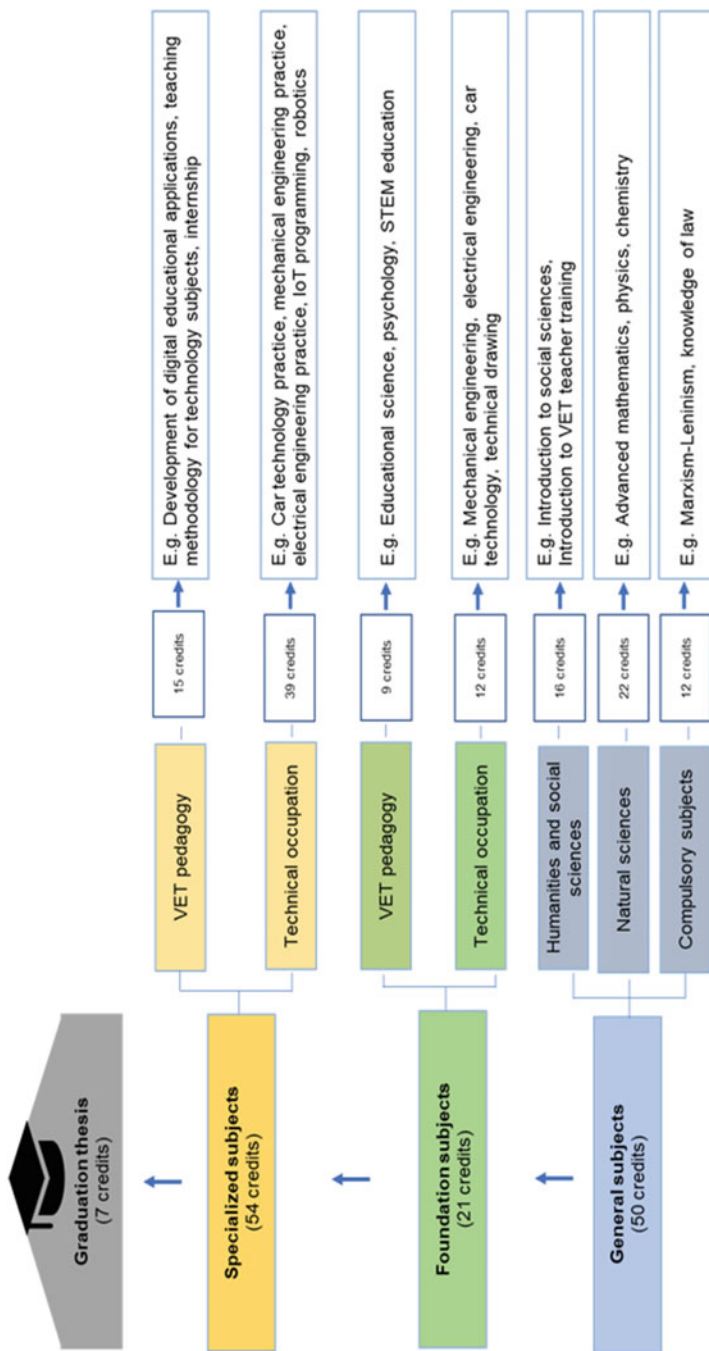
Fig. 10.3 Course structure of the bachelor's program of technology teacher training. Source: HCMC University of Technology and Education

Fig. 10.4 TVET pedagogy subjects—bachelor's program of technology and education. Source: Vinh Long University of Technology and Education (2020)

TVET Pedagogy subjects		
Module		Credit
Compulsory subject		
1	Psychology	3
2	Educational studies	3
3	Teaching equipment	2
4	VET teaching skill and methodology	4
5	Teaching internship	5
Elective 1: Select one of two		
6	Logic of learning	2
7	IT application in teaching	2
Elective 2: Select one of two		
8	Research methodology in VET	2
9	VET curriculum development	2
TOTAL		**21**

10.5.1 VET Teacher Development Policies and Legal Framework

Regulated by the Education Law and the VET law, VET teacher development policies and regulations make up the most substantial part of the legal framework on VET teachers.

The Education Law emphasized that "teachers play a decisive role in ensuring the quality of education, and (thus) have an important status within the society and shall be respected by the society" (National Assembly, 2019). Teachers are entitled to "further training and professional development to raise their level of political awareness, technical and professional qualifications" (National Assembly, 2019). In the same spirit, the VET law states in greater detail that VET teachers have the right to access "regular training and professional development to enhance technical and professional qualifications and improve teaching methodology" (National Assembly, 2014). More specifically, the VET law requires that VET teachers "have the responsibility and be allowed by their managing VET institutes to make time for internships in enterprises in order to update and improve practical skills and approach new technology as regulated" (National Assembly, 2014). However, it was not until 2017 that specific regulations were issued to require a minimum of 4 weeks of company-based internship annually for VET teachers at the college and intermediate levels and 1 week for VET teachers at the elementary level (MoLISA, 2017d).

10.5.2 In-Service Training Programs

While the Ministry of Education and Training (MoET) is responsible for all university-level programs including the pre-service VET teacher training programs available at the six UTEs, MoLISA is in charge of in-service training for VET teachers VET institutes are also required and encouraged to provide in-service training for their own teachers (MoLISA, 2017a).

10.5.2.1 In-Service Pedagogical Training

The in-service pedagogical training for VET teachers is regulated in MoLISA's Circular 38/2017/TT-BLĐTBXH issued on December 29, 2017 (MoLISA, 2017d), and Circular 28/2018/TT-BLĐTBXH issued on December 25, 2018 (MoLISA, 2018a).

Teachers at the elementary, intermediate, and college levels can complete a VET teaching methodology training program of either 160 h, 320 h, and 400 h, respectively, to obtain the pedagogical training certificate required for their teaching practice. For teachers at the elementary level, the training includes four modules:

1. Lesson design and preparation
2. Lesson delivery
3. Testing and assessment
4. Internship

For teachers at the intermediate and college levels, three additional modules are included:

1. Organization and management of educational activities
2. Curriculum development
3. Research in VET

Circular 38/2017/TT-BLĐTBXH and Circular 28/2018/TT-BLĐTBXH also prescribe the core contents of the three VET pedagogy training programs, as well as specify the expected learning outcomes, assessment methods, implementation requirements, and training methodology of every module. Nevertheless, there are no explicit instructions on how these training programs can be adapted to different occupations in the VET sector (e.g., bartending, mechatronics, graphic design, etc.). Instructions on conducting practical sessions also focus strongly on classroom-based activities rather than real VET teaching settings. For instance, the teaching methods prescribed for conducting the "Lesson delivery" module includes "teaching theoretical knowledge, guiding the trainees to research related documents, organizing group work and display sessions for trainees to demonstrate their teaching skills" (Fig. 10.5).

Elementary-level VET		
No	**Module**	**Hour**
1	Lesson design and preparation	60
2	Lesson delivery	56
3	Testing and assessment	20
4	Internship	24
TOTAL		**160**

Intermediate-level VET		
No	**Module**	**Hour**
1	Lesson design and preparation	60
2	Lesson delivery	56
3	Testing and assessment	20
4	Organization of educational activities	36
5	Curriculum development	44
6	Research in VET	40
7	Internship	64
TOTAL		**320**

College-level VET		
No	**Module**	**Hour**
1	Lesson design and preparation	60
2	Lesson delivery	56
3	Testing and assessment	20
4	Organization of educational activities	36
5	Curriculum development	56
6	Research in VET	52
7	Internship	120
TOTAL		**400**

Fig. 10.5 VET pedagogy training programs for VET teachers. Source: MoLISA (2017d) and MoLISA (2018a)

10.5.2.2 Technical Training

In-service VET teacher training is generally much less elaborated than pre-service training programs in Vietnam. There is even much less of a defined structure for in-service technical training than in-service VET pedagogy training.

MoLISA set the target of training and evaluating between 4500 and 5000 VET teachers in occupational skills on an annual basis from 2017 to 2020 (Asian Development Bank, 2020). By end of 2018, only an estimated 630 VET teachers took part in this training (NIVT, 2020), and by end of 2017, only an estimated 11,692 have a NOS certificate (NIVT, 2019), while the target was set at 20,000 by 2020.

Another prominent in-service technical training scheme consists of sending Vietnamese VET teachers overseas to build capacity for the transfer of Australian and German training programs in key occupations.[3] In 2018, there were 264 enrollments of VET teachers in training programs organized in Australia. The language barrier was found to be a problem that negatively affected the quality of this training scheme (NIVT, 2020).

---

[3]In 2017, MoLISA issued in Decision 1839/QD-LDTBXH the list of 134 key occupations applicable at the intermediate and college levels. These occupations are listed as key occupations for the national, ASEAN, and international levels.

10.6   International Cooperation for the Establishment of Centers for In-Service VET Teacher Training

Vietnam seeks advice from several international cooperation development partners in its efforts to improve VET quality. Capacity building for VET teachers have been integrated to different extents in both bilateral and multilateral engagements. A model that has the potential to ensure sustainability for practice-oriented in-service teacher training is the establishment of high-quality VET institutes as hubs for specific occupations. This model has been piloted by the Vietnamese-German program "Reform of TVET in Vietnam"[4] since 2015 and was recommended by the ADB in its 2020 Vietnam TVET assessment report (Asian Development Bank, 2020).

This approach consists of working with a selected VET college to identify relevant flagship program(s) that can be further developed to allow the college to take up a leadership role and provide support for other peer VET institutes in the same technical and/or geographical areas. With regard to VET teachers, this approach seeks to build up their capacity to serve the dual purpose of (1) providing high-quality, demand-oriented VET programs at the intermediate and college levels and (2) assuming the role of multipliers to provide training for peer teachers and technical personnel from enterprises.

Located in Dong Nai, one of the country's economically fastest-growing provinces (VCCI-USAID, 2019) and home to large industrial zones, LILAMA 2 International Technology College enrolls an average of ≈1300 students annually to cater for human resources needs from businesses in the southeastern region of Vietnam. The college's flagship programs are in the fields of mechanical engineering, metal cutting, mechatronics, electronics, and construction. As one of the country's few fully autonomous VET colleges, LILAMA 2 is also among the most dynamic in building cooperation activities with the business sector.

LILAMA 2 became a key partner of the Vietnamese-German Program "Reform of TVET in Vietnam" in 2014 and is expected to function as a VET hub in the region for mechanical occupations.

10.6.1   Training of Multipliers

A needs assessment was carried out as the first step of the process of developing training programs for the multipliers, i.e., the qualified VET teachers capable of providing further training for their colleagues. Companies were consulted on their current and future needs of skilled workers and on their vision about the future of

---

[4]The Vietnamese-German program "Reform of TVET in Viet Nam" is implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in cooperation with MoLISA on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

work. At the same time, the multipliers were assessed against both the Vietnamese NOSS and the German occupational standards issued by German Chambers of Crafts and Trades (Handwerkskammer—HWK).

Training courses for the multipliers were developed by German experts, selected Vietnamese VET teachers, and national experts in four mechanical occupations, i.e., metal cutting-CNC, industrial electronics, construction mechanics, and mechatronics. The expectation was for the multipliers to reach the occupational skills levels of skilled workers in Germany so that they can deliver VET training programs built on German standards and train other trainers.

The training courses for multipliers last between 900 h and 2000 h for different occupations. To facilitate the participation of multipliers, who are also full-time teachers, the training is organized in units of 1–2 weeks for a total of 22–25 weeks. Trainers are German and Vietnamese experts with strong industry experience. An estimated 70% of the training was allocated for practice-oriented activities, and an integrative approach to training delivery was adopted to ensure that theory and practice are integrated as much as possible into every teaching and learning activity rather than separated in different sessions. At the end of the training, multipliers are assessed by certified by German examiners. Eighteen multipliers were recognized by German evaluators from Chambers of Crafts and Trades (HWK) as having the same occupational skills levels as German skilled workers in the two occupations of mechatronics and metal cutting.

10.6.2 In-Service Training Courses for VET Teachers and Enterprises' Workers

The development of in-service training programs for VET teachers was informed by the 3-year college-level VET training programs built on German standards and the process of multiplier's training. Specifically, these courses target the highly specialized technical skills needs identified through the company survey and subsequent multiplier training, such as proficiency in design and control software in metal cutting. As of 2019, a series of in-service training courses were available for two occupations, i.e., metal cutting and mechatronics. For each occupation, there are 10–15 courses organized into two levels, i.e., basic and advanced. The training duration for each course is between 50 and 160 h. One year after its introduction, these in-service training programs have already enrolled VET teachers from 16 institutes and several local companies (Fig. 10.6).

1 Needs assessment
* Company survey
* Occupational skills assessment of VET teachers against Vietnamese and German standards

2 Programme development for multipliers
* DACUM approach
* Programmes developed for 4 occupations: mechatronics, metal cutting, industrial electronics and construction mechanics

3 Training of multipliers
* 900 – 2,000 hours of training organized in units of training weeks
* Integrative approach with 70% of time allocation for practice

4 Assessment and certification of multipliers
* Conducted by certified German evaluators from Chambers of Crafts
* 18 Vietnamese VET teachers met occupational skills standards for German skilled workers in two occupations (mechatronics and metal cutting)

5 Programme development for in-service training
* Short-courses for in-service technical training in two occupations: mechatronics and metal cutting
* 10 – 15 courses for each occupation

6 In-service training delivery
* Training provided for VET teachers from 16 VET institutes and enterprises' workers
* Course duration: 60 – 75 hours of training

Fig. 10.6 Development of training programs for in-service technical training for VET teachers by the Vietnamese-German program "Reform of TVET in Vietnam". Source: Programme "Reform of TVET in Vietnam" (GIZ) (2020)

10.7   Further Developments

Since becoming the sole state management agency for VET in 2016, MoLISA's approach to raise the quality of VET proved to have a strong focus on regulative standardization. In 2017 and 2018, MoLISA issued several circulars for setting more detailed professional standards for VET teachers as additions to the core require-ments regulated by the 2014 VET law. As a result, according to the Vietnam VET Report 2018, although 100% of Vietnamese VET teachers possess the required qualifications to demonstrate their levels of training, a significant number do not meet the (new) standards, especially in the areas of occupational skills, foreign language proficiency, and computer literacy. Nevertheless, information about the solutions for the large-scale upskilling of VET teachers is hard to come by.

The new regulation requiring VET teachers to complete annual in-company internships, which was issued in 2017, allows capacity development for VET teachers to be a more prominent part of the general effort of building VET-industry linkages. However, it is also unclear how this regulation will be complied with in the context of limited industry involvement in VET.

An important development in the VET sector was the amendment of the Labour Code in 2019 to allow for the tripartite relationship between employers, VET institutes, and trainees to be recognized and regulated by law. Whereas VET institutes used to have a monopoly on students' recruitment, employers can now recruit trainees for cooperative training courses that take place at their companies and VET institutes. The duration of the traineeship is determined by the length of the formal training program the trainees are enrolled in at the VET institute. This new development is expected to result in the expansion of the cooperative training and dual training models, which allow VET students to enjoy extensive industry expo-sure through in-company training phases. However, the expected benefits of in-company training can only be secured if there is a strong network of qualified in-company trainers. Several VET institutes have been proactive in providing training—mostly in VET pedagogy—for in-company trainers from their partner companies as a measure for ensuring a better quality internships for their own students. MoLISA is advised to give momentum to this practice by providing technical support, e.g., training programs, master trainers, etc., and by creating a regulatory framework in order to facilitate the training and formal recognition of in-company trainers as part of the VET teaching personnel.

10.8   Conclusion

VET teacher training and professional development is considered a breakthrough solution for VET reform in Vietnam. In recent years, especially since 2016, when VET came under the state management authority of MoLISA, several measures have been introduced for improving the quality of VET teachers, including a significant

process of standardization. The attainment of these standards is a challenging endeavor because of the sheer number of VET teachers needing to be upskilled in the context of scarce resources and limited VET-industry linkages. Meanwhile, the lack of incentives for attracting qualified professionals with industry experience to join the VET teaching profession continues to undermine both the quality and image of VET.

For in-service VET teacher training, the development of selected high-quality VET institutes into regional hubs for practice-oriented in-service training for VET teachers could be a practical, cost-effective solution. At the same time, as the VET system seeks to shift its focus away from the traditional model of school-based training delivery and stimulate greater enterprise-based training through the cooperative training and dual training models, the recognition and development of in-company trainers should be given appropriate consideration. At the pre-service training level, flexible university pathways that combine VET teacher training with another area of study which then lead to career opportunities in both industries and educational settings are a positive development that deserves greater promotion.

The Vietnamese VET sector expects to enroll more than six million students and ensure quality employment for over 90% of its VET graduates by 2030 (MoLISA, 2018b). Qualified VET teaching personnel is a requirement for the achievement of this ambitious target. It is expected that the need to improve the development of VET personnel will be recognized in the country's next VET development strategy (2020–2030). On this foundation, sound policies that take into account implementation requirements and motivations from different stakeholders will be needed to facilitate the work of VET practitioners in the common effort to improve VET quality and its demand orientation.

References

Asian Development Bank. (2020). *Vietnam technical and vocational education and training sector assessment*. https://www.adb.org/publications/technical-and-vocational-education-and-training-socialist-republic-viet-nam-assessment

Euler, D. (2018). *TVET personnel in ASEAN: Investigation in five ASEAN states*. Eusl.

Hoang Ngoc Vinh. (2002). *TVET in Vietnam and challenges*. http://hdl.voced.edu.au/10707/152952.

Hung Yen University of Technology and Education. (2020). *Undergraduate programmes- Intake 2020*. http://www.tuyensinh.utehy.edu.vn/Career.aspx?mod=dhcd.

MoLISA. (2017a). *Circular 06/2017/TT-BLDTBXH: Regulation on recruitment, employment and further training of VET teachers*.

MoLISA. (2017b). *Circular 08/2017/TT-BLDTBXH regulating the professional standards of VET teachers*.

MoLISA. (2017c). *Circular 15/2017/TT-BLĐTBXH on VET accreditation criteria and standards*.

MoLISA. (2017d). *Circular 38/2017/TT-BLĐTBXH on the in-service pedagogy training for elementary-level VET teachers*.

MoLISA. (2018a). *Circular 28/2018/TT-BLĐTBXH on the in-service pedagogy training for VET teachers at the intermediate and college levels*.

MoLISA. (2018b). *Resolution 617/BCSD on continuing the reform and quality improvement for VET until 2021 with orientation to 2030*.

MoLISA, Embassy of Denmark in Hanoi & Danish Ministry of Education. (2019). *White paper promoting dual technical vocational training in Vietnam*. http://en.gdnn.gov.vn/infomation/news/gdvt-news/2019/7/160.aspx

National Assembly. (2014). *Law on vocational education and training*. Socialist Republic of Vietnam. No. 74/2014/QH13.

National Assembly. (2019). *Education Law*. Socialist Republic of Vietnam. No. 43/2019/QH14.

NIVT. (2014). *Vietnam vocational education and training report 2012*. www.nivet.org.vn | www.nivt.org.vn

NIVT. (2018). *Vietnam vocational education and training report 2016*. www.nivet.org.vn | www.nivt.org.vn

NIVT. (2019). *Vietnam vocational education and training report 2017*. www.nivet.org.vn | www.nivt.org.vn

NIVT. (2020). *Vietnam vocational education and training report 2018*. www.nivet.org.vn | www.nivt.org.vn

Programme "Reform of TVET in Vietnam" (GIZ). (2020). *Training programmes following Vietnamese requirements and German standards*. https://www.tvet-vietnam.org/tvet-programme-publications

Prime Minister. (2012). *Decision 630/QĐ-TTg on the approval of the vocational training for the period 2011–2020*. https://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=91572

Prime Minister. (2016a). *Decision 1981/QD-TTg on the approval of the national education system framework*. Available: http://vanban.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=2&mode=detail&document_id=187037

Prime Minister. (2016b). *Decision 1982/2016/QD-TTg on the approval of the Vietnamese qualifications framework*. http://www.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=2&_page=2&mode=detail&document_id=186972

UNESCO-UNEVOC. (2018). *TVET country profile Vietnam*.

VCCI-USAID. (2019). *The Vietnam provincial competitiveness index 2018*. https://www.usaid.gov/vietnam/fact-sheets/provincial-competitiveness-index

Vinh Long University of Technology and Education. (2020). *Undergraduate programmes- Intake 2020*. http://vlute.edu.vn/vi/dao-tao/dai-hoc-chinh-quy/

World Economic Forum. (2018). *The global competitiveness report 2018*. https://reports.weforum.org/global-competitiveness-report-2018/

Chapter 11
Teacher Professional Development: Institution-Based Professional Development (IBPD) Centre Myanmar

Kyi Kyi Lwin

Abstract While Myanmar has implemented and completed several important education reforms in recent years, the Technical and Vocational Education and Training (TVET) sub-sector continues to face numerous serious challenges in ensuring the equitable and quality training that are demanded by the industry. In response to these challenges, the Department of Technical and Vocational Education and Training (DTVET) is implementing different reforms to strengthen and upgrade vocational teacher training in collaboration with different development partners and international organizations. One of these response measures is developing a model for decentralizing TVET teacher training at TVET institutions in order to be able to provide professional development support immediately as well as to maximize efficiency. The DTVET's teacher training institution Technical Promotion Training Centre (TPTC-Baelin) plays a vital role for the professional leaders (PD leaders) in overseeing the PD mechanism and provides technical and operational leadership under the policy guidance of the DTVET. The Institution-Based Professional Development (IBPD) centre is designed to provide soft skills training for TVET teachers and to improve TVET institutions, e.g. capacities to respond to labour market demand. The plan is materializing with the budget support of European Union (EU). This article examines the teacher professional development programme in Myanmar, including the role of teachers and their professional development requirements, the role and responsibilities of the current training institutions, the role of the IBPD centres and the challenges encountered during the implementation process. This study is based on the analysis of qualitative and quantitative data collected from the schools under the DTVET and the Ministry of Education (MoE). The article concludes that supporting TVET teachers in achieving their professional development goals through higher learning opportunities is of paramount importance and is an aspect of strengthening the vocational teacher training system and the TVET sector for the country.

K. K. Lwin (✉)
Technical Promotion Training Centre, Baelin, Department of Technical and Vocational Education and Training, Ministry of Education, Naypyidaw, Myanmar

11.1   Introduction

The Government of Myanmar has introduced a number of policy reforms to transform the national education system and ensure that all students progress through the educational system, achieve quality learning standards and fulfil their lifelong learning goals and aspirations. However, the practice of most people in Myanmar is to send their children to university after they have completed the upper secondary level of school. According to the matriculation exam results, only 200,000 of 800,000 students passed the exam (Ministry of Education, 2019). Unfortunately, about 600,000 students dropped out of school for a wide variety of reasons. Pathways for further training have to be created for these to become successful professionals. Given this situation, the vocational education sector is the best option for these students who have dropped out to continue their learning opportunities focused on the needs of the job market.

The basic principles of Myanmar vocational education training are to access capabilities for all citizens; to adjust for educational training of several related subjects in one place according to the needs of the local area; to establish partnerships with public and private sector; to attain international standards for quality educational environment; to provide access to lifelong learning; to guarantee quality; to permit independent and cooperative investment of government, private, local and international organizations; and to coordinate different programmes with various paths.

Prior to 1998, teaching staff from the Technical and Vocational Education schools were trained by the Technical Teachers' Training Programme from New Zealand and Canada (cf. Hayden & Martin, 2013; MoE New Zealand, 2016). In 1998, due to the complicated political situation, all support from international organizations were stopped, and Technical Teachers' Training Institutes couldn't function properly. Although technical training for teachers in service was started again at the TPTC-Baelin, established in 2011 with the mission to enhance teaching efficiency and promote the technical skills of teachers under the MoE (Ministry of Education, 2013), there are still critical problems for the development of the TVET system in Myanmar due to a lack of quality and quantity of technical teachers. The needs of TVET teacher training can be identified in both pre-service and in-service teacher education programmes.

In Myanmar, the concept of public-private partnership has been highlighted as part of the education reform policy. In the Comprehensive Education Sector Review (CESR)'s report from 2013 (ibid), the importance of professional associations and industry associations was discussed, and it was emphasized that they usually have an educational role which extends from formal courses to informal addresses, conferences and seminars to improve professional practice. Both types of institutions are involved in training that bridges the gap in between the academic knowledge possessed by graduates (the theory) and the skills and knowledge that make them work ready (the practice), the "theory-practice divide" in a more connected way. The associations may directly run the training, or they may give a preference to specific

providers of training. Furthermore, the Ministry of Education of New Zealand (MoE New Zealand, 2017, p 14) explains that, in the education work programme: "the quality of teaching has the biggest influence on student achievement. Communities of Learning are helping to raise achievement by: enabling teachers to work together and benefit from each other's knowledge and experience improving teaching practice".

As a matter of fact, the comparative review of teachers conducted by the Organization for Economic Co-Operation and Development (OECD) (OECD, 2005) noted that better and more targeted professional development, one avenue towards improvement of effective professional development, is ongoing. This includes training, practice and feedback and provides adequate time and follow-up support. Successful programmes involve teachers in learning activities that are similar to the ones they will use with their students and encourage the development of teachers' learning communities (Paryono, 2017). Further, the report highlighted the growing interest of developing schools as learning organizations and ways for teachers to share their expertise and experience more systematically.

Teachers of technical subjects for TVET schools and institutions are recruited from fresh graduates of technical colleges and universities who do not have any pedagogical training, as in most Southeast Asian countries. Thus, they are lacking in industrial experience and pedagogical competence for qualitative TVET. CESR (cf. Ministry of Education, 2013) has recommended that pedagogical training for pre-service TVET teachers should be compulsory with practical training in industries included in the curriculum.

According to the technical report of the International Labour Organization (ILO), there is broad consensus on the need of TVET teachers' capacity building in terms of pedagogical and practical skills before they start instructing in classrooms and workshops (Lee & Lassig, 2015; Milio et al., 2014). The National Education Strategic Plan 2016–2017 (NESP, 2016) gives guidance for providing pedagogical and specific skills training for pre-service and in-service TVET teachers, with the aim of strengthening the quality and relevance of TVET.

A focus group of senior technical teachers also pointed out some weaknesses of newly recruited teachers: (1) weak in teaching methodology, (2) weak in using teaching aids, (3) less effective teaching due to lack of teaching experience, (4) weak in classroom control and relationship with students, and (5) weak in instruction of practical lessons due to lack of practical skills. In short, the educational needs of pre-service teacher training should encompass both pedagogical basic competencies and practical technical skills (Thornton & Tolmer, 2017).

According to the State Counsellor Daw Aung San Suu Kyi (Training for The Future, n.d., Cf. GNLM, 2016-7-16), "TVET education is not second-class education; it should be first-class education". In Myanmar the education system has been undergoing in transition, and reform programmes are starting in many areas. For example, reform programmes in curriculum, teaching and learning, teacher training and skill development programmes for students and the upgrading of vocational education to a first-class educational sector as the main provider of skilled workers needed for industry, which is important in the development of the country's

economy, are all ongoing. During such reform processes, vocational trainers and teachers play a vital role in nurturing those workers to fulfil the demand of the nation (cf. Ulla, 2017). The vocational teacher training system also needs to be upgraded according to changes in the teaching and learning environment.

Myanmar's TVET teacher training system needs to be strengthened, and the reform of the teacher training system is urgently needed in terms of quality in teaching and learning and also for an adequate teacher and student ratio. With regard to the quality aspect, the teachers in TVET institutions hold high academic level qualifications but insufficient in practical and pedagogical skills. These teachers only had a chance to study these topics from books and are thus lacking experience in the real workplace. According to NESP, technical teacher training should promote the National Education Strategic Plan (cf. NESP, 2016). At that time, the Government of Myanmar formulated policies and reform strategies that can achieve people- centred development, civic participation and human resources development, effective and transparent use of public financial resources, sustainable regional development, decentralization and local governance and poverty reduction. This NCDP for Myanmar was drawn up in line with international standards, economic policy objectives and people-centred development (cf. Milio et al., 2014).

11.2   Scope and Method of the Study

The objective of this study is to examine the teacher professional development programme in Myanmar which includes the role of teachers and their professional development requirements, the role and responsibilities of the current training centres, the role of Institution-Based Professional Development (IBPD) centres and the challenges encountered during the implementation process. This study aims to find out possible ways to increase professionalism of every teacher in schools by reforming the teacher training system through the establishment of professional development centres in schools and also to provide the infrastructure and teaching aids needed for the schools.

The description method used in this study aimed to find the answers through survey questions. Alongside the answers to the survey questions, it sought to conduct a theoretical study of training needs analysis of professional development training. 10 IBPD centres located at TVET schools were visited, and answers to questionnaires from 900 teachers in these schools (total 23 schools) were used to analyse the needs for the development of IBPD centres and the programmes for professional development of the teachers from TVET schools. The data needed to develop the professional development guidelines were also collected from these findings and answers. The structure of the study was as follows:

1. Collect information about the schools under DTVET through responsible sections of DTVET.
2. Prepare survey questionnaires:

(a) Which training/course helped you in your classroom experience?
(b) What would you like to be changed before you work as a teacher? Why?
(c) How have you used/applied your teacher professional development training in your classroom to help yourself and your students?
(d) What topics would be of interest/concern to you?
(e) What times within the school timetable (weekly, monthly, semester/year) would be best for you?
(f) What benefits are there to you personally from your participation in professional development sessions?
(g) What rewards/recognition would you value for your professional development participation?
(h) How comfortable with classroom observations are you?
(i) How might a mentor/coach relationship with teaching colleagues help a new teacher/an experienced teacher?
(j) How willing would you be to coach/mentor new teachers to your institution?
(k) I wish I had known (What challenges have you experienced in your teaching experiences?)
(l) How might the principal support teachers who wish to improve their teaching performance?
(m) What advice would you give to a new teacher joining the staff at your institution?
(n) What advice would you give to those who plan professional development for vocational teachers?
(o) Is there anything that you'd like us to know about teacher professional development training that we haven't asked you about?

3. Visit to schools and collect responses from teachers through survey questionnaires.
4. Analyse training needs and facilities needs of the schools based on the responses of survey questionnaires.
5. Plan implementation procedure of the programme.

11.3 Current Status of Myanmar's TVET Teacher Training System and Challenges

In Myanmar, the vocational education sector has been promoted through cooperation among concerned ministries, industries and local and international stakeholders. The Ministry of Education (MoE) leads the coordination as a focal ministry, and the implementation plan has been laid out in the NESP (2016). Unfortunately, teacher training policy and training curricula have not yet been introduced in the sector. The teacher training system is based on supply-driven approach and run by a centralized location named Technical Promotion Training Centre (TPTC Baelin) with a limited capacity of 180 teachers at one time. The teacher for TVET should be a university

graduate, but the teacher's qualification does not require capabilities to perform teacher's roles successfully. Currently, teacher education and training is passive at most. Awareness of the teacher's competencies and training requirements is low among practitioners, and the TPTC Baelin, teacher training centre, needs more facilities and resources to increase its capacity. The practices with equipment and tools for the teacher training are insufficient largely because the equipment and tools are mostly absent for some of the high-demand occupational areas urgently needing teachers to be trained. Due to the weakness in systematic planning for teacher education and training, the educational contents do not match the training equipment. This hinders the ability to improve the system. The current vocational teacher training system lacks proper personnel for management and operations, including analyses of teacher training needs, planning, preparation, execution and evaluation.

The pools of teachers in the TPTC, Government Technical Institutes (GTIs) and Government Technical High School's (GTHSs) are the same, which causes serious problems for Myanmar's TVET. Despite the different levels of teacher competence required for TPTC, GTIs and GTHS, if the government keeps using the same personnel resource pools, then quality improvements of TVET are almost impossible. Reform should start with different qualification staffing frameworks for different TVET institutes where the primary tasks of education administration are performed. Currently, teachers' tasks are centred on basic administrative duties for education administration. Thus, most parts of education and training of TVET such as preparation of classes, class performance, education environment preparation and planning, educational evaluation and linkage with industry are not planned and do not progress. Ideal elements for the teacher's work include the following:

- Student performance management, teaching environment management, textbook development, curriculum development and updates, lesson plans, etc.
- Knowledge related to teaching methods, adjustment of educational contents in accordance with technology changes, needs assessment of students' needs, teaching activities development, etc.
- Teaching strategies, work analysis in major areas (trades), and student management
- Test development and supporting materials development including tutorials

The current systems of educational design, development, implementation and evaluation seem to be insufficient for implementing further improvements. Overcoming these serious problems requires an examination of the whole educational process and identification of future educational contents, which are linked to teacher education and training. The link between education and changes in technology and industry is judged as being underdeveloped; thus, the improved teacher education and training will not be easily gained.

The absence of equipment and skilled teachers for technology and education, the weakness of the linkages with industry and the insufficiency of curriculum effectiveness are connected, causing chain effects. Political stability, systematic industrial development, an engagement of large-scale production companies and other similar elements are necessary. In order to be in line with the development of technology,

TVET teachers need to upgrade their technology proficiency in teaching and learning, and the curriculum use in the schools also needs to be updated. Absence of such an effort for teacher education system and specialization may cause several problems for the teaching and learning environment of the teachers. The equipment for the teacher education and the tools utilized for practice are insufficient. The problem of specialized subjects includes the grasp of their field and reflection on education. The problems of the teachers, including lack of professionalism, are recognizable in all aspects of their work in DTVET institutions. Recent issues in TVET system and its policy implementation in Myanmar are related to governance of TVET institutes under various ministries, insufficient financial support, a deficit in cooperation between industry and institutes, public-private partnership and inclusiveness between various forms of TVET. DTVET (2012) identified some challenges encountered in TVET development in Myanmar. These challenges were a result of the rapid expansion of institutes with insufficient numbers of qualified trainers, weakness in budget allocation for infrastructure and equipment, weakness in industrial linkages and weakness in assessment and accreditation system of training programmes.

The insufficiency in school's equipment and tools is linked with the teachers' non-professionalism and demonstrates the lack of efforts towards expertise enhancement. Even though the government recognizes the need for teacher expertise enhancement, the schools' basic infrastructure is insufficient for upgrading to meet the needs of industry. Facilities, tools and equipment are not modernized due to the small size of the businesses around the institutes, and networks between the industry and the institutes are yet to be strengthened. Such degraded and isolated areas show low demand for modern facility and equipment as a result of their old-fashioned, manual style work setting. An adequate internet connection for teaching and learning is not available. As the teachers need more practical experience in their respective subject areas, they cannot use the machines properly for training purposes. Teachers should already be involved in teaching activities while they are studying at university.

The DTVET Professional Development (PD) team visited the Technical Promotion Training Centre (Baelin) which is a part of DTVET and met 500 teachers from year I (2018–2019) at 10 IBPD centre schools during March and May 2018 and 400 teachers from year 2019 to 2020 in January and February 2020 to introduce the IBPD centre programmes. They also discussed 15 survey questionnaires. After the discussion, the summary of main findings was as follows:

1. Teacher training: There was no pre-service teacher training before 2017. The newly recruited teachers are mostly graduated from the technological universities, and they do not have any experience in teaching. They need to attend both practical and pedagogical trainings for more confidence in teaching in the class. They also need to get the textbooks required for curriculum development and self-study. There is a critical lack of suitable handouts for the trainees. Most of the handouts are in English, and no information has been collected on the need for skills in the labour market when deciding which courses to develop and offer.

Most of the courses are competency-based, but, in general, these are not related to national or company standards.

2. Equipment and consumables: Some schools have more teaching aids and equipment than others, but most of the schools need teaching aids in order for all students to practice in the workshop.

3. Teaching load: All the teachers who deliver short courses also teach in the long courses. In many cases, the extra workload requires teachers to offer short courses on the weekend or during holidays for which they receive no additional compensation. All teachers to be engaged in professional development activities should be given further PD training and need to be encouraged to participate in the school PD activities. Most of the teachers are eager to improve the quality of their teaching, and they believe that the quality of their teachers is important for ensuring their professional development.

4. Recognition and rewards: It is necessary for there to be more recognition of teacher's participation in OD trainings and activities. Motivating all newly recruited teachers and experienced teachers to work together in a team and learn from each other is the main objective of their professional development. If there is some reward system, it will further motivate the teachers to participate in PD activities.

11.4   Introducing a Relevant Model for TVET Teacher Training in the Country

The most common arguments to overcome the above challenges include the following:

1. Teacher training for didactical skills should start at university level (BTVET + MTVET + research structures). Currently, DTVET is mandated to provide only diploma-level graduates for TVET teacher programmes at TPTC Baelin and TTTI Yangon, and thus the teacher education programmes for higher degrees may need to undergo the existing universities under the Department of Higher Education (DHE).

2. Given the situation mentioned above, TVET teachers can be involved in teaching activities during the education programmes at their respective universities. For example, a Bachelor of Engineering degree programme with only 4–6 weeks of pedagogy learning provided by DTVET is not enough to become a TVET teacher. This paper argues that diploma-level teachers without practical experience should not be entering schools as fully fledged TVET teachers.

3. There is a need to reform learning conditions and create equal environments in all learning situations (hours, equipment, etc.) so that they meet the industry demands.

4. Teachers need to be assigned at the relevant schools where their specialized trade areas are available, and thus the duty station transfer policy should be improved.

5. While the industry is moving ahead, TVET teachers in the system need regular upgrades in training along with curriculum review.
6. Pre-service training for newly recruited teachers needs to not only be carried out in TPTC (Baelin) but also in the IBPD centres. This training duration should last more than 3 months, with an on-the-job training scheme for them to build confidence in teaching for their teaching life in the TVET sector.

Based on these facts, the TVET chapter of the National Education Strategic Plan (NESP, 2016) has outlined strategies to cope these challenges as follows:

- Improve the quality of technical education and vocational programmes through the provision of necessary infrastructure.
- Reform the teacher training system to improve the professionalism of the vocational teachers.
- Establish the IBPD centres at the schools under DTVET.

These strategies aim to develop teachers who are proficient and confident in supporting student development and achievement. Within Myanmar's MoE TVET institutions, the focus is on providing a Teacher Professional Development (TPD) system through an institution-based approach. TPD is defined broadly as "activities that develop an individual's skills, knowledge, expertise and other characteristics as a teacher".

In the near future, there should be a forecast for expected industry changes and the establishment of a vocational education training system for the cultivation of technical manpower. To achieve this, there should be action taken to expand the facilities and equipment associated with the teachers' tasks. Internal personnel management systems should also already be in use. For students, the expansion of industrial experience should be made preferential, and a competition among the schools must be established. Institutional aspects need to be maintained first. Managers should be granted authority, and there should be enough support for facilities and equipment.

Based on the study visits to the schools and research questions asked of all 900 teachers from 23 schools, possible ways to overcome the difficulties and challenges of the professional development programmes came from their answers (cf. OECD, 2005):

1. 80% of teachers want support for systematic surveying, hard and soft skill and curriculum development processes from PD leaders at the TPTC (Baelin).
2. Almost all teachers want rewards, appreciation and experienced foreign support from DTVET. 70% of the teachers want support for pedagogical and technical teacher training and good networking among schools. Most of them also need support in connecting the private sector (industrial experience/needs/upgrades) and regional government (network/permission/hardship money).

In order to meet the needs expressed in these answers, MoE is setting the reform goals to the development of the professional skills of individual teachers and began the establishment of IBPD centres in schools under DTVET with the support of EU funding (cf. DTVET, 2012; DTVET, MOE, 2019). According to the reform
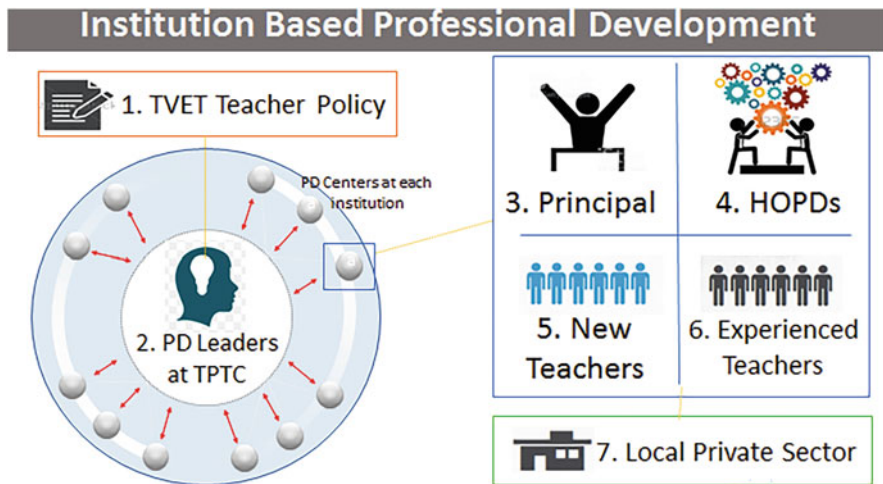
Fig. 11.1 Areas of the concept of professional development. Source: PD Guideline, DTVET, MOE (2019)

programme, MoE will develop and adopt a TVET teacher training guideline, implement new professional development programmes and assign more staff, train the professional development leaders (PDL) from TPTC (Baelin) and train the heads of professional development (HOPDs) from selected TVET schools. The objective of these reforms also includes IBPD centres which will help strengthen connections with the local economy and other stakeholders to establish better learning and teaching opportunities for the teachers and to enhance the job opportunities for the students who have finished school. The Fig. 11.1 is the flow chart of IBPD centre concept for the professional development of TVET teachers.

The implementers of this concept are the MoE, DTVET, PDAG, the PD team, PD leaders from TPTC (Baelin), principals of schools within DTVET, HOPDs and teachers from the school. In order to reach this goal successfully, everyone has to actively participate and support the system. DTVET is establishing IBPD centres for the following reasons:

- Because PD happens at each institution, not just at TPTC, DTVET will be able to invest more time in teachers and train more teachers on the job.
- Because PD happens at each institution, teachers have constant opportunities to practice in real classrooms. The IBPD centre, with private sector connections, also offers practical PD opportunities for field visits, company placements, guest speakers and other linkage activities.
- PD is continuous and follows teachers all the way into their classrooms. HOPDs are change agents, constantly driving and supporting improvements in teaching practices and knowledge. Each serving teacher gains experience over time, which can be shared with others.

- Networking teachers through ongoing PD activities reduce the risk of teachers losing motivation, creativity and self-reflection.
- Over time, each IBPD centre becomes responsible for designing and implementing the local solution that fits the needs of teachers and local employers. PD leaders from TPTC provide key resources and support for each local problem and solution.

Everyone who participates in the IBPD centre programme has their role and responsibility. In order to successfully implement this programme, the vision of the IBPD centre, which is "Provide more Opportunities for TVET teachers to upgrade their teaching and learning qualifications and to help administrators, teachers and other educators improve their professional, knowledge, competence, skills and effectiveness", has been set up (cf. PD Guideline, DTVET, MOE, 2019).

In order to reach this vision, the following goals are set: At least 50 dedicated IBPD centres are expected to be operational by 2022 and will perform two main functions:

1. Systematic teacher training through in-school professional development by means of a reformed training programme in pedagogical and practical skills which will guide student-centred, competency-based education and training
2. Providing a platform to create institution-level links to the local private sector

    IBPD centres were implemented in order to:

- Make PD training easier for teachers to attend PD sessions.
- Make PD cost effective (travel, materials).
- Cater to institution-specific PD interests and needs to provide a fit-for-purpose training plan.
- Imbed PD activities in the school timetable to facilitate teacher participation in PD (make efficient use of time).
- Provide more opportunities for teachers to upgrade their teaching and learning qualifications in and out of the classroom, learn to put theory into practice and develop those skills valued by the labour market.
- Provide a flexible support system (HOPDs/principals/physical training space) to develop teachers' confidence as they move from a focus on theory to competency-based applications and shift from teacher-directed teaching to student-centred learning activities.
- Foster IBPD centre + private sector connections to enrich teachers' practical professional development opportunities for field visits, industrial placements, guest speakers, etc.
- Provide structured ways for teachers to work together, learn from each other, get immediate help to become more effective and become a "community of practice".

11.5 SWOT Analysis of the IBPD Centre Implementation Procedure

Although the reform system itself is a good model for the professional development of the teacher, the implementation process still has many challenges. By applying SWOT analysis, we found the following facts:

Strength

- Budget support from the European Union (EU) and DTVET(MOE) has been agreed upon for the implementation of the professional development programme.
- There are sufficient human resources and capacity to manage the programme.
- Almost all schools will have the opportunity to participate in the programme.
- The programme model provides a platform for other stakeholders and international organizations to contribute specific support within this framework. The model is greatly oriented for sustainability, and it can be continued after the budget support period from the EU is over.

Weakness

- The policy guidelines for TVET teacher training have not yet been introduced.
- State budget rules and regulations need to be updated (especially for travelling and daily allowances, and accommodation fee for external trainers and government staff is insufficient or even lacking).
- Inadequate cooperation and teamwork can delay the programme implementation.
- Not enough change agents (professional development activators) to implement the programme at the level of individual schools (needs to organize a team with teachers from all subjects).
- Needs to find the way to raise the awareness and cooperation of the principals, Head of Departments (HODs) and teachers from schools to understand and participate in PD activities.

Opportunities

- Quality of schools and teachers will be improved (more teaching aids and equipment, professional development activities).
- Professional skills of individual teachers will be developed through activities and trainings.
- Capacity for industrial linkage will be stronger, and better job opportunities can be developed for the students and also to schools.

Threats

- Some principals and HODs are afraid of losing their power in school because they misunderstand the role of the HOPDs.
- Although people want change, they are still afraid to change their mindset.

After reviewing the result from the SWOT analysis, it is clear that the implementers face many difficulties and challenges to implement the professional development programme in IBPD centres. These include the following:

1. *Mindset and attitude*: Teachers are accustomed to their normal teaching and learning method (like chalk and talk approach). For some experienced teachers who are skilful in technical subjects, they do not want to change their teaching style. Some may think they do not need to learn more to improve their teaching methods. And the most difficult part is they don't want to accept and participate in change.
2. *Sustainable (HOPD) plan*: The role of the HOPD may be questionable for some principals and HODs from the schools. In order to raise awareness for all teachers for IBPD centre functions and the role of HOPD, it is important to implement the professional development programme in order to be sustainable.
3. *Industrial linkage*: Schools within DTVET are the main providers of skilled labourers for the local economy. IBPD centres and HOPD will be a part of industrial linkage, and this may be difficult for some HOPDs without experience. The most important way to overcome this difficulty is to obtain the cooperation and support of the principals and HODs.
4. *The most difficult time* of implementing the PD plan and establishing the IBPD centre was from October 2018 to September 2020. Professional development activities and trainings were new experiences for everyone, and no one had the experience of participating in professional development activities. For this reason, teamwork plays a vital role in achieving this programme. And finding out possible ways to effectively use the centre is important for sustaining the development of the IBPD centres and development of the professional skills of the teachers.
5. *Pre-service training* in IBPD centres also needs time to function properly.

11.6 Further Opportunities and Developments

The implementation process for Postgraduate Diploma in TVET Education and Advanced Diploma in TVET Education programme for pre-service teachers was started in December 2020 by the support of GIZ. But in order to be in line with teacher training system of other countries, Myanmar needs to develop bachelor's and master's degree programmes for TVET teachers. In contrast to general education teachers, there is no bachelor/master system which includes vocational pedagogy for TVET teachers and that DTVET would rather take in engineers (with NO pedagogy at all) and give them some (4–6 weeks) pedagogy training via the TPTC and IBPD centres. It is necessary to have more professional ways of teacher training at the university level (these should include research and international exchange). The IBPD concept is mainly helping to retrain those already in service, as they had (almost) no training at all. TVET teacher training already begins at the university level (BTVET + MTVET + research structures). Diploma-level teachers should have a pathway that involves practical work experience and may make them workshop experts in the schools rather than fully fletched teachers. New teachers need a better system from the beginning, and 1–2 years of practical work experience in the

industry should be mandatory. Teachers should also be involved in teaching activities during their time at university.

During the pandemic crisis, although all schools are closed, PD team tried to figure out the solutions to carry out the trainings for HOPDs. The HOPDs' trainings were conducted by using online learning tools like MS 365, Google Meet and Zoom applications. The lesson that ICT skills of the teachers play a vital role for the teacher with online trainings and digital tools beyond their technical subjects and didactical skills has been learnt.

11.7   Conclusion

To support the recommended changes outlined in NESP, 2016–2021, DTVET, operating under the auspices of the MoE, is currently moving forwards to set up IBPD centres to cater to specific local teacher professional development needs. DTVET started the process on developing Myanmar Technical Teacher Competency Standard Framework (MTTCSF) in support of GIZ in December 2020. As reforms are made, there will be more opportunities for teachers to develop their professional teaching competence. As they become more confident and proficient in their jobs, they will play a critical role in student development and achievement. This, in turn, ultimately positively affects the economic impact for the country. With well-prepared teachers, the education system benefits, which will eventually lead to increased job satisfaction as their teaching contributions are recognized and rewarded. In order to achieve these important and necessary goals, there are many critical areas of action needed to fulfil the requirements of qualified education.

According to the findings from this research, it is highly recommended for Myanmar's educational system to place more emphasis on teacher education, especially in vocational education teacher training. Working conditions (hours, equipment, etc.), transfer policy, accreditation and certification systems of teacher training and rewarding and recognition of the IBPD system and professional development activities urgently need to be reviewed, and the teachers in the system need retraining. In the future, TVET sub-sector in Myanmar can be strengthened through capacity building of the training of these teachers who are important for developing a skilled workforce for the country's economy. The IBPD centre concept is the solution for effectively expanding the TVET system but also for sustaining the system with long-term training opportunities for TVET teachers as well as learning opportunities within higher learning (BTVET/MTVET programme) in order to upgrade the TVET sector of the country. This study makes the strong recommendation that, in order to upgrade the country's economy by providing qualified teachers, the first objective is to achieve the professional development goals of TVET teachers and the development of the vocational education sector. In conclusion, the professional development plan is, with the financial support of the EU, starting to upgrade the school facility and teachers' profession. However, sustaining the IBPD centre's function is equally important for upgrading the vocational

education sector of the country. To construct the concrete quality assurance system and standards for TVET teachers is also important to be in line with the regional system and standard. It is the duty of every responsible person to consider these facts deeply, and to accomplish the solutions concretely for sustaining the teacher professional development programme is really important and urgently needed for the teacher and also for the education sector of the country.

References

DTVET. (2012). *Initial assessment of post-primary education (PPE) in Myanmar: Discussion paper*. Asian Development Bank, MoST.

DTVET, MOE. (2019). *Institution-based professional development center operational manual*. DTVET, MOE. https://tptcbaelin.tvet.edu.mm/index.php/course/knowledges-resources/download/8-pd-office/4-operation-manual-17-9-19?fbclid=IwAR1TeP5n6hkJz6-Ju1khJL4GpZTASr1gVecFtSUntn1jvS-dSKhvXg7x5AI

Hayden, M., & Martin, R. (2013). Recovery of the education system in Myanmar. *Journal of International and Comparative Education*, 2(2). http://crice.um.edu.my/downloads/1Hayden&Martin.pdf

Lee, M., & Lassig, P. P. (2015). International teacher training in the GDR—Throwback to the past, learning for the present, BIBB Bonn. https://www.bibb.de/en/35497.php

Milio, S., Garnizova, E., & Shkreli, A. (2014). *Assessment study of technical and vocational education and training (TVET) in Myanmar. ILO DWT for East and South-East Asia and the Pacific*. ILO. https://www.researchgate.net/publication/272089098_Assessment_study_of_technical_and_vocational_education_and_training_TVET_in_Myanmar?channel=doi&linkId=54da37260cf2464758215d2b&showFulltext=true

Ministry of Education. (2013). *Myanmar comprehensive education sector review, CESR*. The Development Partner Coordination Group (DPCG). https://www.google.com/search?client=firefox-b-d&sxsrf=ALeKk01KlhuE-h96rEx5EQbzPGYUl8yO5w%3A1609956501870&ei=lfz1X_XRNOiajLsPgv-ioAU&q=Ministry+of+Education.+2013.+Myanmar+Comprehensive+Education+Sector+Review%2C+CESR.+Myanmar%3A+The+Development+Partner+Coordination+Group+%28DPCG%29.&oq=Ministry+of+Education.+2013.+Myanmar+Comprehensive+Education+Sector+Review%2C+CESR.+Myanmar%3A+The+Development+Partner+Coordination+Group+%28DPCG%29.&gs_lcp=CgZwc3ktYWIQAzIECCMQJzIECCMQJzICCAAyBAgAEAoyCAgAELEDEIMBMgIIADICCAAyAggAMgIIADICCABQjh1Yjh1gwyxoAHAAeACAAT2IAT2SAQExmAEBoAECoAEBqgEHZ3dzLXdpcesABAQ&sclient=psy-ab&ved=0ahUKEwi18Jar84fuAhVoDWMBHYK_CFQQ4dUDCAw&uact=5

Ministry of Education. (2019). *MoE's reforms: Working on educational development plan on 12 priority sectors*. Ministry of Education, April 10, 2019: http://engmoest.moe-st.gov.mm/?p=4686.

MoE New Zealand. (2016). *Ambitious for New Zealand four year plan 2016-2020*. Ministry of Education. https://www.education.govt.nz/assets/Uploads/4-Year-Plan-2016-WEB.pdf

MoE New Zealand. (2017). *The Ministry of Education. Annual report*. MoE. https://www.education.govt.nz/assets/Documents/Ministry/Publications/Annual-Reports/2017-MOE-Annual-Report-web.pdf

NESP. (2016). *National education strategic plan (2016-2021)*. MOE. http://www.moe.gov.mm/en/?q=content/national-education-strategic-plan

OECD. (2005). *Technical report, teachers matter: Attracting, developing and retaining effective teachers*. OECD Publishing. https://www.oecd.org/education/school/34990905.pdf

Paryono. (2017). The importance of TVET and its contribution to sustainable development. *AIP Conference Proceedings, 1887*(1), 020076. https://doi.org/10.1063/1.5003559

Thornton, B., & Tolmer, Z. (2017). *Strengthening pre-service teacher education in Myanmar review report* (p. 2016). Myanmar TVET Forum.

Training for The Future (n.d.). Myanmar. https://www.burmalibrary.org/docs22/GNLM2016-07-1 6-red.pdf?fbclid=IwAR1hcb8TYTKgwSXeMcKOHz_v-XS9w9OBvx0 RAPiNKOfHBgucTpTCuyLGaRM

Ulla, M. B. (2017). Teacher training in Myanmar: Teachers' perceptions and implications. *International Journal of Instruction, 10*(2), 103–118. http://www.e-iji.net/dosyalar/iji_2017_2_7.pdf

Chapter 12
Indonesia TVET Teacher Training: Policy and Implementation to Meet Industry Demands

Moh Sanni Mufti Alamsyah, Isma Widiaty, Dinn Wahyudin,
M. Syaom Barliana, Yulia Rahmawati, Danny Meriawan,
Pupung Purnawarman, Aim Abdulkarim, Johar Maknun, and Edi Suryadi

Abstract Vocational teacher education and training in Indonesia are one of the essential pillars for guaranteeing quality in the learning processes which are carried out in vocational secondary schools. TVET teacher education and training in Indonesia is a cross-sectoral field of responsibility for vocational teachers, for the pre-service TVET Teacher Training program which is carried out by universities in faculties related to existing study programs in vocational secondary schools. At the

M. S. M. Alamsyah (✉)
UNEVOC Centre at BBPPMPV BMTI, Bandung, Indonesia
e-mail: sannialamsyah@tedcbandung.com

I. Widiaty · Y. Rahmawati
Faculty of Technology and Vocational Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

D. Wahyudin
Universitas Pendidikan Indonesia, Bandung, Indonesia

M. S. Barliana · J. Maknun
Technical and Vocational Education and Training (TVET), Research Center, Faculty of Technology and Vocational Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

D. Meriawan
Department of Civil Engineering Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

P. Purnawarman
Faculty of Language and Literature Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

A. Abdulkarim
Faculty of Social Sciences Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

E. Suryadi
Faculty of Economics and Business Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

183

same time, in-service TVET Teacher Training is the responsibility of the TVET Teacher Training Institution, which belongs to the ministry of education and culture and also involves universities in some of its programs. Nowadays, TVET Teacher education and training in Indonesia are attempting to synergize pre-service programs with in-service programs. This needs to be done so that the development of vocational teachers can produce professional vocational teachers according to the needs of SMKs sustainability.

12.1 Introduction

Indonesia is the largest archipelago country in the world with a projection for ongoing positive economic growth. In order to support this consistent growth, Indonesia needs skilled workers to support the nation's development targets. The qualification of skilled workers is one of the critical issues for the competitiveness of economies in most countries in the world. One of the formal education services needed to improve the quality of human resources in Indonesia are vocational secondary schools (SMK) or vocational education at the secondary educational level. Law Number 20, Article 15, of 2003 (Gov, 2003) concerning the national education system states that vocational education is a secondary education that prepares students to work in specific fields. A similar definition is also mentioned in Government Regulation No. 29 of 1990 (Gov, 1990) concerning secondary education that vocational education is education at the secondary level that prioritizes the development of students' abilities to carry out certain types of work.

Implementation of vocational education is very different from general education in terms of curriculum or the contents of the lessons, as well as graduates and relationships with stakeholders. In order to realize these objectives, SMKs need support from educators and educational staff, facilities and infrastructure, curriculum, and others in implementing the learning process under applicable competency standards. In their implementation, SMKs face various obstacles, one of which, the quality and quantity of teachers, is a classic problem in Indonesia. In daily learning processes, teachers assigned to vocational secondary schools are normative teachers, adaptive teachers, and productive teachers. Normative teachers are those who teach subjects that function to shape students into whole individuals and those who have the norms of life as individual beings and social beings, both as citizens of Indonesia and as citizens of the world. Normative subjects are taught in a way that students can live and develop in harmony in their personal, social, and citizen life. This subject focuses on the norms, attitudes, and behaviors that must be taught to, instilled in, and trained with students. Normative subjects apply equally to all study programs in vocational secondary schools (SMK). The subjects consist of Religious Education, Citizenship Education, Indonesian Language, Physical Education, Sports and Health, and Cultural Arts Education.

Adaptive teachers are those who teach subjects that form students as individuals who have a broad and robust knowledge base which will help them adapt to changes

in the social environment and work environment and be able to develop themselves following changes in science, technology, and art. Adaptive programs contain subjects that focus more on providing opportunities for students to understand the basic concepts and principles of science and technology that can be applied to everyday life, as well as those which underlie competencies for work. Adaptive subjects are given so that students not only understand "what" and "how" a job is done but also provide an understanding and mastery of "why" it should be done. Adaptive programs consist of groups of subjects that apply equally to all skills programs as well as subjects that only use specific skills programs according to the needs of each study program. These include Mathematics, English, Natural Sciences, Social Sciences, Entrepreneurship, Computer Skills, and Information Management. Productive teachers are tasked with training students to have working competencies according to the Indonesian National Competency Standards (SKKNI) and make them into qualified skilled workers in specific jobs for industrial needs. They teach subjects according to the competencies that are the main elements of vocational secondary schools graduates. Responding to these demands, productive teachers in Indonesia must have theoretical and practical abilities. Unfortunately, SMKs still have some problems with quantity and quality for these productive teachers.

Nowadays, the Indonesian government has implemented several programs to meet the needs of productive teachers and to continuously improve teacher competencies in accordance with the needs and development of the industry. The development of productive teacher competencies continues to be carried out by making adjustments regularly under the certification scheme based on the Indonesian National Competency Standards (SKKNI) or international competency standards that apply to specific fields in Indonesia. Several factors are affecting the quality of vocational education, particularly by generating workers with qualified knowledge and skills, and reality shows that the quality of TVET teachers is the most salient factor among them. Against this background, this paper will discuss programs that have been implemented by the government for developing the quantity and quality of vocational teachers through document reviews related to pre-service and in-service training for productive teachers in vocational secondary schools (SMK) in Indonesia.

12.2 Requirements of Indonesian TVET Teachers

Discussing TVET Teacher requirements is undoubtedly very complicated due to differences in approaches between countries. For example, advanced countries like Germany have mandatory requirements for teachers to have master's degree qualifications, whereas in Indonesia, teachers are required to have a bachelor's degree. Therefore we must look carefully at how the ideal requirements for the TVET Teacher are constructed (cf. Bünning & Jenewein, 2006). When viewed holistically, TVET teachers should possess appropriate personal, ethical, professional, and teaching qualities. Proper preparation will enable them to operate in and adapt to

an ever-changing scientific, technological, and social environment (cf. Stolte, 2006). The dual professional identity of the TVET teacher as pedagogue and industry expert is generally well established among academics and policymakers. However, the desired profile for high-quality TVET professionals is becoming increasingly complex and demanding.

Unlike in some other countries, the competencies required by productive teachers in Indonesian vocational schools in managing learning are that teachers not only manage the learning process in the classroom in a theoretical session. They also include learning processes into practical activities in the workshop as well as assessing or evaluating student learning outcomes as material for subsequent policymaking. With the kind of capabilities TVET teachers have, it is expected that the process of transfer of knowledge, both in theory and practice, from teachers to students, happens effectively and efficiently. In order to improve the overall quality of teaching and learning activities, a teacher must master the planning of teaching and learning activities, carry out planned activities, and conduct assessments on theoretical and practical exercises.

Also, one of the main skills that productive vocational teachers in Indonesia must possess is technical competence in their respective fields of expertise that can support their teaching practice in the workshop. Professional competence in knowledge is one of the essential qualifications for vocational teachers. If this technical competence does not exist in a vocational teacher, then he/she will not be competent in the job. This technical competence skill is in line with the implied message of competence itself, which demands professionalism and proficiency. Technical competency helps teachers master the material and process teaching and learning programs, especially practical learning. Vocational teachers must also carry out evaluations and administrative procedures. The ability of teachers to carry out practical evaluation results is an essential competency for teachers. It is not sufficient for a class to only be supported by learning planning, but it also requires evaluation. Teachers are also required to be able to develop the learning process as well as to have mastery of the teaching materials. In addition to being able to master the class, the teacher also needs to evaluate student competency planning, which significantly determines the next context, or evaluate the policy of treating students based on the concept of complete learning (cf. Purwanto, 2004).

Figure 12.1 demonstrates the capabilities of TVET teachers based on knowledge, technical and personal attributes, and the ability to impart those capabilities to others. They must be able to balance their teaching expertise with up-to-date knowledge and experience of an ever-changing industry. They need pedagogical skills, industry experience, and academic knowledge (cf. ILO, 2010). Having pedagogical competence, personal competence, and social competence in the formulation of an ideal profile that is broadly in line with the competency formulation in Law Number 14 of 2005 (Gov, 2005b) on Teachers and Lecturers, which was further elaborated in the Ministry of Education Regulation Number 16 of 2007 (Ministry, 2007) concerning Academic Qualification Standards and Teacher Competence and Government Regulation Number 74 of 2008 (Gov, 2008) concerning teachers, two other competencies, namely, competency of expertise and managerial competence, are findings of

Fig. 12.1 The requirements for Indonesian vocational teachers. Source: Surono and Wagiran (2016)

previous research conducted on teachers competency formulation based on the policy context in Indonesia (cf. Surono & Wagiran, 2016). Technical competence in the field of expertise is the primary variable that must be possessed by a vocational teacher in Indonesia. In order to guarantee and measure the quality of the technical competencies of the vocational teachers' expertise, the Directorate of Teachers and Education Personnel of the Ministry of Education and Culture established a second-party Professional Certification Institution (LSP-P2) licensed by the National Professional Certification Authority (BNSP) in all TVET teacher training centers in Indonesia.

12.3 Status of TVET Teacher Training in Indonesia

12.3.1 Pre-service TVET Teacher Training

Indonesia's national education system is stipulated by Law Number 20 of 2003 (Gov, 2003) of the Republic of Indonesia, which concerns the national education system. The national education system regulates all the components of education that need to be implemented by stakeholders. In Chap. 6, the law has regulated levels, pathways, and types of education. Education pathways include formal, non-formal, and informal education channels. Education levels consist of primary education, secondary education, and higher education. Types of education include general, vocational, academic, professional, vocational, religious, and specialized education. Based on the National Education System Law, many other laws and
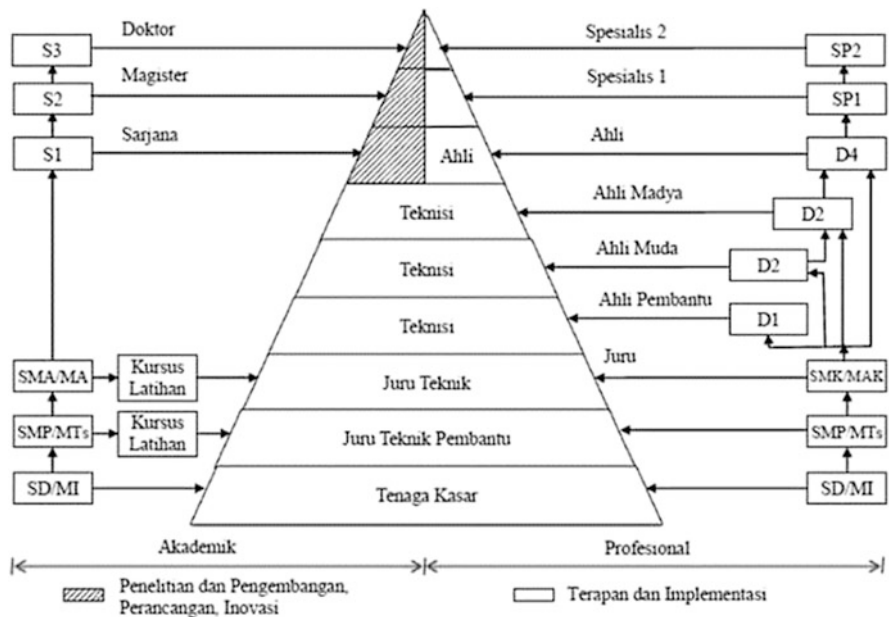
Fig. 12.2 Academic and professional education system in Indonesia. Source: Compiled from information from the Indonesian Education Act (Kurnia, 2013). Remarks: SD/MI: Primary education, SMP/MTs: Secondary education, SMA/MA: Higher secondary education, Sarjana: Undergraduate degree, Tenaga kasar: Non-skilled labor, Teknisi: Technician, Ahli: Expert worker

ministerial regulations support the implementation of a national education system. Supporting rules governing the process of education, teachers, and higher education include the official rules on National Education Standards (Gov, 2005a, 2013), several ministerial regulations governing the components of National Education Standards, Law No. 14 of 2005 (Gov, 2005b) concerning Teachers and Lecturers, National Ministry Education Regulation No. 16 of 2007 (Ministry, 2007) concerning the qualifications and competency standards of teachers, and Law No. 12 of 2012 (Gov, 2012) concerning higher education. Some of these laws and regulations guide the implementation of education at all levels of education. However, some have still not fully been implemented, for example, those governing teachers and lecturers and higher education. Law No. 12 of 2012 (Gov, 2012) is intended to complete the regulations regarding higher education as part of the national education system based on the law of the national education system (cf. Fig. 12.2). Higher education consists of the following:

- Academic education, which is focused on mastery of academic knowledge and understanding the scientific method.
- Vocational education, which focuses on preparing graduates to apply the expertise they have learned.

Higher Education Institutions that organize academic and vocational education can be distinguished based on the levels and study programs that are offered, namely, universities, institutes, polytechnics, academies, and community academies. The figure below is an overview of the higher education system in Indonesia. Based on this, the requirements for training professional teachers can be outlined. Based on the Law on Teachers and Lecturers, the requirements for becoming a teacher are to have a minimum S1 (bachelor's degree) or diploma IV as well as a professional teaching certificate. Based on these regulations, the process of academic education (S1 or D IV), as well as professional teacher education, is held at universities.

Vocational teacher education has taken place since the early era of Indonesian independence. After Indonesia's independence, the Indonesian government observed a lack of teachers at all levels and types of educational institutions. In order to overcome this problem, the government established various teacher education courses. Around the 1950s, at the level above secondary education developed B-I course, B-II course, and first advanced teacher education (PGSLP stands for Pendidikan Guru Lanjutan Pertama), courses were tasked with preparing teachers for secondary schools. Efforts to improve the quality and number of teachers continue to be made through the establishment of the Teacher Education College (PTPG stands for Perguruan Tinggi Pendidikan Guru) by the government through the Minister of Education and Culture. PTPG was established in four cities, namely, Batusangkar (West Sumatera), Manado (North Sulawesi), Bandung (West Java), and Malang (East Java). Thus there are two types of educational institutions which produce teachers, namely, B-I/B-II/PGSLP courses and PTPG. The two institutions are then integrated into one educational institution through various steps. In 1957, PTPG was incorporated into the Faculty of Teacher Training and Education at the nearest university. In 1963, the Ministry of Basic Education establishes the Institute of Teacher Education (IPG) to produce secondary school teachers. The BI and BII courses, which also produce secondary school teachers, are integrated into the FKIP, under the Ministry of Higher Education. This dualism is felt to be less effective and also to disrupt the management of teacher education. To solve this problem, B-I and B-II courses have been integrated into FKIP at one university. The Presidential Decree No. 1 of 1963 (Presidential Decree, 1963), on 3 January 1963, established the integration of teacher education institutions. This Presidential Decree took effect 16 May 1964, and FKIP and IPG were changed to IKIP (Institute of Teacher Training and Education) at the university level. In the next development, IKIP was given an expanded mandate to develop educational and non-educational knowledge within the university. Since 1999, IKIP has been transformed into a state university (cf. Table 12.1).

The universities mentioned above organize educational programs for vocational teacher candidates with a Bachelor of Education degree, following the requirements of the law governing teachers and lecturers who wish to become professional teachers according to the law. Starting in 2015, graduates from the universities before serving in vocational secondary schools attend the "Pre-service Post-Study Practical Training Program" (PPG) program for two semesters (1 year), after which they can apply for service as a vocational teacher in SMK.

Table 12.1 List of universities with vocational teacher undergraduate programs

No.	Before transformation	After transformation	Location
1.	IKIP Medan	Universitas Negeri Medan	Medan, North Sumatera Province
2.	IKIP Padang	Universitas Negeri Padang	Padang, West Sumatera Province
3.	IKIP Jakarta	Universitas Negeri Jakarta	Capital Special Region Jakarta
4.	IKIP Bandung	Universitas Pendidikan Indonesia	Bandung, West Java Province
5.	IKIP Semarang	Universitas Negeri Semarang	Semarang, Central Java Province
6.	IKIP Yogyakarta	Universitas Negeri Yogyakarta	Special Region Yogyakarta
7.	IKIP Surabaya	Universitas Negeri Surabaya	Surabaya, East Java Province
8.	IKIP Malang	Universitas Negeri Malang	Malang, East Java Province
9.	IKIP Singaraja	Universitas Pendidikan Ganesha	Singaraja, Bali Province
10.	IKIP Manado	Universitas Negeri Manado	Manado, North Sulawesi Province
11.	IKIP Ujung Pandang	Universitas Negeri Makassar	Makassar, South Sulawesi Province
12.	IKIP Gorontalo	Universitas Negeri Gorontalo	Gorontalo, Gorontalo Province

Source: Authors

12.3.2 In-service Teacher Training

Up until now, the growth in the number of students at vocational secondary schools (SMK) has reached more than 3000 new SMKs, which directly contributes to the growth in the number of secondary school students, especially SMK students, by more than one million students. As a result of this significant growth, the configuration of high school students, compared to vocational school, has shifted from 60% high school students: 40% vocational students to 49% high school students and 51% vocational students (Directorate of Vocational Secondary Schools, 2017). Based on the current total population of SMKs, 73.9% are SMKs which have been established by the community, and only 26.1% were established by the government. An interesting fact is the population of state vocational secondary schools in 2013 was only 25.8% of the total SMKs but has more students than private vocational secondary schools, which reached 40.3% (ibid). Other interesting facts are also shown in the distribution of students based on the area of expertise. It can be seen that there is a declining trend in almost every sector except the Information and Communication Technology (ICT) and the healthcare sector; these had an increase of ±1–2% per year. Junior high school graduates interested in the ICT and healthcare sector are strongly influenced by the increasing market demand for SMK graduates in these two fields. The upward trend of vocational school students in the areas of agribusiness and agro-industry were constant from year to year. This continuous growth indicates that Indonesia's agricultural potential is not yet attractive to junior high school graduates. Therefore, action is needed to increase their

interest, given that Indonesia still lacks skilled workers in agribusiness and agro-industry (cf. Ministry, 2017).

While a declining growth trend can be observed in the areas of Arts, Crafts and Tourism, Business and Management, and Technology and Engineering, a very significant downward trend occurred in the field of Business and Management sector which has decreased by almost 5%. The causes of this decline include the fact that the market has begun to saturate with business and management graduates. Educators are one of the main factors which affect the quality of education in a country. Based on Law Number 20 of 2003 (Gov, 2003), educators consist of teachers, lecturers, counselors, tutors, facilitators, and others participating in the administration of education. Following the mandate of Government Regulation No.74 of 2008 (Gov, 2008), all teachers in secondary schools starting in 2015 must have, at minimum, a bachelor's degree (S1/D4). This qualification is needed so that teachers have sufficient knowledge about the subjects being taught. However, until 2013, 9% of high school and vocational school teachers still had qualifications lower than a bachelor's degree (S1/D4). Especially in vocational secondary schools, the productive teachers take more responsibility for teaching both in theoretical and practical sessions. Indonesia still lacks productive teachers in vocational schools. The lack of productive teachers is experienced in almost every province, according to the results of research conducted in eight provinces coordinated by the Directorate of Vocational Secondary Schools (SMK), the Development for Central Java, the Special District of Yogyakarta (DIY), East Java, West Java, the Special District of Jakarta, Lampung, South Kalimantan, and West Nusa Tenggara. Respondents included the provincial education office; the TVET teacher training centers (P4TK), which organized a dual expertise program; the P4TK instructor; the principal of the vocational secondary schools; the teacher participating in the dual expertise program; and the related department (cf. Directorate of Vocational Secondary Schools, 2017).

The development and improvement of teacher competencies, as outlined in Government Regulation No. 74 of 2008 (Gov, 2008), are carried out through a system of sustainable professional development (PKB), which includes education and training, apprenticeships, scientific publications on research, and so on (cf. Table 12.2).

Sustainable professional development (PKB), based on the provisions of the Ministry of Administrative and Bureaucratic Reform's Regulation No. 16 of 2009 regarding functional teacher positions and credit scores, is based on the fact that teachers have a significant role in improving the learning process for and the quality of students. One of the fundamental changes contained in Regulation Number 16 of 2009 is the assessment of teacher performance; what was previously even more bureaucratic is now becoming more practical, as well quantitatively and qualitatively oriented, so that teachers are expected to be more motivated to improve their performance and professionalism. Under these policies, functional positions consist of four levels, namely, first teacher, junior teacher, intermediate teacher, and primary teacher. Every year, teachers must be assessed regularly through Teacher Performance Assessment (PK Guru) and must take part in sustainable professional

Table 12.2 TVET teacher training modes in Indonesia

No.	Activities	Target	Responsible institution
1.	In-house training (IHT)	All teachers	Teachers working groups (KKG) and subject teachers deliberations (MGMP)
2.	Industrial apprenticeship program	Productive teacher	Vocational secondary schools (SMK) and TVET teacher training centers (P4TK)
3.	Training trough schools partnership	Productive teacher	Vocational secondary schools (SMK) and TVET teacher training centers (P4TK)
4.	Distance training and learning	Productive teacher	Vocational secondary schools (SMK) and TVET teacher training centers (P4TK)
5.	Tiered or special training	Productive teacher	Vocational secondary schools (SMK) and TVET teacher training centers (P4TK)
6.	Short courses	Productive teachers	Vocational secondary schools (SMK), TVET teacher training centers (P4TK), and university (LPTK)
7.	Internal coaching	All teachers	Vocational secondary schools (SMK)

Source: Authors

development (PKB). If the teacher has the rank of III/a, she/he has to take part in further education, whereas if the teacher has the rank of III/b, she/he has to publish innovative scientific studies. In addition to the teacher competency development programs mentioned above, GIZ (2013) recommended five models of vocational teacher education: first, the concurrent or integrative model; second, the consecutive model, in which a person obtains qualifications as a teacher after graduating from university (bachelor's or master's); third, the model for recruiting practitioners from the workforce; fourth, the model of recruiting practitioners who have a bachelor's degree; and fifth the model of recruiting expert workers (real-life practitioners). At present, of the five models, Indonesia applies the first model, the concurrent model. After the Law on Teachers and Lecturers and the Teacher Professional Education (PPG) were implemented, the first and second models were implemented in Indonesia (cf. Wijanarka, 2016).

In implementing sustainable vocational teacher competency development, the Ministry of Education and Culture regulation number 16 of 2015 (Ministry, 2016) governing organization and work procedures of the Center for Development and Empowerment of Teachers and Education Personnel, the Ministry of Education and Culture manages TVET teacher training centers across Indonesia. Each has their own fields of specialization as there is Center for Development and Empowerment of Teachers and Education Personnel (PPPPTK) in the field of the following:

1. Machinery and Industrial Engineering, in Bandung, West Java.
2. Building and Electricity, in Medan, North Sumatra.
3. Automotive and Electronics, in Malang, East Java.
4. Business and Tourism, in Depok, West Java.
5. Agriculture, in Cianjur, West Java.
6. Arts and Culture, in Yogyakarta.

7. Maritime Affairs, Fisheries, Information and Communication Technology, in Gowa, South Sulawesi.

Based on Law Number 16, Article 1, Paragraph 1 of 2015, the Center for Development and Empowerment of Teachers and Education Personnel, hereinafter referred to as PPPPTK and LPPPTK KPTK, is the technical implementing unit of the Ministry of Education and Culture in the field of developing and empowering teachers and education personnel who answer to the Director General of Teachers and Education Personnel.

Article 2 states that PPPPTK has the task of carrying out the development and empowerment of teachers and educational personnel according to their respective fields. Article 3 states that in carrying out the tasks referred to in Article 2, PPPPTK carries out the following functions:

1. Preparation of development and empowerment programs for teachers and education personnel.
2. Management of data and information for increasing the competence of teachers and education personnel.
3. Facilitation and implementation of increasing the competence of teachers and education personnel.
4. Implementation of development and empowerment cooperation of teachers and education personnel.
5. Program evaluation and facilitation for enhancing the competence of teachers and education personnel.
6. Implementing PPPPTK administrative affairs.

12.4 TVET Teacher Training Program Implemented in Indonesia

12.4.1 Implementation of Pre-service TVET Teacher Training

12.4.1.1 Background

As explained in Sect. 12.3, the implementation of education and training of prospective vocational teachers in Indonesia is the responsibility of the universities across various faculties, especially in vocational education and technology faculties (FPTK). In practice, vocational education and technology faculty (FPTK) have a variety of study programs that are expected to produce vocational teachers in existing study programs (focused on skill competencies) in vocational secondary schools (SMK). Still, in their implementation, the study programs in vocational education and technology faculties (FPTK) are not the same as study programs in vocational secondary schools (SMK); this can be the result of differences in levels of

Table 12.3 Examples of study program comparison between SMKs and universities

No.	Areas of expertise	Skill programs	Number of skill competency in SMK	Study program (vocational teacher program)	Faculty
1.	Technology and Engineering	Construction and property technology	4	Civil engineering and planning education	Vocational education and technology, faculty (FPTK)
		Geomatics and geospatial techniques	2	Civil engineering planning education	Vocational education and technology, faculty (FPTK)
		Electrical engineering	6	Electrical engineering education	Vocational education and technology, faculty (FPTK)
		Mechanical engineering	6	Mechanical engineering education	Vocational education and technology, faculty (FPTK)
		Aircraft technology	7	–	–
		Graphic technique	2	–	–
		Industrial instrumentation engineering	2	Electronic engineering education	Vocational education and technology, faculty (FPTK)
		Industrial engineering	2	–	–
		Textile technology	4	–	–
		Chemical engineering	4	Chemical engineering education	Mathematics and natural sciences education faculty (FMIPA)
		Automotive engineering	7	Automotive engineering	Vocational education and technology, faculty (FPTK)
		Shipping techniques	7	–	
		Electronic engineering	5	Electronic engineering	Vocational education and technology, faculty (FPTK)

Source: Authors

education or differences in curriculum. Table 12.3 outlined the relation of existing study programs in university with those in SMK.

From the table above, we can see that the study programs in vocational schools are targeted more to jobs or positions. In contrast, the study programs in universities focus on broader knowledge. By comparison, graduates from universities can choose a study program in vocational schools to obtain expertise in their field in accordance
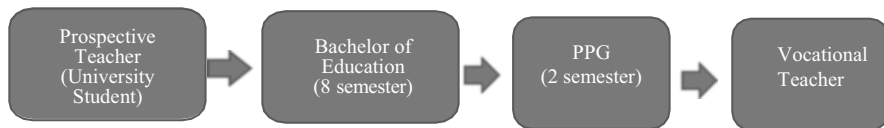
Fig. 12.3 Vocational teacher education and training flow. Source: Authors
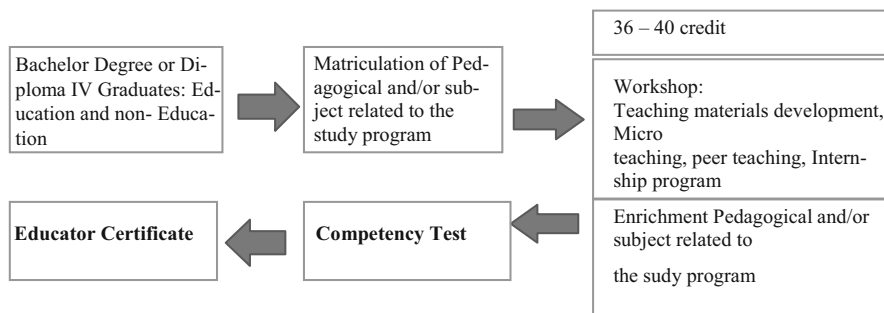
Fig. 12.4 PPG model for S1/D IV graduates (educational and non-education with a related degree in SMK). Source: Wijanarka (2016)

with the knowledge gained at the university. We can also see that not all skill programs that can be facilitated by universities are present in undergraduate programs that train vocational teachers.

After earning a bachelor's degree in education in a specialized vocational teacher study program, graduates will take part in a post-study education program, namely, the Professional Teacher Program (PPG) for two semesters (1 year). Below is Fig. 12.3 which shows the flow of vocational teacher education and training in Indonesia.

In practice, the PPG program can also be attended by graduates who have not studied educational sciences but are interested in becoming vocational school teachers and earning a bachelor's degree related to vocational secondary schools related to the existing study program/subject in vocational secondary schools (SMK). A more detailed explanation regarding PPG can be found below (Fig. 12.4).

According to the policy outlined above, it is expected that vocational teachers can be trained in accordance with the existing study programs in SMKs and with the expected quantity and quality.

12.4.1.2   The Curriculum of Pre-service TVET Teacher Training

Vocational teacher education programs in Indonesia generally consist of eight semesters, conclude with a bachelor's degree, and are designed in so-called concurrent mode. This means that the teaching subject content is studied parallel to the pedagogical contents, also called integrated teacher education (cf. Kustija, 2010). A

Table 12.4 Example of a vocational teacher training curriculum

Kind of subject	Semester credit unit (SKS)	Explanation	Information
General subject	14	Compulsory	General subject
Educational basic subject	12	Compulsory	Educational/didactic subjects
Internship program (PPL)	12	Compulsory	Teaching practice in vocational secondary schools (SMK)
Professional expertise subject	4	Compulsory	Vocational/technical subjects
Expertise subject	86	Compulsory	Vocational/technical subjects
Deepening expansion subject	16	Students are only required to choose 16 credits from the 40 credits offered	Vocational/technical subjects
Thesis (final project)	6	Compulsory	Final thesis
Total	150		

Source: UPI (2021)

typical distribution of general subjects, vocational subjects, and didactic subjects over the semesters of the concurrent model is depicted in the tables below. There are no nationally unified vocational teacher education curricula available at the moment, so the content and distribution of study programs vary from institution to institution. Study programs, however, must be accredited by the competent accreditation agency (cf. Kurnia, 2013).

The curriculum in the vocational education program contains 144–150 credits. As an example, Table 12.4 is showing the curriculum for the Automotive Education Engineering program in Universitas Pendidikan Indonesia (UPI).

12.4.2 Implementation of In-service TVET Teacher Training

In-service TVET teacher training has been carried out continuously by the Indonesian government since the 1990s. To train vocational teachers, several programs designed for vocational secondary schools teachers have been integrated with other teacher training programs at all educational levels in Indonesia, providing different approaches depending on the vocational education characteristic. Training policies and strategies always change with the times and with the developments in related industries. Traditionally vocational teacher training in Indonesia is conducted at

vocational teacher training centers related to the teachers' area of expertise. This training is also conducted internally by the teachers in the subject teachers' meeting (MGMP) in their respective regions. In its development, vocational teacher training in Indonesia is training new teachers following the concept of CBT (competency-based training), which is based on competency standards that apply to related fields of study. This training is being conducted at TVET teacher training centers across the country. Improving the quality of vocational teachers in Indonesia has accelerated when viewed in terms of the quantity of training carried out by all vocational teacher training centers. However, the amount of training conducted was not able to reach all vocational teachers throughout Indonesia. To get around this, the Ministry of Education and Culture, through the Directorate General of Teachers and Education Personnel, has made several breakthrough efforts to improve the quantity and quality of teacher training.

12.4.2.1   Learner Teacher Program (Implemented in 2016–2017)

The Learner Teacher Competency Improvement Program is a process of organizing teaching and learning activities to improve the ability and competence of teachers in carrying out their professional duties. Capacity building includes activities aimed at strengthening and growing abilities, attitudes, and skills. This activity is expected to result in a change in behavior in the teacher that will have a significant impact on improving their performance in teaching and learning processes in the classroom. Learner Teacher Competency Improvement Programs are one way to meet teacher competency standards following the demands of the profession as well as of developments in science, technology, and art. Learner Teacher Competency Improvement Programs have thus become an essential part of vocational teacher training that must continuously be carried out in order to maintain teacher professionalism. Therefore, the Learner Teacher Competency Improvement Program must be designed to provide a new experience in helping to improve competencies according to the teacher's task area so that learners gain knowledge and skills, as well as enhance the attitude of behavior needed to do their work in an appropriate manner based on their responsibilities (cf. Fig. 12.5). Learner Teacher Competency Improvement Program is designed to be based on Teacher Competency Standards (SKG), according to the Ministry of Education Regulation Number 16 from 2007 governing Academic Qualification Standards and Teacher Competencies, the Ministry of Education Regulation Number 27 from 2008 (Ministry, 2008) governing Academic Qualification Standards and Counselor Competencies Standards for Academic and Special Education, and teacher Competencies (Ministry, 2014). Based on the Indicators of Achieving the General Guidelines for the Learner Teacher Competency Improvement Program, which includes 14 Competencies in the Teacher Competency Standard (SKG), a teacher competency map was developed and divided into 10 competency groups (Ministry, 2013).

Furthermore, based on the ten competency groups, a Teacher Competency Test (UKG) question grid was developed, and a module of learner teacher competency
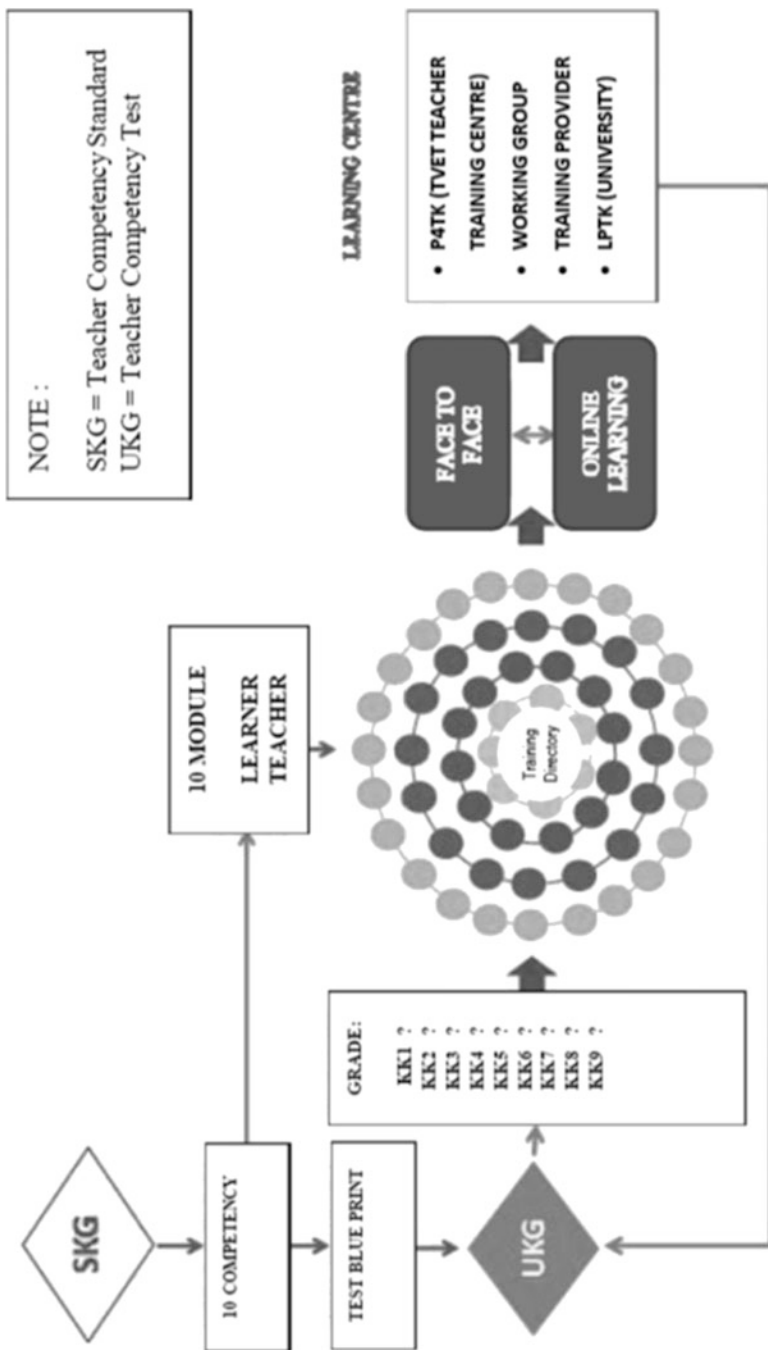
Fig. 12.5 Flowchart of learner teacher program development. Source: Ministry of Education and Culture (2016)

Table 12.5 Training modes for learner teacher program

No.	Learner-teacher mode	Target group	Learning process	Institution
1.	Face to face	Teacher with a below average grade in teacher competency test (UKG)—pass in two modules or less	Short courses Certification by BNSP	TVET Teacher training centers (P4TK)
2.	Combined learning mode	Teacher with an average grade in teacher competency test (UKG)—pass three to four modules	Short courses Distance learning Certification by BNSP	TVET Teacher training centers (P4TK)
3.	Online learning	Teacher with good grade in teacher competency test (UKG)—pass five to seven modules	Distance learning in an online platform	TVET Teacher training centers (P4TK)

Source: Ministry of Education and Culture (2017)

improvement was designed for each competency group. The results of the UKG become a reference for teachers for self-assessment for competencies so that the module required to improve teacher competency could be determined. The UKG results also serve as a reference for conducting a needs analysis for organizers of the Learner Teacher Competency Improvement Program.

Table 12.5 explains the learner teacher guideline for the Competency Improvement Program which is carried out and coordinated by TVET teacher training centers (P4TK) related to the subject and to the vocational schools (SMK) where teachers are assigned. This program was conducted through three modes, face-to-face mode, online mode, and combined online mode, based on the results of teacher competency tests (UKG).

These modes described are conducted based on the teacher competency test (UKG) result that teachers have taken and the program conducted by TVET teacher training centers which are related to the subject of expertise. This all takes place in coordination with vocational secondary schools (SMK).

Objectives

Specifically, the Learner Teacher Competency Improvement Program aims to make participants:

1. Master pedagogical and professional competencies per the modules studied.
2. Be able to perform as an educator and a leader for students.
3. Serve as an example of toughness, optimism, and cheerfulness for students.
4. Have the will to continue to learn to develop their potential.

to increase the necessary teacher competency test scores of teachers to 70 in 2017.

Benefits

1. Teachers can increase their capacity without neglecting their daily tasks.
2. With a variety of training modes provided, this program can increase the capacity of teachers according to the needs.
3. The government will get a picture of the real overall ability of teachers.
4. Provide opportunities for teachers who achieve maximum scores to become mentors for other teachers.

Target

The targets of this program are teachers at all levels of the educational units starting at kindergarten through to elementary, high school, junior high school, high school, and vocational secondary schools who have participated in the 2015 teacher competency test (UKG) specifically the teachers who need competence improvement through:

1. Completing eight to ten modules using face-to-face mode.
2. Completing six to seven modules using combined online mode.
3. Completing three to five modules using online mode.
4. Completing two modules and who can be identified as a national instructor/ mentor for participants.

Program Outcome

The learning program for teachers was implemented based on the result of teacher competency test scores in 2015, as shown in Table 12.6. In 2015 the average vocational teacher test scores were 44.31 which is far below the national standards set by the ministry with 55. After competency teacher tests which were conducted in 2015, this program successfully reached 19,419 vocational teachers in various sectors. After the implementation of this program, we can see a significantly increased test score for 2016. This result shows that this program has been

Table 12.6 Teacher competency test result (2015–2017)

Teacher level	Test participants			Average test result				
	2015	2016	2017	2015	2016	2017	↓↑	
Kindergarten	89,430	72,016	89,430	43.74	65.82	68.23	↑	24.49
Elementary	184,661	219,207	184,661	40.14	63.80	62.22	↑	22.08
Middle school	65,214	85,390	65,214	44.16	65.33	67.76	↑	23.61
High school	24,759	27,847	24,759	45.38	66.66	69.55	↑	24.17
Vocational school	11,592	19,419	11,592	44.31	70.30	68.53	↑	24.22
Extraordinary school	6,892	3,310	6,892	46.45	66.79	71.70	↑	25.26

Source: Directorate General Teachers and Education Personnel 2018

successfully implemented and achieved the targets set to improve the competency of vocational teachers.

As shown in the table above, this program has been successfully implemented and also achieved the targets set, based on average scores on teacher competency tests. In 2015 the average score reached by vocational teachers was 44.31 with 11,592 participants from various sectors. In 2016 the average score reached by vocational teachers increased to 70.30, an increase of as many as 25.99 points among 19,419 participants, despite the average decline in scores to 68.53 in 2017; overall the average test scores of vocational teachers increased by as much as 24.22 after 2 years of this program is implemented. Through the various kinds of training modes provided in this Learner Teachers Program, this program has offered extensive opportunities for vocational teachers to develop their capacities according to their area of expertise.

12.4.2.2   Dual Expertise Program (Implemented 2016–2017)

Background and Definition of the Program

Based on the results of teacher needs analysis by the Directorate General of Teachers and Education Personnel, data was obtained that some study programs in vocational schools (SMK) had a lack of productive teachers. In contrast, the number of teachers in other expertise/specialization programs or other subjects exceeds the required number. The results from the needs analysis show that in 2016 there was a shortage of productive teachers by as many as 91,861 teachers, including 41,861 teachers for public vocational schools and 50,000 teachers for private vocational schools. Following these results, in 2016–2017, the Directorate General of Teachers and Education Personnel (2016 and 2017a) implemented a short-term program called Dual Expertise for the Teacher in Vocational Schools (SMK)/Senior High School (SMA). The target of this Dual Expertise Program in 2016–2017 was to train 15,000 new productive teachers (Fig. 12.6). All stages in the program must be followed by teachers participating in the Dual Expertise Program include the ON-IN program, skill certification at the Second-Party Professional Certification Institute (LSP P2) licensed by the National Professional Certification Authority (BNSP), and Teacher Educational Training (PLPG) in university.

In this program, teachers will be given skills certification programs according to their choice. Skills certification is a way of assuring that the expertise of a certified teacher meets the requirements for his or her position by referring to the competency profile/packaging set for that position. The skills certification activity in this Dual Expertise Program is based on the Indonesian National Qualification Framework (KKNI) Level IV certification scheme for vocational teachers approved by BNSP. The KKNI Level IV scheme is divided into several clusters (a collection of competency units) that refer to productive subjects in SMK.
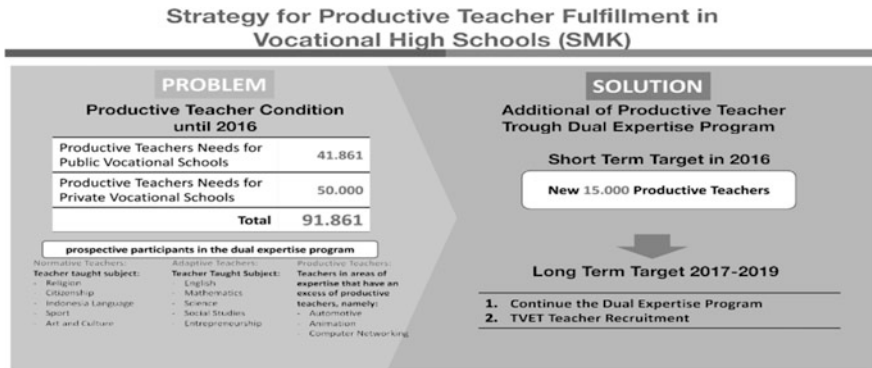
Fig. 12.6 Strategy for productive teacher fulfillment in SMK. Source: Directorate General Teachers and Education Personnel (2017b)

Table 12.7 below shows the design of a dual expertise program implemented, where participants participated in 1-year education and training programs at their respective schools for in-service training. They completed five modules there and five modules at the TVET teacher training center for in-service training. In total, participants completed ten modules in this program.

Objectives

- To equip prospective teachers who are the target of the Dual Expertise Program with technical competencies so that they can become productive teachers in vocational secondary schools (SMK).
- To empower and organize teachers according to the needs in Vocational Secondary Schools (SMK).

Benefits

- The teacher obtains a certificate of competency and an educator certificate.
- The needs of vocational productive teachers in each province are met.
- The learning process in vocational secondary schools (SMK) is expected to be more optimal.
- Vocational school graduates have competencies in accordance with their field of expertise, so they can compete in the workforce, especially in dealing with the ASEAN Economic Community (AEC).

Table 12.7 Dual expertise program design

2016	2017										
Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug		Sept–Dec	Month
ON-1			IN-1		ON-2			IN-2		–	
Teaching orginal subject			Training		Teaching internship as productive teacher in vocational schools (SMK)			Training		Inductrial internship (2 months)	Activity
Self learning 3 module (supervise by senior teacher)			4 Module		Self learning 2 module (supervise by senior teacher)			1 MODULE	Certification preparation and competency assessment by BSNP	Educational training (at University 10 days)	
25 h			50 h		17 h			50 h	50 h	–	Learning hours/weeks
12 weeks			8 weeks		12 weeks			2 weeks	2 weeks	–	Learning duration
300 h			400 h		200 h			100	100	–	Total hours

Source: Directorate General Teachers and Education Personnel (2017b)

Target

Teachers who will take part in the dual expertise program will focus on five priority sectors, namely, Maritime, Agriculture, Tourism, Creative Industries, and Technology and Engineering, under the following conditions:

- Adaptive teacher subjects at vocational schools that are not listed in the 2013 curriculum, namely, teachers of natural science, social studies, and entrepreneurship.
- Vocational school teachers who teach normative subjects such as Mathematics, Citizenship, Physical Education, and Cultural Arts.
- General high school teachers who teach Citizenship, Biology, Physics, Chemistry, Geography, Economics, Anthropology, and ICT.
- Productive teachers who lack teaching hours, according to their certificates.
- Productive teachers with competency packages/skills that are no longer offered in their schools.

Program Outcome

This dual expertise program was implemented in 51 skill packages which were grouped into 5 priority sectors, namely:

- Maritime (7 packages).
- Agriculture (11 packages).
- Creative Industry (16 packages).
- Tourism (5 packages).
- Technology and Engineering (12 packages).

The prospective teachers who registered reached 15,168 participants; however, after a rigorous selection, 12,324 participants were chosen or around 81.25% of the total number of registrants, with the highest number of participants coming from the Technology and Engineering Sector at 54%, Tourism at 18%, Agriculture at 18%, Maritime at 6%, and Creative Industries at 4%. Of the total participants, those coming from the East Java province dominated the number of participants with 1730 participants or 14.04%, while North Kalimantan was the smallest group, with 80 participants or 0.65%. In its implementation, the Directorate General of Teachers and Education Personnel involved all TVET teacher training stakeholders, including 34 provincial education offices and 7 TVET teacher training centers (6 PPPPTK and 1 LP3TK KPTK) with 366 learning centers (vocational secondary schools), district/city offices, instructors, Professional Certification Institution (LSP P2), vocational secondary schools (SMK) for internships, as well as supervisor teachers and related industry professionals (Ministry of Education and Culture, 2017).

During the education and training activities, participants were distributed to each TVET teacher training center related to the chosen skill package, as shown in Table 12.8.

Table 12.8 Dual expertise participant placements by sector

No.	TVET teacher training	Sector
1.	Center for Development and Empowerment of Educators and Education Personnel in the field of Machinery and Industrial Engineering (PPPPTK BMTI), in Bandung, West Java	Technology and Engineering
2.	Center for Development and Empowerment of Educators and Education Personnel in the field of Building and Electricity (PPPPTK BBL), in Medan, North Sumatra	Technology and Engineering
3.	Center for Development and Empowerment in the field of Educators and Education Personnel of the Automotive and Electronics (PPPPTK BOE), in Malang, East Java	Technology and Engineering
4.	Center for Development and Empowerment of Educators and Education Personnel in the field of Business and Tourism (PPPPTK Bisnis dan Pariwisata), in Depok, West Java	Tourism
5.	Center for Development and Empowerment in the field of Educators and Education Personnel of Agriculture (PPPPTK Pertanian), in Cianjur, West Java	Agriculture
6.	Center for Development and Empowerment of Educators and Education Personnel in the field of Arts and Culture (PPPPTK Seni dan Budaya), in Yogyakarta	Creative industry
7.	Center for Development and Empowerment of Educators and Education Personnel in the field of Maritime Affairs, Fisheries, Information and Communication Technology (LPPPTK KPTK), in Gowa, South Sulawesi	Maritime

Source: Directorate General Teachers and Education Personnel (2017b)

Of 12,324 registered participants, 2268 participants left the course for various reasons, and, in the end, the dual expertise program graduated 10,056 new productive teachers. The majority of graduates have completed five skill packages.

The highest number of graduates from East Java Province was 1474 teachers, followed by Central Java with 1070 teachers, West Java with 583 teachers, South Sulawesi with 445 teachers, and Nanggroe Aceh Darussalam with 443 teachers. The graduates were spread throughout 471 cities in 34 provinces across Indonesia. This program has succeeded in producing new teachers for 51 skill packages in vocational secondary schools (SMK). However, the number of graduates is still lower than the expected target of 15,000 new teachers. The implementation of this dual expertise program proved to be a quick solution for the fulfillment of productive teachers' needs by SMKs.

12.5 Further Developments

12.5.1 Political Vision to Enhance Pre-service TVET Teacher Training

In Indonesia, some efforts and programs have been developed by the Government of the Republic of Indonesia over the past two decades. The Ministry of Education and Culture has revitalized the TVET system. One TVET system program is developing pre-service and in-service teachers training through the Professional Teacher Program (PTP) or, as it is called in Bahasa, Pendidikan Profesi Guru (PPG). It is a two-semester higher education program working toward a teaching certificate as an (Gov, 2003) official license, following the completion of a bachelor's degree. The developments in science and technology bring logical consequences for the orientation of the development of teacher competence. Article 10 paragraph (1) of Law Number 14 of 2005 (Gov, 2005b) governing Teachers and Lecturers mandates that professional teachers must have pedagogical competence, personal competence, social competence, and professional competence. These four competencies are holistic and constitute a unity that characterizes professional teachers. As stated in Law No 20 of 2003 (Gov, 2003) for the national education system, professional teacher education or PPG is further higher education following a bachelor's program and prepares participants to be a professional teacher. The PPG program is an educational program organized for graduates of undergraduate education (S1) in education subjects and undergraduate (S1) non-education subjects who have a talent for and interest in becoming professional teachers. The objective of the professional teacher education (PPG) program, as stated in the Minister of Education and Culture Regulation Number 87 of 2013, is to produce prospective teachers who have competence in planning, implementing, and evaluating learning, following up on results assessment, mentoring and training of students, and conducting research and who can develop their professionalism in a sustainable manner.

Following the regulation of Ministry of Education and Culture number 55 from 2017 Article 1 point 5 states that the Professional Teacher Education program or PPG is an educational program that follows an academic graduate program (S1) or applied graduate (D-IV) program, leading to a teacher certificate for teaching in kindergarten, formal education, primary education, and secondary education. After attending the program prospective, teachers will receive a teachers' certificate, and the graduate will be encouraged to work as a professional teacher.

The Professional Teacher Program or PPG consists of two parts (source: cf. Ministry of Education and culture regulation number 55, 2017):

1. PPG pre-service program, 36–40 credits, runs over two semesters.
2. PPG in-service program, 24 credits, runs over one semester.

The two types of PPG programs contain serial workshops (as subject matter) in developing subject-specific pedagogy (SSP) learning tools such as developing media, developing a lesson plan, developing a program for classroom action research

(CAR), and teaching practice at the micro-teaching level. The next program is then the implementation of Field Experience Practices (PPL) as real teaching practice in schools. The proportion between the SSP Workshop and Teaching Practice, in general, is 60% compared to 40% of the overall PPG learning load.

It is important to note that in the area of PPG for vocational teachers, this provision has both advantages and disadvantages. These pros and cons are based on the fact that vocational education is a type of education which teaches not only knowledge and science but also psychomotor skills. Thus, it requires vocational teachers who not only have good enough science and general teaching skills but also have capabilities and skills for conveying psychomotor skills in a real-life setting in industries (Estriyanto, 2016). TVET teachers should have capabilities and knowledge in a particular vocational field, and they should have command of the skills required for doing the typical jobs and tasks in this field. This experience and know-how can only be acquired by practical situations in companies or industries where professional standards of excellent performance have to be met. In addition, a TVET teacher has to combine this practical "know-how" with theoretical knowledge when planning the proper steps for carrying out a task.

As mentioned in the Indonesian Ministry of Indonesian National Education Regulation Number 16 of 2017 (Ministry, 2017) concerning the standards of academic qualification and teacher competencies, the teachers at SMK must have a minimum educational diploma qualification of 4 years (D-IV) or undergraduate (S1) study programs that are appropriate for the subjects being taught, which have been obtained from accredited study programs.[1]

Based on the information above, it must be made clear what is missing from the pre-service teacher education and certification in the PPG program for vocational secondary schools. Adaptive and normative teachers are trained by their non-vocational educational study. PPG trains them in accordance with the subjects they have mastered, while productive teachers are trained through their participation in the PPG program on TVET. In terms of the program, adaptive and normative teachers are trained as outlined in the following mechanism in Fig. 12.7.

On the other hand, for productive teachers who are responsible for teaching in certain fields for building vocational skills, in the PPG program of TVET, it is necessary to have both field teaching practice in vocational secondary school or SMK and a period of training in industries and factories.

Currently, a Center of Excellence for TVET at the Universitas Pendidikan Indonesia is being established as a center of excellence for TVET in Indonesia. Some leading programs are developed under the CoE of TVET.

---

[1]There are three types of subject matter teachers in vocational secondary schools: first, normative teachers who teach subjects such as Indonesian, English, and Counselling Guidance; second, adaptive teachers who teach basic abilities, namely, Mathematics, Chemistry, and Biology; and third, productive teachers who teach vocational skills such as buildings, electricity, and machinery, namely, specific fields, for example, in the fields of engineering, agriculture, and science.
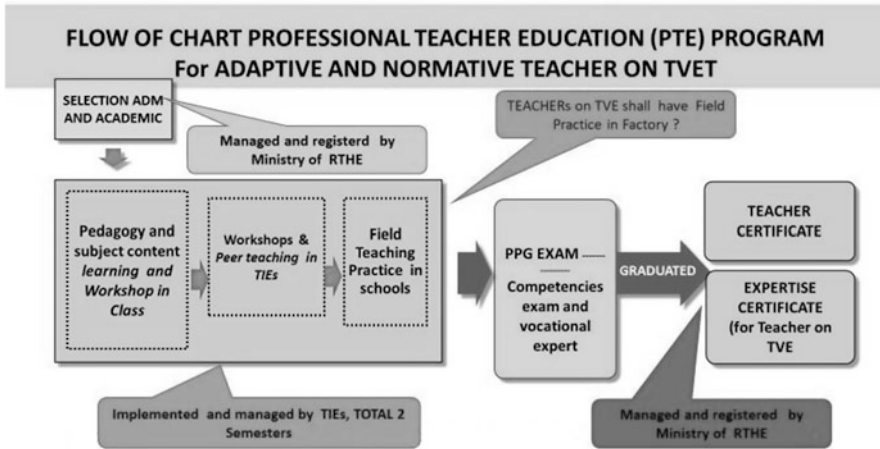
Fig. 12.7 Flowchart of PPG for adaptive and normative teachers on TVET. Source: Wahyudin (2019)

Fig. 12.8 The synergy of CoE TVETs components. Source: Barliana (2019)
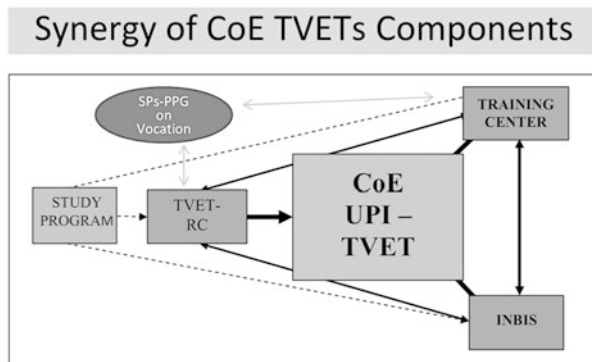
12.5.1.1 Center of Excellence for TVET Teachers

In developing a Centre of Excellence for TVET at the Universitas Pendidikan Indonesia (CoE UPI TVET), collaboration and synergy among related components and subunits in internal UPI as well as coordination among external organizations are essential. These collaborations will allow the Center on TVET in UPI to become a leading and outstanding TVET organization that will contribute significant benefits to the further development of human resources in vocational areas and industries. The synergy of CoE TVETs components can be seen in Fig. 12.8.

The Center of Excellence on Technical and Vocational Education and Training for Teachers (CoE on TVET-T) is being developed by UPI in response to the demands for increasing the quality of technical and vocational teachers who educate SMK students as well as to meet the demands of business and industrial sectors. The CoE on TVET-T has the central mission of increasing the Quality of Technical and

Vocational Education and Training for Teachers (TVET-T) across the nation through excellence in the development of teachers and leaders, research, innovation, and consulting. More specifically, the CoE aims to:

1. Be a provider of quality pre-service/initial and in-service/further training programs for TVET personnel (TVET teachers, trainers, leaders, and managers) and general clients, meeting national and international standards.
2. Provide a reputable and licensed certification body in the occupational area(s) in which the CoE is specialized.
3. Provide showcases and evidence-based practices for the development and assurance of quality in TVET teacher education.
4. Be the national center for research and innovation for TVET with a strong orientation toward problem-solving and innovation generation.
5. Showcase business incubation model for better employability, teaching factories, entrepreneurship, and partnerships.

To realize all these missions, the CoE cooperates with various institutions, both within the UPI organization and outside UPI. Such institutions within UPI include all the faculties and colleges at UPI. Furthermore, institutions outside UPI include Central and Regional Governments, Vocational High School Directorates, P4TK, Chambers of Industry and Commerce, Universities and Polytechnics, Ministry of Manpower, TVET International Networks, and TVET National Networks.

12.5.1.2   Components and Services of the Center of Excellence for TVET

The Center of Excellence consists of several organizations. Such organizations within the CoE are TVET-RC (TVET Research Center), CPTET (Center of Professional Teacher Education and Training), IPC (Institute of Profession Certification), CTC (Competency Test Center), BI (Business Incubator), and TF (Teaching Factory). All these organizations operate within the sphere of coordination of the CoE in their work with other organizations inside UPI and outside the university.

The CoE provides various services as needed by the university and other organizations or government offices. Some of the services cover pre-service and in-service teacher training, consulting and advising services, license and certification services, competency testing services, apprenticeship and entrepreneurship services, business incubators and commerce organizations, and research and innovation services. In detail, the fields of work of the CoE are as follows:

1. Further training institution for TVET for teachers and trainers in the occupational areas in which the CoE is specialized.
2. Advisory institute for personnel management of other TVET providers in the organization of labor market relevant training.
3. Hub for national and international networks for TVET.
4. Partner institution for TVET innovation and TVET research.

5. Assessment and certification center.
6. Information and resource center for TVET stakeholders across Indonesia.

In the field of education and training, the CPTET (Center of Professional Teacher Education and Training) provides various services such as Teacher Professional Education Program for TVE (known as PPG in Indonesia) and applied approaches (AA) and PEKERTI program for vocational lecturers, training, and certification for VHS teachers. These services are provided through the MoUs as well as cooperations with the Ministry of Education and Culture, various government offices, universities and polytechnics, and vocational schools.

In the field of research, the TVET-RC (TVET Research Center) aims to increase the capacity and quality of research in the field of vocational education, to increase invention and innovation in the field of vocational education, to improve the dissemination and utilization of research activities in the field of vocational education, and to improve preparedness in formulating policies for vocational education. TVET-RC's research areas include the philosophy of TVET; politics and policies for TVET; TVET in social, economic, business, and work field contexts; TVET for sustainable development; engineering innovation for TVET; quality improvement in teaching and learning for TVET; formal and non-formal education for TVET; LPTK industry effective and mutual relationships; and policies on diversification management of teacher supply from industry and LPTK. In the field of certification and testing, the IPC (Institute of Profession Certification) and CTC (Competency Test Center) provide various services to increase the productivity and quality of vocational learning to support vocational technology education, to increase the productivity and quality of human resources, to develop vocational technology education, and to increase cooperation between various stakeholders in the field of vocational education. Furthermore, these services seek to conduct competency certification tests for students, develop a modern and representative Competency Testing Center (TUK) for various competency schemes needed by the labor market, and develop competency schemes for various expertise programs needed by the job market.

In the field of business and commerce, the BI (Business Incubator) provides services that include business development, business planning, business management, business practice and training, e-commerce operations and consulting business incubators, and partnerships for entrepreneurship, financial sustainability, and national and international partnerships. Last but not least, in the field of teaching in the factory, the Teaching Factory aims to accelerate innovation, development, and production in the sectors of fashion, pastries, and bakeries, to initiate and downstream research results in related sectors, to oversee production-based education in the Teaching Factory and in partner schools/institutions, and to manage on-the-job training in the industry for vocational teachers and students.

The Center of Excellence on Technical and Vocational Education and Training for Teachers (CoE on TVET-T) has been developed at the Universitas Pendidikan Indonesia in response to the need to meet demands of the business and industrial fields, to improve the quality of technical and vocational teacher education, and to fulfill the need to increase the quality of technical and vocational teachers in order to

educate SMK students and better prepare SMK graduates to meet the requirements of the business and industrial sectors. The CoE for TVET-T, with all its components, works to contribute to fulfilling the Indonesian government's programs for improving the quality and skills of SMK teachers and vocational lecturers in Indonesia by providing various services and by collaborating with all partners and networks of the CoE.

12.6   Conclusions

For a large country like Indonesia, the challenges for training prospective vocational teachers as well as developing the skills of existing vocational teachers will always arise from time to time. It requires consistency and continuous development under industry demands. In other words, the challenge for guaranteeing the quantity and quality of vocational teachers is a serious challenge that Indonesia will face in the future. The development of vocational teacher professionalism is defined as an effort to improve the level or degree of professionalism of vocational teachers concerning their ability to master teaching materials or teaching methodologies, as well as the professionalism of teachers in learning technical competence following their areas of expertise, motivation, and commitment in carrying out their duties as teachers. Professional teachers are teachers who realize that they are individuals who are called to assist students in the learning process so that they continually need to develop their knowledge of and skills in understanding how students should be learning in order to achieve maximum results. Therefore, if students fail, the teacher can serve as a problem solver to find the root causes and find solutions with students, instead of silencing or even blaming the students. The attitude that must always be fostered is the willingness to critically self-reflect, refine their teacher training, and continue to learn through taking the time to become a competent and professional teacher in accordance with the demands. In order to do so, universities and other institutions, as the key to pre-service TVET teacher training, must conduct continuous improvement on curriculum development, training approaches, and training strategies to continue to assure that they correspond to changes in the industry and social life. While in-service TVET teacher training also needs to conduct sustainability development so that the facilitated vocational teacher can meet industry demands, in-service TVET teacher training strategies for the development of vocational teacher professionalism can be formulated as four strategies, namely:

1. First, professionalization efforts were personally undertaken by teachers in order to improve the quality of professionalism, with or without the help of others, or, in other words, self-training.
2. Second, development is carried out by school management through various managerial policies.

3. Third, development efforts at the macro level, which are the responsibility of the government and society at large within the framework of national education management.
4. Fourth, vocational teacher development within the international cooperation context, as well as bilateral and regional cooperation for vocational teachers' development programs.

The first and second strategies can be categorized as micro strategies of vocational teachers' professional development.

The third and fourth strategies can be categorized as macro strategies of vocational teachers' professional development.

The continuous improvement in university in the face of industry demands and the strategies of professional development mentioned above, if they run smoothly, is expected to produce a system that synergizes efforts to sustainably develop the vocational teacher profession in accordance with challenges, changing times, and rapid technology both with regard to the quantity and quality of TVET teachers in Indonesia.

The strategies described above are aimed at quality improvement. Quantity improvement of TVET teachers in Indonesia can be formulated as three strategies, namely:

1. New teacher recruitment from university graduates.
2. Dual expertise programs for non-productive teachers to train them to become productive teachers in the future.
3. New teacher recruitment from industry experts.

References

Barliana, S. (2019, September 20–21). *Synergy of CoE PTGV components. Preparatory activities forum for TVET workshop. Bandung:*.

Bünning, F., & Jenewein, K. (2006). *The international framework for a master's degree in technical and vocational education and training (TVET): A case study of the implementation of a joint European-Asian master's degree programme in TVET. TVET Teacher Education. The Threshold of Internationalization* (pp. 45–53). UNESCO-UNEVOC.

Directorate General Teachers and Education Personnel. (2016). *Guru Pembelajar, Pedoman program peningkatan kompetensi, moda tatap muka, dalam jaringan*. Indonesian Ministry of Education and Culture. GURU PEMBELAJAR. Pedoman Program Peningkatan Kompetensi. Moda Tatap Muka, Dalam Jejaring (Daring), dan Daring Kombinasi - PDF Download Gratis (docplayer.info).

Directorate General Teachers and Education Personnel. (2017a). *Pedoman program keahlian ganda guru SMK/SMA Tahun 2017–2018*. Indonesian Ministry of Education and Culture. 1__Pedoman_Keahlian_Ganda_Tahap_2_Hasil_Mille_18112017.pdf (kemdikbud.go.id).

Directorate General Teachers and Education Personnel. (2017b). *Program sertifikasi keahlian dan sertifikasi pendidik bagi guru SMK/SMA (keahlian ganda), Petunjuk teknis pelaksanaan sertifikasi keahlian pada program keahlian ganda*. Indonesian Ministry of Education and Culture. 5__Juknis_Uji_Kompetensi_Keahlian_2018_boutique_07112017_21_45.pdf (kemdikbud.go.id).

Directorate General Teachers and Education Personnel. (2018). *Upaya Peningkatan Keprofesian Guru Pendidikan Dasar Dalam Jabatan*. http://rise.smeru.or.id/sites/default/files/event/Upaya%20Peningkatan%20Keprofesian%20Guru%20Pendidikan%20Dasar%20dalam%20Jabatan%20-%20Anas%20M.%20Adam.pdf

Directorate of Vocational Secondary Schools. (2017). *Development, Directorate General Basic and Middle Education. Konseptual model pengembangan kompetensi guru produktif SMK berbasis industry*. Indonesian Ministry of Education and Culture. http://repositori.kemdikbud.go.id/5278/

Estriyanto, Y. (2016). A review of Indonesian pre-service teacher certification policy from the point of view of the philosophy of vocational education. *Prosiding ICTTE FKIP UNS, 1*(1) 2015. (ISSN: 2502-4124).

GIZ. (2013). *Regional conference on vocational teacher education. Vocational teacher education and research as a regional task and challenge*. GIZ-RCP.

ILO. (2010). *Teachers and trainers for the future—Technical and vocational education and training in a changing world. Report for discussion at the Global Dialogue Forum on Vocational Education and Training*. International Labour Organization.

Kurnia, D. (2013). *Post-study pre-service practical training programme for TVET teacher students. Regional cooperation platform*. GIZ.

Kustija, J. (2010). Study analysis of curriculum models for TVET. The First TVET international conference 2010.

Purwanto, N. (2004). *Psikologi Pendidikan. PT*. Rosda Karya.

Stolte, H. (2006). *Capacity building in TVET staff development in the context of international cooperation. TVET Teacher Education. The Threshold of Internationalization* (pp. 25–34). UNESCO-UNEVOC.

Surono, S., & Wagiran, W. (2016). Profil Guru SMK Teknik Pemesinan dan relevansinya dengan Kurikulum Program Studi Pendidikan Teknik Mesin Fakultas Teknik Universitas Negeri Yogyakarta. *Vocational Education Journal Yogya State University*, *6*(1) . https://journal.uny.ac.id/index.php/jpv/article/view/8128.

UPI. (2021). Kurikulum. Fakultas Pendidikan Teknologi & Kejuruan. http://mesin.upi.edu/content/page/Kurikulum.

Wahyudin, D. (2019, September 20–21). *Roadmap of teacher professional education program on VTE. Preparatory activities Forum for TVET Workshop*.

Wijanarka, B. S. (2016). *Usulan Model Pendidikan Profesi Guru Kejuruan di Indonesia*. National seminar, APTEKINDO.

Government Papers and Laws

Gov. (1990). Government regulation no. 29 of 1990 concerning secondary education.

Gov. (2003). Law no. 20 of 2003 concerning national education system.

Gov. (2005a). Government regulation no. 19 of 2005 concerning national education standard.

Gov. (2005b). Law no. 14 of 2005 concerning teachers and lecturers.

Gov. (2008). Government regulation no. 74 of 2008 concerning teachers.

Gov. (2012). Law no. 12 of 2012 concerning higher education.

Gov. (2013). Government regulation no. 32 of 2013. Amendments to government regulation number 19 of 2005 concerning national education standards.

Ministry. (2007). Minister of National Education regulation no. 16 of 2007 concerning academic qualification standards and teacher competencies.

Ministry. (2008). Minister of national education regulation no. 27 of 2008 concerning academic qualification standards and counselor competencies.

Ministry. (2009). Minister of Administrative and Bureaucratic reform regulation no. 16 of 2009 concerning the functional position of teachers.

Ministry. (2013). Minister of Education and Culture regulation no. 87 of 2013 concerning pre-service teacher professional education programs.

Ministry. (2014). Minister of Education and Culture regulation no. 137 of 2014 concerning national standards for early childhood education.

Ministry. (2016). Minister of Education and Culture regulation no. 16 of 2015 concerning organization and work procedure of PPPPTK.

Ministry. (2017). Minister of Research, Technology and Higher Education regulation no. 55. Of 2017 concerning teacher education standards.

Presidential Decree. (1963). *Establishment of IKIP* (Vol. 1, p. 1963). Presidential Decree.

Chapter 13
TVET Teacher Education System in Mongolia

Sara Galbaatar

Abstract The Mongolian technical and vocational education and training system (TVET) dates back to the early 1920s; however, in the past hundred years, it has seen numerous periods of rapid development, expansion, decline and transitions. The TVET teacher training system has undergone major reforms in this period as well. This paper provides a short discussion of historical developments in TVET teacher training in Mongolia and concludes with the most recent reforms that include preparations to start the qualification of TVET teachers at a graduate level, taking the UNESCO-UNEVOC standard framework curriculum master's programme in TVET as a point of reference.

13.1 Introduction

The Mongolian technical and vocational education and training (TVET) system dates back to the early 1920s when the first schools were established to train telephone and telegram clerks as well as wool washing factory workers and veterinarians (UNESCO, 2019). The time period from 1960 until 1990 saw the most developments in this sector until the socio-economic changes that took place after 1990 led to a near collapse of the sector. In the time period from 1960 to 1990, the number of occupations trained through technical and vocational education and training institutions have grown and so has the number of VET institutions, which numbered 46 nationwide by 1990.

As in many other former socialist countries, after the collapse of the existing political system in the 90s, the education sector as a whole took a hit in Mongolia as well. However, the TVET sector was hit the hardest as, even during the socialist

S. Galbaatar (✉)
Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Cooperative Technical and Vocational Education and Training Project, Ulaanbaatar, Mongolia
e-mail: galbaatar.sara@giz.de

times, the image of this type of education was lower than that of higher education. After 1990, given the freedom to choose any type of post-secondary education (or none at all), those who chose to continue their formal education chose higher education over technical and vocational education. This, combined with the cease in state investment in the sector, naturally led to a sharp decline in the numbers but, more importantly, a decline in the qualification of those teachers who chose to remain in the sector.

Nonetheless, as was the case in most countries in transition, there have been continuous attempts to reform the sector as well as to improve teacher training in order to meet the labour market demand for skilled workers. In 2016, the Mongolian Ministry of Labour and Social Protection (MLSP) approved the short-term in-service training programme for TVET teachers, which is still the only programme in existence today. However, more recently, in 2019, the decision was made to return to the practice of training TVET teachers through an academic programme[1] which had been previously abandoned (GIZ, forthcoming).

With this paper, we will be attempting to provide a short discussion of current teacher training needs in Mongolia, current developments and possible future scenarios. An overview of the historical developments as a basis for the current status of teacher training will be provided as well.

It is important to mention here that one of the major obstacles in the reform process, especially with regard to the reform of teacher training, has been the lack of comprehensive research on this subject. Despite a number of large-scale projects which were implemented in the TVET sector over the last twenty-something years, a comprehensive study of the results of these projects as well as results of the official policy implementation has not been conducted. For example, there are data that demonstrate that close to 2000 teachers have been trained as multipliers (trainers of trainers) through various projects since the mid-1990s. However, there has neither been a study analysing the effects and results of these trainings nor is there a centralized database for these multipliers. In other words, despite international organizations' efforts, most recently, those of UNESCO in 2019, to assess the education sector in Mongolia and provide policy recommendations, the research on initial and further TVET teacher training has been as good as non-existent in the recent years. In order to bridge this gap, the "Cooperative Technical and Vocational Education and Training" (cTVET) project implemented by GIZ together with MLSP with funding from the German, Australian and Korean governments commissioned two short-term studies in 2019 on the history of and current status of teacher training as well as the short- and medium-term demand for teachers in those selected trades and skills which were the most sought after in this time period. The study on teacher training has once more highlighted the urgent need for reform of the teacher training system in Mongolia.

---

[1]This decision and the academic program to be established are taking place through the "Cooperative Technical and Vocational Education and Training" project implemented by GIZ and Ministry of Labour and Social Protection with funding from German, Australian, and Korean governments (2019–2022).

13.2   Status of TVET Teacher Training

13.2.1   Types of TVET Teachers

In Mongolia, there are three types of technical and vocational education and training: upper secondary level vocational education, post-secondary vocational and technical education and short-term skills training. Accordingly, there are currently two formally recognized types of TVET teachers: teachers of general education subjects and teachers of vocational subjects.

The teachers of general education subjects teach subjects from the general secondary education curriculum to students in the secondary vocational education programmes. As general secondary education is the responsibility of the Ministry of Education and Science (MEDS), teachers of these subjects are trained at the Mongolian State University of Education and their further training, i.e. professional development, is formally overseen and organized in accordance with the regulations governing the professional development of secondary education teachers in general. In other words, there are no special qualification programmes specifically for teaching general education subjects at TVET institutions. Therefore, when we speak of TVET teachers in the following sections, we will be referring to the teachers of vocational subjects unless otherwise specified.

Moreover, since TVET is primarily school-based in Mongolia, the majority of vocational practice takes place at the school. The teachers of vocational subjects teach both theory in the classroom and practice in the workshops. The practical training that takes place in the industry is supervised by the in-company instructors. The in-company instructors are not formally recognized as TVET teachers; however, the Ministry of Labour and Social Protection (MLSP) formally regulated their training in 2019.

Finally, there are professional levels of TVET teachers, although these are not a qualification requirement nor are they mandatory. In other words, teachers can apply to the higher professional level and prove with supporting documentation that they do fulfil the requirements. This only has an effect on their remuneration and responsibilities other than teaching.

As the above description demonstrates, one can speak of different teachers teaching at TVET institutions. However, it is only the qualification of teachers of vocational subjects which is under the responsibility of the authority governing TVET, i.e. the Ministry of Labour and Social Protection. Therefore, when we speak of TVET teachers in the following sections, we are referring to teachers of vocational subjects unless otherwise specified.

13.2.2 Historical Developments[2]

TVET teacher training in Mongolia can be divided into three historical phases: socialist, post-socialist decline and post-transition to market economy. The systematic development of the professional qualification of TVET teachers was undertaken starting in the 1960s:

First, a notable policy development was undertaken in 1965 with the government resolution that stated that only trained teachers and master teachers could teach at vocational schools. Starting in 1969, a certain number of students annually were sent to the Soviet Union and Eastern European countries such as Germany, Hungary and others to be trained as VET teachers and practical training master teachers (Tseepil, 1995).

In the late 1970s, the training of VET teachers started at the academic level in Mongolia as well, with the opening of new "engineer-pedagogue" programmes at a number of higher education institutions. For example, engineer-pedagogues for the construction sector were trained at the National University of Mongolia while the Institute of Agriculture offered a programme for agro-mechanics engineer-pedagogues and so on.

As a result of these policies, by 1987, the number of vocational education and training teachers amounted to approximately 2000, 97 percent of these having a higher education degree and 88 percent of master teachers having college diplomas. By 1989, the number of VET teachers had surpassed 2000 while the number of teachers and instructors at the industry had surpassed 1500 (Tseepil, 1995).

Trainers from the Soviet Union and German Democratic Republic were invited to teach at vocational schools. International guest instructors also worked at production sites, where they "mentored" the TVET teachers. At the same time, highly skilled engineers and technicians from the industry were assigned to teach for short periods of time at the technical vocational schools as teachers and instructors (GIZ, forthcoming). Also, engineers with industry experience were assigned to teach at vocational schools upon completion of a short-term teacher training, which provided them with the basics of pedagogical theory and skills.

Finally, it must be noted that further training was systematically offered in three areas: vocational skills in the technical trade, didactics and industry knowledge and experience.

---

[2] Where not otherwise specified, the information in this section has been taken from the study report on TVET teacher training in Mongolia conducted in 2019–2020 on commission from the "Cooperative Technical and Vocational Education and Training" project implemented by GIZ and the Mongolian Ministry of Labour and Social Protection with funding from German, Korean, and Australian governments (2019–2022). The report is forthcoming in 2021 in Mongolian and English languages and will be made available in electronic form upon request.

Table 13.1 Number of teachers 1990–1992

Educational institution	1990	1991	1992
Vocational technical schools (VTS)	1817	1142	746
Specialized technical, vocational educational schools	1260	1260	460
Total	3077	2402	1206

(GIZ, forthcoming)

The political and socio-economic changes of 1990 can be said to have marked the beginning of the second historical phase, i.e. the post-socialist phase decline of the teacher training. The legal framework was adapted to the transition from the state planned economy to market economy with the 1991 Law of the People's Republic of Mongolia on education. This law defined the rights and obligations of both the public and private sectors' participation in vocational training (GIZ, forthcoming). Moreover, it provided the students with a freedom of choice after the completion of basic secondary education: students could choose whether to complete their senior secondary education and go on to acquire a higher education degree or to receive technical and vocational education. The state no longer allocated quotas to individual schools or students. In the technical and vocational education sector, the reforms following the aforementioned law and its bylaws and regulations resulted in structural changes to the TVET institutions, in an effort to promote cooperation between schools and enterprises, accommodate the student choice as well as update the curricula to meet the demands of a market economy. Changes made to the curricula resulted in gradual reduction in practical lessons: While some of this reduction took place as a result of curricular revisions, most and foremost, it was the lack of material resources and funding for technical and vocational training that was the major cause. In rare cases, when funding was available, the materials could not be purchased on the market. Hence, more often than not, practical trainings in school settings as well as internships were foregone, and the whole education was reduced to only theoretical part of the trainings due to lack of materials needed to conduct practical trainings. This, in combination with the freedom of choice between TVET and higher education, meant that the beginning of this period was marked by a drastic reduction in the demand for the technical and vocational education, which went hand in hand with a reduction in the number of schools and teachers (cf. Table 13.1). As can be seen from the table below, following the transition of 1990, the number of TVET teachers was reduced by more than half within only 3 years (GIZ, forthcoming).

This sharp reduction in the numbers of teachers led to a decline in the quality of training, in particular, in the fields of carpentry, plumbing, electric welding and construction. Lack of sector funding has also resulted in a stagnation of the TVET teacher training system that was in place before 1990. Most of the teachers who did not graduate from the engineer-pedagogue academic programmes and who started their careers as TVET teachers in the early 1990s did not receive any pre-service training in pedagogy. This period can be defined as the post-socialist decline phase. In order to address this problem, as well as based on the paradigm shift in teaching

content and methodology, the master plan for the educational sector was developed in 1994. While the archives do not contain comprehensive data on the implementation results of this master plan, existing documents suggest that trainings were organized for TVET teachers in Mongolia and a number of teachers were enrolled in trainings abroad in 1996–1997. At the same time, a 21-day long professional development training on pedagogy was developed and offered at the School of Education Development. Despite these efforts, the training of TVET teachers continued to remain largely academic with only a weak focus on pedagogy and didactics. Industry-based trainings could be said to have ceased, further weakening the ability of teachers to deliver practical training.

The post-transition to market economy phase starting in the early 2000s witnessed a number of major reforms in the sector, which, nonetheless, did not bring nearly as many of the desired results in the teacher training area as hoped. The most notable developments of this phase can be summarized as follows:

Starting in 2009, major investments from international donor organizations such as the Asian Development Bank (ADB), Millennium Challenge Corporation, European Union and development agencies from Australia, Germany and Switzerland have flowed into the TVET sector in unprecedented amounts. It is estimated that large mining companies invested similarly large amounts in the development of the TVET sector. This investment was primarily due to an expected increase in large-scale projects in the mining and construction sectors which, in turn, required a significant increase in the demand for skilled labour (Duggan, 2015). TVET curricula were updated, and TVET schools were equipped with up-to-date workshops and equipment. However, the teacher training system profited the least from this flow of funding into the sector, despite large numbers of trainings conducted. Although several thousands of teachers were enrolled in further trainings by internationally funded projects and companies, the problems persisted with regard to delivery and quality of theoretical knowledge as well as insufficient practical skills.

The transfer of responsibility for the technical and vocational education and training to the Ministry of Labour in 2012 led to closer ties of the sector to the employment and industry sectors resulting in more real involvement of the private sector in TVET delivery. Nonetheless, despite the creation of a more encouraging legal environment, the cooperation between the private sector and TVET has been growing at a slower speed than required to sufficiently improve the quality of TVET delivery as well as the quality of teacher training. Most notably, it is primarily the TVET institutions that have been supported by internationally funded projects or those located near the few large industrial centres of the country that have shown noteworthy progress in the quality of the training through improved teacher qualifications, in-company training opportunities and workshop equipment through such cooperation, as opposed to those TVET institutions located in the more remote and rural areas. Most recently, two large projects funded by international donors such as ADB and the governments of Germany, Australia, Switzerland and Korea have been implemented in the TVET sector. These focus on the updating of curricula, the qualification of teachers and management as well as updating of learning environments in technical trades at TVET institutions. The "Cooperative Technical and

Vocational Education and Training" project implemented by GIZ, in cooperation with the Ministry of Labour and Social Protection since 2019, has been tasked with supporting the process of updating the initial TVET teacher training system (GIZ, forthcoming).

Regional methodology centres (RMCs) were established in six regions of Mongolia in order to cover all parts of the country. In 2015, with the transition to the competency-based training system, the need for the retraining of teachers and a new programme for initial teacher training arose (GIZ, forthcoming). Since 2016, this network of centres has carried the sole responsibility of conducting in-service initial and further trainings of TVET teachers. However, these centres lack central management and, more importantly, sufficient human and financial resources to ensure sufficient coverage of their services such that, for example, supervision of practical teaching parts of the trainings in remote areas cannot be sufficiently ensured. Moreover, a survey conducted in 2019–2020 among teachers who attained their teaching license by completing the initial teacher training programme through RMCs revealed further gaps in this programme, which can be addressed with the following changes:

- Teachers who have taught for 3–5 years since completing the training stated that the results of the training would improve if the training were conducted as a series of trainings instead of one block;
- Increase in duration and depth of training on the use of IT in training delivery;
- Increase in duration and depth of the training on research methods;
- Increase in duration and depth of the training on development methodology and use of the competency-based curriculum;
- Increase in the duration of the practical training at the industry.

The trainers delivering the initial teacher trainings were also surveyed and offered the following observations and conclusions about the need for updating of the existing programme:

- Lack of qualified trainers in rural areas who are able to teach fundamentals of pedagogy and psychology units of the programme units of the programme;
- The need for a system of periodical further training which builds on the initial training, i.e. similar to the system in place for the qualification of teachers of general secondary education whereby teachers are provided with further trainings 3, 5 and 10 years after the initial training;
- Inclusion of units on didactics specific to TVET, as this will benefit teachers of practical training at the industry;
- All 19 trainers who participated in the survey agreed unanimously that the curriculum for the initial teacher training needed to be updated.

Finally, the trainers agreed with the teachers on the need to increase the duration and depth of the training offered on research methods as well as the practical training in industry. Thus, the main stakeholders in the initial TVET teacher training system have expressed views which support the government's strategy for updating this system.

In late 2019, the regional methodology centres were restructured under central management from the TVET Assessment, Information and Methodology Centre, formerly known as the TVET Assessment Centre, which is now responsible for quality assurance and certification of short-term skills trainings nationwide. The TVET Assessment, Information and Methodology Centre has been tasked with leading the implementation of the updating of the initial TVET teacher training system supported by the cTVET project.

13.2.3 Requirements for TVET Teachers

As can be seen from the historical developments in the TVET teacher training system, the pre-service training programmes were largely discontinued in the late 2000s and have not been re-introduced. This also meant that the requirements set forth for TVET teachers have not been systematically reviewed and redefined. As of the time of this publication, TVET teachers must meet the following general requirements as specified in the current Law of Mongolia[3] on Vocational Education and Training under provisions 18.1–18.6 of the Article 18:

- 18.1. Teachers of the training institution for vocational and technical education shall have bachelor's degrees or higher in the field they shall teach in or have an appropriate[4] experience in practical work, a high-level professional degree and a license to teach.
- 18.2. A teacher who is to lead and manage vocational training shall have production and technological experience, a high-level vocational degree (on a scale from 1 to 6, 5 and 6 would be considered high) and a license to teach.[5]
- 18.3. Full-time teachers who have not obtained the official status of teacher should master teaching methodology and earn a certificate to teach.
- 18.4. Training hours' load, salary and days for vacation of both teachers of theoretical and practical sessions at the training institution for vocational education shall be equal.
- 18.5. The regulation of the salary and extra payment for the teacher mentioned in Article 18.4 of this law shall be approved jointly by members of the government responsible for financial and labour issues, but a job description, procedure,

---

[3]The Law on Vocational Education and Training has been in effect since 2009 with the latest amendments coming into effect in 2016; however, it is currently in revision again (Law of Mongolia, 2009).

[4]As there is no supporting regulation as to how to measure the "appropriate" experience, TVET institutions with a high demand for TVET teachers can and do interpret this such that newly appointed teachers barely have any industry experience, which negatively affects the quality of practical training.

[5]The teaching license can be obtained through the short-term in-service initial TVET teacher training offered by the Regional Methodology Centres. This is, in practice, the only qualification route for a TVET teacher at the moment of this publication.

methodology and recommendation to identify and calculate the training hours shall be approved by the appropriate state administrative organization in charge of vocational education and training issues.

- 18.6. Ranks or levels such as teacher instructor, supervisor teacher and teacher advisor (consultant) shall be issued to the teacher specified in the Article 18.4 of this law.

In addition to the Law on Vocational Education and Training, a Law on Promotion of Teacher Development came into effect in January 2019. While this was initiated by the then Ministry of Education, Culture, Science and Sports (since 2020, it has been called the Ministry of Education and Science), it applies to TVET teachers as well. Under this law, the professional development of these teachers must be promoted by a national strategy, which, in Mongolia, usually takes the form of a national programme developed by the responsible ministry, and approved by the government for the period of 4–5 years. Such a national programme for the promotion of the development of TVET teachers has been drafted by a large working group led by the MLSP in 2019–2020. The issues of initial and further training of TVET teachers have been covered in this programme in great detail; however, the approval and subsequent implementation have not yet taken place.

There are also close to 20 regulations currently pertaining to the status, remuneration and qualification of the TVE teachers. An important document that contributed significantly to regulating the retraining and qualification of vocational education teachers was the credit regulation for VET teachers of 2013 approved by the joint order of the then Minister of Labour and Minister of Finance (GIZ, forthcoming). Through this regulation, teachers can collect up to 0.4 credit hours[6] through further training in the field they are teaching in, whether through a formal course or self-study. However, what this regulation did not provide was the incentive or an enabling environment for application of the newly acquired knowledge or skills by teachers, thus severely limiting the desired effects.

Finally, the most recent regulatory document on the requirements for TVET teachers—the occupational profile—was approved by the highest regulatory body in the TVET sector, i.e. the National VET Council in 2020, thus marking an important step towards setting standards for TVET teachers. Nonetheless, certain issues of requirements for TVET teachers and their qualifications remain unresolved to this day, as discussed in the section on historical developments.

13.2.4 Initial TVET Teacher Training Programme

As evident from the section on historical developments, currently, Mongolia does not have a pre-service training requirement for TVET teachers. The vast majority of

---

[6]The workload of TVET teachers is calculated in credit hours; thus, this regulation was designed to increase the opportunities and motivation of teachers for professional development.

teachers are trained through a relatively short in-service training programme of 144 classroom hours.[7]

Competency unit	Content, subject
CU1: VET law and regulations /10 h/	• Law on education. • VET law. • Rules and duties of NCVET. • Social partnership.
CU2: Competency-based training system /10 h/	• VET system. • VET technological reform. • Role of the RMCs. • CBT system.
CU3: Foundations of pedagogy /16 h/	• Foundations of teaching. • Pedagogical relationship. • Theory of instruction, development trends. • Instruction methods. • Characteristics and technology of teaching for adults. • Training materials. • Ethics of teachers.
CU 4: Foundations of psychology /16 h/	• Foundations of psychology. • Psychology and specifics of VET students to be considered in their training. • Psychology and specifics of adult learners to be considered in their training. • Cooperation between students and teachers.
CU 5: Teaching in VET /16 h/	• Specifics of VET teachers, specifics of communication skills to be acquired. • VET teachers and their activities. • VET technology, reform in training methodology. • Teaching in VET and its specifics. • Understanding of training, its objectives and content. • In-company instruction process and methodology. • Assessment of learners' knowledge and attitude.
CU 6: CBT curriculum (CBTC) development methods and its usage /18 h/	• VET standards, curricula, CBTC's content, structure and implications. • Labour market information framework and information collection methods. • DACUM analysis (job analysis). • CBT curricula structure. • Assessment standards. • Journal keeping for on-the-job and theory lessons.
CU 7: CBT assessment development methods /18 h/	• CBT assessment. • CBT assessment types, tools and principles.

<div align="right">(continued)</div>

---

[7]This curriculum was approved in January 2016 by the order of the then Director General of the Vocational Education and Training Policy Implementation Coordination Department of the Ministry of Labour, Mr. B. Altanjargal.

Competency unit	Content, subject
	• CBT assessment plan development approach. • Organization of CBT assessment.
CU 8: Planning of training, development of the learner group /12 h/	• Lesson structure and lesson plan development. • Moderation of training. • Planning training to suit different learning styles. • Active forms of training.
CU 9: OSH basics /6 h/	• OSH-related laws and regulations. • Incidents/accidents at the job. • Risk management. • Safety notifications and signs.
CU 10: Use of information technology in the training /12 h/	• Use of IT in the training. • Online training preparation methods. • Working with Adobe Captivate programme.
CU11: Research methods /10 h/	• Foundations of research methods and the preparation phase. • Principles and methods in research work. • Data analysis.

It is supplemented by the following eight competency units to be completed through the on-the-job training part:

Competency unit	Content, subject
CU 1: Lesson unit plan development	• Development of the theory lesson plan of the competency unit. • Development of the practical lesson plan of the competency unit. • Receive lesson plan approvals from the registrar's office and the sector head.
CU 2: Develop necessary materials/handouts for lesson	• Develop all relevant visual aid and handout materials for each competency unit in electronic forms using ICT.
CU 4: Use of information on related modern techniques and technology for delivering specific competency unit	• Research, translate information on commonly used advanced techniques and technology related to the competency units and use in teaching.
CU 5: Journal keeping in theory lessons	• Keep theory lesson journals correctly and in accordance with the instructions.
CU 6 Journal keeping in practical lessons	• Keep practical lesson journals correctly and in accordance with the instructions.
CU 7: Planning of extracurricular activities	• Prepare a list of and plan for extracurricular activities. • Have the performance of the planned activities evaluated by the head of the Registrar's Office.
CU 8: Report on competencies acquired through the on-the-job training	• Write a report on competencies acquired through the on-the-job training and have the report evaluated by the relevant officer of the VET department.

The requirements for the personnel providing this training are also set forth in the order approving this curriculum as follows:

- Leading, advising and specialized advising engineer teachers with a master's or higher degree, over 5 years of work experience in the learned occupation.
- Trainers of trainers who completed national and international trainings on CBT methodology and are highly skilled and knowledgeable in TVET, labour market theory and methods.

The need to update this programme content and organization as evaluated by the recipients and providers of the training was discussed above in the section on historical developments and does not need to be repeated here except for the reiteration of the fact that most rural areas lack the personnel qualified to conduct the training on competency units in pedagogy and psychology, thus requiring specialists from Ulaanbaatar. However, neither the former Ulaanbaatar Regional Methodology Centre nor the current TVET Assessment, Information and Methodology Centres have staff with the required qualifications, meaning the system relies on external experts (from the universities and other educational institutions in Ulaanbaatar) to conduct crucial parts of the curriculum. As a result, the system lacks a team of personnel which could ensure the continuous monitoring and quality assurance of the programme and its results, i.e. the teachers' competencies upon completion of and following the training.

Of the programmes at an academic level, only the University of Life Sciences (formerly, the University of Agriculture) offers an "engineer-pedagogue" programme, which was discontinued at most universities throughout the 1990s and early 2000s. As of 2017, this programme was only reinstated after a short period of discontinuation; thus, at the moment of the aforementioned studies conducted in 2019–2020 and of this publication, there has been no specific information on the graduates' employment nor the quality of their teaching. Finally, while the graduates of this programme are expected to work as TVET teachers, there is no coordination either with the Ministry of Labour and Social Protection or with the TVET Assessment, Information and Methodology Centre and its regional offices.

13.3   Model of TVET Teacher Training

As mentioned in Parts 1.2 and 1.4, the need to update the initial teacher training programme has been acknowledged at all levels of the sector. Since late 2019, parallel to the development of the National Programme for Promotion of TVET Teacher Development, a task force led by the Ministry of Labour and Social Protection has been working on reforming of the TVET teacher training system. A concept draft was developed in late 2020 as a result of the comprehensive analysis of current and past experiences in initial teacher training as well as a study of international good practices. With a view towards long-term demand, the concept draft of

the initial TVET teacher training foresees multiple streams of intake offering qualification at various levels ranging from short-term in-service training to academic trainings at bachelor's and master's levels.

According to this concept, the short-term in-service training venue will continue to be based on the existing programme presented in Sect. 13.2.4. The academic programme at the bachelor's and master's levels will have to be developed anew. The targeted intake are technician-level graduates in the TVET sector who have completed a bachelor's degree in a related discipline, seasoned engineers and technicians from the industry who are nearing retirement age or wishing to teach, current teachers as well as fresh graduates of undergraduate programmes in relevant disciplines.

Due to the financial and time constraints, the decision has been made by the Ministry of Labour and Social Protection to update the existing short-term programme while the academic programme at the master's level is being set up with the support from the cTVET project in 2020–2022. Other considerations taken into account are the advantages of a graduate programme for ensuring more flexibility in meeting the short-term fluctuations in demand, especially in a country with a relatively small population such as Mongolia, and the cost-efficiency and higher return on investment for students compared to a bachelor's programme. Last, but not least, a graduate programme paves the way for establishment of more comprehensive research practices in the TVET sector.

The master's level training will be based on the modular UNESCO-UNEVOC standard framework curriculum master's programme in TVET (UNESCO, 2005). It is to be adapted to fit the sector requirements specific to Mongolia as well as the requirements for graduate programmes as set forth by the selected university and the Ministry of Education and Science. Furthermore, the modular structure can provide additional advantages for Mongolia as relevant contents from different modules can be modified to update the existing short-term in-service training programme.

A team consisting of representatives of MLSP, MES, TVET AIMC, directors of state-owned and private TVET institutions, TVET NGOs as well as independent researchers and consultants is steering the process of selecting the partner university and TVET institutions which will implement this programme, monitor development of the curriculum and implementation as well as ensure coordination of participating parties. This team is being supported by a team of international experts with extensive advising experience in the fields of TVET teacher qualification in an international arena.

Once the university to pilot this programme is selected, a teaching team will be put together, which will include representatives from the TVET sector as well, who are expected to be actively involved in the teaching, especially in the supervision of the practical on-the-job training.

13.4   Conclusions

Just as modern Mongolia only joined the international economy roughly about a hundred years ago, so is its TVET sector a relatively young establishment compared to many countries with a similar political and socio-economic history. Nonetheless, this sector has already seen periods of rapid expansion, decline and transitions. The most recent period of transition which started in the late 2000s has seen the most investment in the sector. However, teacher training has remained the area which has profited the least from this unprecedented amount of investment. Despite numerous reforms and trainings offered to thousands of teachers within the last decade or so, testaments by teachers, their trainers and the recipients of their work results, i.e. industry employers are unanimous in expressing that the quality of the technical and vocational training remains a challenge.

This initiated the latest reforms to the TVET teacher training system, which are currently being implemented. The chances for the effectiveness of these reforms, notably, the introduction of the initial teacher training at a graduate level, depend first and foremost on the readiness and ability of the main stakeholders to steer the process, closely monitor the implementation in order to make necessary modifications along the way and ensure support at the policy level. The latter will involve, among others, careful assessment of the current legal framework pertaining to TVET teachers: Are the existing regulations sufficient to ensure retention of teachers in their capacity as teachers? What are the possible career paths for them? How can quality assurance be retained beyond the initial phases of the implementation? These and many other questions will have to be clarified in the coming few years, while the TVET teacher training system as a whole will have to be expanded through an added focus on the other types of teachers in technical vocational education and training: the training of teachers of general subjects teaching at TVET schools as well as a nationwide understanding of in-company instructors as an integral part of the TVET system. Finally, in light of the further training of TVET teachers, another type of teachers demands further attention, namely, master trainers or multipliers.

References

Duggan, S. (2015). Approaches to the quality improvement of TVET teachers in Mongolia: A lost opportunity. *TVET@Asia*, (5), 1–14. http://www.tvet-online.asia/issue5/duggan_tvet5.pdf.
GIZ. (2021, forthcoming). *TVET teacher training and further training system: Today and before. Study report, policy analysis institute on commission from cooperative technical and vocational education and training project*. GIZ.

Law of Mongolia. (2009). *On vocational education and training (2009, amended version)*. https://www.legalinfo.mn/law/details/376.

Tseepil, S. (1995). *Inception, development and future of the Mongolian TVET*. Training Content and Methodological Institute.

UNESCO. (2005). *UNESCO international meeting on innovation and excellence in TVET teacher/trainer education. Final report of the meeting*. UNESCO. https://doi.org/10.13140/RG.2.2.35514.39367

UNESCO. (2019). *Education in Mongolia: A country report*. UNESCO. ISBN 978-9919-21-276-6.

Chapter 14
Pre-service TVET Teacher Education in Cambodia

Sesokunthideth Chrea and Sothy Yok

Abstract The following article aims at providing TVET practitioners, scholars, and researchers with necessary information about pre-service TVET teacher education in Cambodia. This information includes selection criteria for the program, curriculum development, and challenges and future development. The authors reviewed related documents and discussed them with focal persons in Department of Education Science and Technical Vocational Education and Training of National Technical Training Institute (NTTI), which is in charge of the program, in order to obtain reliable data and information. It is revealed that the role of pre-service TVET Teacher Education Program is crucial for preparing TVET graduates for the teaching profession, and the program has produced more than 3500 TVET teachers since 2001. Nonetheless, ensuring the quality of the program remains a challenge as (1) some of TVET teacher educators are unfamiliar with their subjects and (2) the program needs more decent monitoring and evaluation system. The authors suggest increasing efforts to enhance the capacity of TVET teacher educators as well as implementing a reliable monitoring and evaluation system that complies with the quality standard in order to guarantee further development of the program as a whole.

14.1 Introduction

High school drop-out rates and low education level of the workforce pose a concern for the Cambodian government. As a result, Technical Vocational Education and Training (TVET) is seen as a solution. TVET, as stated by the government, provides school youths, women, and marginalized groups who have dropped out of school

S. Chrea (✉)
General Secretariat of National Council for Minimum Wage, Phnom Penh, Kingdom of Cambodia

S. Yok
National Technical Training Institute (NTTI), Phnom Penh, Kingdom of Cambodia

opportunities to further their education and skills (Royal Government of Cambodia, 2017). However, the development of the educational system, particularly TVET, has seen some challenges, such as:

1. TVET quality does not respond to the demand of national and international labor markets.
2. Misconceptions about the importance of TVET.
3. Limited financial resources for the TVET system.
4. Weak linkages to other educational streams.
5. Lack of hard and soft skills among TVET graduates.
6. Weak public-private partnerships.
7. Inadequate support for trainees.
8. Weak governance in TVET (Royal Government of Cambodia, 2017).

The National TVET Development Policy 2017–2025 was established to mitigate these challenges. The policy is comprised of four main objectives:

1. Improvement of TVET quality.
2. Increasing access to TVET.
3. Promoting public-private partnership (PPP) among TVET stakeholders.
4. Enhancing TVET governance (Royal Government of Cambodia, 2017; Yok et al., 2019).

In response to the first objective, measures relating to enhancing the quality of TVET teachers have been introduced, for the government believes that key to good education and training is having good teachers or instructors.

Nonetheless, there has not been enough documentation on TVET Teacher Education Programs in Cambodia. Therefore, this is the purpose of this country case study to provide descriptions of pre-service TVET Teacher Education Programs in Cambodia so that it can be a meaningful source for policymakers, scholars, and researchers in the field of technical and vocational education and training in Cambodia. Section 14.2 describes the detailed status of pre-service TVET teacher education in Cambodia. Section 14.3 provides further development of the programs, and Sect. 14.4 provides a conclusion.

14.2 Status of TVET Teacher Training

14.2.1 Course Introduction

Teacher education is important in Cambodia since it is always believed that the quality of teachers determines their students' performance. As a result, teachers are required to take a pedagogical training course prior to beginning their full-time teaching role. In Cambodia, in order to become a teacher, one must undertake a pedagogical training at a state-owned institution recognized by the government of Cambodia. There are two ministries responsible for teacher training. One is the

Table 14.1 Number of pre-service TVET teachers by academic year

No.	Year/academic year	Senior TVET teachers		Junior TVET teachers	
		Total	Female	Total	Female
1	2001–2010	1028	185	606	72
2	2010–2011	193	43	31	1
3	2011–2012	240	53	34	10
4	2012–2013	278	84	19	4
5	2013–2014	255	67	27	5
6	2014–2015	235	73	48	11
7	2015–2016	247	77	51	6
8	2017–2019	223	33	73	16

Source: National Technical Training Institute

Ministry of Education, Youth, and Sports (MoEYS), which is in charge of junior (high school +2) and senior (Bachelor +1) teacher training via its various Regional Teacher Training Centers (RTTCs) and National Institute of Education (NIE). While RTTCs provide pre-service teacher training at the junior level, the National Institute of Education offers the course at the senior level. Another is the Ministry of Labor and Vocational Training (MLVT), who is responsible for pre-service TVET teacher education.

In the case of TVET sector under the Ministry of Labor and Vocational Training, this pre-service teacher training aims to equip graduates who hold required degrees in appropriate fields of study, with the pedagogical qualifications to work as TVET teachers across Cambodia (UNESCO-UNEVOC, 2014, International Centre for Technical and Vocational Education and Training). At the end of the training course, the pre-service TVET teachers are expected to be able to (National Technical Training Institute, 2016):

- Utilize appropriate teaching/training methods.
- Design and develop lessons and training materials according to the learning needs of the students.
- Plan their teaching/training steps effectively.
- Manage the class in a professional manner.
- Determine the value of professional ethics as a teacher.

According to National Technical Training Institute (NTTI), more than 3500 TVET teachers were dispatched to work in various TVET institutions across Cambodia between 2001 and 2019, which means on average around 200 TVET teachers have been recruited for and participated in pre-service TVET Teacher Education Program in each academic year, except for the academic year 2016–2017 where the decision was made to not recruit any new TVET teachers. Since the last academic years, 2017–2019, there was a decision to not recruit any more TVET teachers. It is likely that the government prefers investing in enhancing the quality of existing in-service TVET teachers other than recruiting new ones.

Table 14.1 provides the number of pre-service TVET teachers at NTTI from academic year 2001–2002 to 2017–2019.[1] It is clear from Table 14.1 that a gender gap remains among pre-service TVET teachers, and thus TVET teachers, as women account for far less than 50 percent.

14.2.2 Responsible Body

The TVET Teacher Education Program in Cambodia was established in 2001, 2 years after the official establishment of the National Technical Training Institute (NTTI), where training takes place. Before 2004, TVET was under MoEYS, and therefore, TVET teacher education before that time was considered to be the responsibility of MoEYS. The transfer of TVET from MoEYS to MLVT led to a rise in the need for more TVET teachers. As shown in Table 14.1, the number of pre-service TVET teachers jumped from 80 in academic year 2004–2005 to 267 in academic year 2005–2006. The jump is simply due to TVET being at the early stage of development and the fact that TVET was separated from Ministry of Education, Youth, and Sports (MoEYS) in 2004. Apparently, the National Training Board as well as the MLVT saw the need for increasing the number of TVET teachers working under the MLVT after the separation. The gradual rise in the number of TVET institutions is also one of the rationales behind the rise in the number of TVET teachers recruited.

14.2.3 Prerequisites for Pre-service TVET Teachers

Recruitment for TVET teachers starts around October or November depending on the decision at ministry level, in which graduates holding required degrees and field of study are able to apply for becoming a TVET teacher. Other eligibility criteria include (National Technical Training Institute, 2016):

- Being a Cambodian citizen.
- Being physically and mentally healthy (except in academic years from 2017 to 2019).
- Not being a civil servant or government staff.
- Being between 18 and 30 years old (except academic years from 2017 to 2019).[2]
- Not having had any criminal convictions.

---

[1] 1.5 year training program, new curriculum; see Sect. 14.2.3.

[2] 18–30 years of age was a selection criterion between 2001 and 2016. This age criterion was adjusted for academic year 2017–2019 (see Yok et al., 2019, p. 32).

As NTTI is responsible for TVET teacher training, it is also responsible for the application and selection process of TVET teachers. According to Yok et al. (2019), applicants must go through an examination, comprised of two tests: one on knowledge related to the technical field for which they are being recruited and another on general knowledge (Yok et al., 2019).

Not only graduates in technical fields such as Civil Engineering, Mechanics, Electrical Engineering, and Architecture but also those, for example, in Agriculture, Mathematics, Physics, English Language, Accounting and Finance, and Tourism were recruited for pre-service TVET Teacher Education Program up until the academic year 2015–2016.

14.2.4   Curriculum

TVET Teacher Education in Cambodia is a separate 1-year course from bachelor's or master's programs, which was often called "Bachelor + 1" for the senior level and "Higher Diploma + 1" for the junior level. The course is comprised of different modules and saw changes in terms of curriculum for some years based on decisions of the Educational Science and Vocational Training Department and the management team of NTTI, as they saw the need to add or remove a subject. There is an exception for the training curriculum of the past academic years (2017–2018 and 2018–2019) which is much different from those of previous years.

Table 14.2 provides program syllabus (subjects taught) in pre-service TVET Teacher Education Program listed by academic year. Utilizing a credit system, the pre-service TVET Teacher Education Program consists of between 36 and 38 credits (15 h per credit), excluding the teaching internship. As shown in Table 14.2, Psychology, Teaching Methodology, Curriculum Development, Teaching Aid Development, and Community Development are permanent subjects. Later, a conventional curriculum was no longer considered suitable for the teaching in TVET. Therefore, the Teaching of Theory and Practice, Workshop Management, and Practical Teaching were added and became permanent subjects which were taught until academic year 2015–2016.

Teaching internships is always seen in teacher education programs in Cambodia, where TVET teacher education is no exception. Over the course of 8 weeks, pre-service TVET teachers are sent to various TVET institutions located in Phnom Penh since this is more cost efficient than sending them to the provinces.[3]

It is important to note that between 2001 and 2016, TVET Teacher Education Training curriculum had been a 1-year training program. Beginning in 2017, a new

---

[3]The TVET teacher program does not intend to strengthen the capacity of pre-service TVET teachers regarding to technical skills/subject knowledge (agriculture, mechanics, what they have learnt in undergraduate program, for instance). It meant to provide only pedagogical knowledge, both the old and new curriculum design.

Table 14.2 Pre-service TVET Teacher Education Program syllabus by academic year

Subjects	Academic year									
	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012	2012–2013	2013–2014	2014–2015	2015–2016
Psychology	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Teaching Methodology	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Curriculum Development	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pedagogy	✓	✓	✓	✓	✓					
Teach Aid Development	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Communication	✓									
Total Quality Management	✓	✓	✓	✓						
Professional Ethics	✓	✓	✓		✓					
Philosophy			✓		✓			✓	✓	✓
Entrepreneurship		✓	✓	✓					✓	✓
Community Development		✓	✓	✓	✓	✓	✓	✓	✓	✓
Multimedia in Teaching					✓					
Teaching of Theory and Practice						✓	✓	✓	✓	✓
Workshop Management						✓	✓	✓	✓	✓
Practical Teaching						✓	✓	✓	✓	✓
Soft Skills						✓				✓
Educational Administration					✓					
E-learning					✓					
Teaching Practicum	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Source: National Technical Training Institute

curriculum recommended and supported by Asian Development Bank (under project No. 46064-002) was piloted. This latest curriculum consists of eight modules as follows:

1. TVET Historical Context/Perspectives (6 credits).
2. Education Technology (6 credits).
3. Curriculum Studies (6 credits).
4. Assessment of Learning (6 credits).
5. Teaching/Learning Methods (6 credits).
6. Education Management (6 credits).
7. Professional (Teaching) Practice (9 credits).
8. Soft Skills[4] (1.5 credits).

However, the content of each module was independently developed by NTTI. The construction of each module's content involves team effort that is led by senior TVET educators. This new curriculum also incorporates both teaching practicum and a Return to Industry Scheme, for which the training period was expanded to 1.5 year.

The new 1.5 year program is divided into three semesters, which consists of an educational component and a technological component. The first two semesters were allocated for the educational component, which includes delivery of the eight modules and a teaching practicum. The last semester was given to Return to Industry Scheme (15 credits) for pre-service TVET teachers. Pre-service TVET teachers were sent to various industries/companies that were deemed to match their specialization, for approximately 3 months in the capital city, Phnom Penh, as well as in the provinces. Table 14.3 illustrates the expected learning outcomes of the eight modules of the revised curriculum.

14.2.5 TVET Teacher Educators

Teacher qualification is one of the determinant factors for teaching and learning success. The same is true and even more essential for TVET teacher educators. Surprisingly, TVET teacher educators are not recruited, and thus, there are no specific selection criteria for TVET teacher educators. What have been the practice is that those who are working at NTTI have the privilege to become TVET teacher educators, including fresh graduates from the pre-service TVET Teacher Education Program. As a result, TVET teacher educators consist of both those who are experienced and those inexperienced at teaching. However, NTTI made the effort to ensure that new TVET teacher educators gain adequate experience through observing and learning from experienced educators. In addition, those new TVET

---

[4] A slight adjustment by NTTI as "Soft Skills" was included as one of the modules. Originally only seven modules were recommended by the ADB project, plus technology component.

Table 14.3 Expected learning outcomes of new curriculum

	Module	Expected learning outcomes
1	TVET Historical Context/Perspectives	Recognize and outline the components and recent history of Technical Education in the Kingdom of Cambodia in a development perspective
		Identify the components and management structure of Technical Education
		Demonstrate and understand the development of Technical Education in other countries
		Recognize the relationship between national economic advancement and Technical Education
		Recognize and be able to explain the prospects for career advancement through the Cambodia Qualifications Framework (CQF)
		Develop an understanding of the social, cultural, and economic issues relating to TVET
		Be aware of and relate the expected functions and roles of NTTI graduates in the Cambodian TVET system
2	Education Technology	Research and evaluate teaching-learning resources for possible use and access them from commercial and other sources
		Prepare a variety of teaching-learning resources using a variety of computer software packages, equipment, tools, and techniques
		Use a variety of audiovisual and multimedia equipment
3	Curriculum Studies	Define the basic functions of curriculum development in Technical Vocational Education and Training
		Utilize the process aspects in curriculum development to develop curriculum reflecting industry-improved competency standards
		Apply adult education/andragogy methodology to the design of technical education
		Apply best practice in curriculum design
4	Assessment of Learning	Operationally define the main concepts relating to learners/trainees assessment and assessment modalities
		Select from among several assessment modes those appropriate for a learning context
		Select from among several main assessment modes those most appropriate to learning contexts of technical education
		Develop assessment methodologies that are best suited to technical education
		Interpret and utilize assessment outcomes for teaching-learning as a basis for improvement of teaching-learning methods
5	Teaching/Learning Methods	Demonstrate the ability to diagnose student needs and interest and to organize diagnostic information
		Demonstrate an understanding of the principles and methods in the teaching-learning process
		Demonstrate an understanding of the classification of teaching-learning methodologies as applied to technical/technology course
		Identify and apply appropriate teaching-learning approaches
6	Education Management	Demonstrate an understanding of principles and theories of Education Management
		Demonstrate an understanding of how education and training

Table 14.3 (continued)

	Module	Expected learning outcomes
		systems are managed particularly in TVET programs
		Develop an understanding and make use of the perspective of management applicable to training institutions in the TVET system
		Demonstrate and apply their understanding of the role of the TVET teacher as manager of vocation/technical training programs
		Demonstrate a critical understanding of the function of training regulatory bodies in relation to the management of TVET institutions
7	Professional (Teaching) Practice	Demonstrate an understanding of principles and policies applicable to the teaching profession
		Practice his/her teaching profession with appropriate work ethic, values, and loyalty
		Develop an understanding of the Code of Ethics for teachers
		Demonstrate qualities as a professional teacher, maintaining high standards of efficiency, integrity, and dignity
		Apply this role in serving the community as part of his/her professional practice
		Incorporate the qualities and characteristics of a competent professional teacher
		Be equipped with an ability to design and implement a system, component, or process such as basic health and safety
8	Soft Skills	Demonstrate an understanding of and apply soft skills in their teaching profession and social life. The soft skills include:
		Critical thinking
		Problem-solving, conflict resolution
		Communication, teamwork
		Customer services
		Organizational skills
		Work ethics
		Stress management (for effective leadership)
		The art of collaborations

Source: National Technical Training Institute

teacher educators who are, at the same time, TVET teachers (teaching engineering students at NTTI) had the opportunity to develop sufficient experience for their teaching profession, which is then shared with the pre-service TVET teachers during the program.

The new curriculum for pre-service TVET teachers has posed some challenges for some TVET teacher educators, particularly when they themselves are not familiar with the topic they are teaching. To give an example, Module 1 (History of TVET Content/Perspectives), which had never been introduced, requires TVET teacher educators be to highly knowledgeable of the Cambodian TVET system and that of other countries either by way of researching, field visits, or being introduced by the experts.

14.3   Further Developments

Despite the fact that the decision to recruit more graduates for pre-service TVET Teacher Education Program is yet to be made, it is most likely that the latest curriculum supported by ADB would continually be implemented. During this latest design of the program, some challenges could be recognized. In this case, NTTI—a pre-service TVET Teacher Education provider together with the government—should:

- Ensure the subject knowledge and pedagogical capacity of their TVET teacher educators by allowing sufficient time and resources for TVET teacher educators to do further research on their expertise and related fields. The importance of the knowledge and pedagogical capacity of TVET teacher educators can be reflected in Spöttl (2009), who stated that "a teacher must be able to teach teaching." Beyond that, he or she must be familiar with other subjects so that he or she could work with different target groups. As described by Spöttl, a teacher can be a social worker, a sociologist, a mediator, a communicator, a team worker, an expert, and a knowledge networker (ibid).
- Ensure the effectiveness of Return to Industry Scheme (RIS) for pre-service TVET teachers in terms of knowledge obtained and time spent. Industries/companies should be carefully selected, for instance, to ensure that the occupation they offer is consistent with each pre-service TVET teacher's technical fields and that they are aligned with one another in terms of technology level and internship policy so that each pre-service TVET teacher within the same field is able to have comparable RIS outcomes.
- Establish an effective means for TVET Teacher Education Program evaluation that involves transparency and compliance to quality standard. At NTTI, the Department of Educational Science and Technical Vocation Education and Training is responsible for pre-service TVET Teacher Education Program. Some TVET teacher educators are selected for evaluation of their performance. Nonetheless, there is no specific or recorded following-up activities to ensure their continuous improvements. This internal audit process is commonly found in Asian countries, and the assessment can be subjective due to "the emotional proximity between participants and assessor and even a culture of corruption and bribery in some countries thus total comprising the quality of learning outcomes" (Kurnia & Ilhamdaniah, 2013). Therefore, reliable and capable external auditors should be recommended.
- Consider industry-related experience as a prerequisite for pre-service TVET Teacher Education Program. It seems from the selection criteria of TVET teachers that work experience is neglected, which is in keeping with the statement by Grollmann (2008) that "work experience is often required in TVET as a precondition to employment as a vocational teacher. However, it is often seen as an alternative and less preferable route…." Despite the fact that RIS was considered an appropriate means for pre-service TVET teachers to be exposed to the real work, RIS's effectiveness had not been well assessed, and thus it can, to

some extent, be too early to conclude that pre-service TVET teachers, essentially those without industry experience, can gain sufficient industry knowledge from this scheme.

14.4 Conclusions

Pre-service TVET teacher education is crucial for preparing TVET graduates for a teaching career. NTTI, as an implementation body of the program under the MLVT, has produced over 3500 TVET teachers since 2001. The training curriculum for the program was constantly developed over the period 2001–2016. However, this development was limited to adjusting the syllabus. In 2017, the new curriculum, which includes a teaching internship and Return to Industry at the same time, was introduced to better prepare pre-service TVET teachers amid the concern that some pre-service TVET teachers may lack industry-related experience in their field.

Notwithstanding the new design of the curriculum, the quality of TVET teacher educators remains a challenge. On the one hand, there have not been specific training programs for TVET teacher educators. On the other hand, the system for the monitoring and evaluation of TVET teacher educators is still not reliable as it is done internally and lacks follow-ups. Absence of the monitoring and evaluation system is also found in other aspects of pre-service TVET Teacher Education Program, such as course content and its Return to Industry Scheme. Hence, establishing a reliable internal and/or external auditing system for each component of the pre-service TVET Teacher Education Program is essential.

References

Grollmann, P. (2008). The quality of vocational teachers: Teacher education, institutional roles and professional reality. *European Educational Research Journal, 7*(4), 2008.

Kurnia, D., & Ilhamdaniah, D. (2013). *Post study pre-service practical training programme for TVET teacher students*. http://www.tvetonline.asia/issue1/kurnia_ilhamdaniah_tvet1.pdf.

National Technical Training Institute. (2016). *Vocational technical teacher training program*. National Technical Training Institute. https://www.ntti.edu.kh/tvet_training_program.php

Royal Government of Cambodia. (2017). *National technical vocational education and training policy 2017–2025*. Royal Government of Cambodia.

Spöttl, G. (2009). Teacher education for TVET in Europe and Asia: The comprehensive requirements. *Journal of Technical Education and Training, 1*(1), 1–16.

UNESCO-UNEVOC. (2014). *International Center for Technical and Vocational Education and Training. "World TVET Database: Cambodia"*. UNESCO-UNEVOC.

Yok, S., Chrea, S., & Pak, R. (2019). Technical and vocational education and training in Cambodia: Current status and future development. In B. Bai & P. Paryono (Eds.), *Vocational education and training in ASEAN member states: Current status and future development*. Springer.

Chapter 15
TVET Teacher Pre- and In-Service Training in the Kyrgyz Republic

Johann Schustereder

Abstract This article describes key features of pre- and in-service teacher training for teachers (Unless otherwise indicated, in this article, the term "teacher" is used to denote all teaching staff of a TVET institutions, i.e., teachers of general subjects, teachers of profile-specific subjects, and workshop instructors.) in vocational colleges in the Kyrgyz Republic. In the field of TVET teacher pre-service training, this includes the relevant legislative framework, the preparation of teachers, their recruitment, and the recently developed TVET teachers' qualifications framework. TVET teacher in-service training is presented from the perspective of the legal framework; current opportunities for in-service training, including workplace learning; and the recently developed TVET in-service training program based on the TVET teachers' qualifications framework. The article includes references to international initiatives from which the TVET teacher pre- and in-service system could benefit. The article also identifies the gaps that require addressing to enable the TVET system to face the challenges resulting from transitions in society and economy in the twenty-first century.

15.1 Introduction

Over the past decades, the Government of the Kyrgyz Republic has implemented several major projects aiming at reforming the education system. Nonetheless, serious challenges to the improvement of learning outcomes for students at all levels of the education system still need to be addressed. The education system of the Kyrgyz Republic is facing the following particular challenges: (1) insufficient funding, (2) old or dysfunctional infrastructure, (3) outdated teaching contents, (4) primarily older teachers, (5) insufficient quality of pre- and in-service teacher

J. Schustereder (✉)
ADB-Supported Skills for Inclusive Growth Sector Development Programme, Bishkek, Kyrgyz Republic

training both in terms of subject knowledge and pedagogical skills, (6) outdated or missing teaching and learning materials, (7) lack of effective external and internal quality assurance mechanisms, and (8) the quality of education management at all levels of the education system. Those challenges also affect the TVET system, whereby teacher training is a particularly important issue.

The country's teacher training system, both in general education and TVET, has been a key component of the majority of educational reform efforts. International and national stakeholders agree on the decisive role of teachers for the provision of quality education, regardless of the level of education (ETF, 2020). The challenges facing TVET teachers in the Kyrgyz Republic do not differ significantly from those in other countries. These are, first and foremost, staying up to date with developments in the labor market, the transition from teacher-centered to student-centered learning, and the focus on competency-based training. Both within donor-funded projects and beyond, the Government of the Kyrgyz Republic has made a considerable effort to raise the quality of the pre- and in-service training for TVET teachers so that the TVET system is able to face the challenges which result from the significant changes in the national, regional, and international economy.

The TVET system of the Kyrgyz Republic is comprised of two components: primary vocational education and training (PVET) and secondary vocational education and training (SVET), whereby these are two parallel systems. PVET offers short-term courses, which, in the majority of cases, do not lead to a degree. SVET corresponds to what in many other countries is referred to as TVET. Hence, no transition is possible between PVET and SVET.

With SVET being the component that corresponds to what is generally referred to as TVET, this section deals only with pre- and in-service teacher training for SVET. In this article, "SVET" is used throughout unless the overall TVET system (PVET and SVET) is referred to.[1]

15.2 Pre-service Teacher Training

15.2.1 Legal Framework

According to Article 28 of the Law on Education, only persons with the required education and the appropriate pedagogical training are entitled to teach. Persons without pedagogical training and qualification can obtain the right to teach through additional training. The Law on Education does not specify any qualification requirements for teachers in the SVET system. According to the National Statistical

---

[1] More often than not, the translation of the educational terminology in the Kyrgyz Republic and other post-Soviet countries represents a challenge. Also, in many cases, the translation may cause misunderstanding and confusion. "PVET" and "SVET" are literal translations of the corresponding Russian terms. For problems of translation educational terminology from Russian into English, see Schustereder (2019).

Committee (2011), the percentage of SVET teachers with a higher education degree is close to 100%.

15.2.2 Preparation of SVET Teachers

Teachers teaching general subjects (e.g., languages, mathematics) get their training at regular teacher training institutions. Teachers for profile-specific subjects have a relevant higher education degree but no pedagogical training. Workshop instructors have different educational backgrounds, from primary vocational to higher education.

15.2.3 Recruitment of SVET Teachers

Each college specifies its own criteria for recruitment. All colleges require their teaching staff to have a higher education degree. Exceptions are sometimes made for workshop instructors. There seems to be a tendency among colleges to hire their former students. Often teachers are hired upon recommendation of the head of the department of the college that needs teaching staff.

15.2.4 The TVET Teachers' Qualifications Framework

The TVET system lacked a clear framework for the preparation and professional development of teachers. Under the ADB-funded "Second Vocational Education and Skills Development Project," a TVET Teacher's Qualifications Framework (TTQF) was developed. The framework provides "a tool for defining expected performance and related qualification levels of TVET teachers. The TTQF is based on TVET Teachers Occupational Standards (TTOS) against which the knowledge, skills and competencies (capabilities) of TVET teachers can be assessed" (Short, 2016, p. 4).

The framework has three levels of expertise and responsibility for TVET teachers and four domains: (1) TVET system, (2) social partnership, (3) teaching and social education, and (4) assessment of learning outcomes. Each of the four domains is broken down into subdomains. The TVET Teachers' Qualifications Framework contains references to the respective levels of the National Qualifications Framework (NQF), whereby all three levels of the TTQF are referenced to levels 4–6 of the national qualifications framework. Apart from its core elements, the framework includes descriptors of VET teachers' transversal competences (communication, leadership, information, and cultural competences).

While the framework provides a useful tool for the pre-service training as well as the professional development of TVET teachers, some adjustments will be needed to make it more operational.

15.2.5 Relevant International Initiatives

The Common European Principles for Teacher Competences and Qualifications (CEPTCQ) can meaningfully support the design of the general (non-subject-specific) competences of SVET teachers. In the CEPTCQ, these are grouped into the ability to work with information, the ability to work with fellow human beings, and the ability to work with society at the local, regional, and national levels. The CEPTCQ include useful recommendations for policymakers in terms of the level of formal qualification of teachers, the role of research for the development of education, teachers' qualification and professional development, the role of partnerships between teacher training institutions and schools, and the development of teachers' awareness of collaborative approaches to learning.

The European Quality Assurance Reference Framework for VET (EQAVET, 2012) aims to promote vocational education and training. The framework offers a series of useful tools for quality management. At its core are ten indicators which countries can use to adapt and develop their VET systems. Indicator 2 of the framework refers to the "Investment in the training of teachers and trainers." The EQAVET Indicators' Toolkit offers important guidelines for the use of each indicator, including its policy rationale and usefulness, its definition, related indicators, contextual and technical caveats, elements needed to generate the indicator, its mathematical formula, and data requirements. Indicator 2, for example, is defined as (a) the percentage of teachers and trainers participating in accredited training programs, from the total number of registered teachers and trainers, and (b) the total amount of funds annually invested per teacher and trainer in teachers' and trainers' further education and training. The current TVET teacher pre-service training system can thus benefit substantially from the application of these relevant EQAVET indicators.

15.2.6 Major Gaps

The current SVET system lacks clear qualification requirements for SVET teachers. Any requirements needing to be introduced must differentiate between the different kinds of qualifications needed by SVET teachers. The TTQF addresses a broad range of qualification criteria but requires an additional component of work experience in the respective subject. Overall, it is a complex document, and more conciseness and, in some cases, clarity may make it easier to use. The SVET teacher pre-service system of the Kyrgyz Republic will benefit greatly from more clarity, conciseness,

Age of stu-dents	Grades	Levels of education		
3-6	-	Pre-primary		
7-10	1-4	Primary		
11-15	5-9	Basic secondary		
16-17	10-11	**Complete secondary**	Primary VET **Second-ary VET**	
17-	-	**Higher education**		

Fig. 15.1 Teacher training within the education system of the Kyrgyz Republic

and coherence with regard to TVET teacher qualification requirements and the resulting training contents and outcomes.

The current SVET teacher pre-service training system does not equip teachers with the skills they need to develop students' lifelong learning competences. Of the eight key competences for lifelong learning identified by the European Commission (European Commission, 2018), the following, in particular, should be developed through the SVET system: mathematical competence and competence in science, technology, and engineering; digital competence; personal, social, and learning to learn competence; and entrepreneurship competence.

The chart (Fig. 15.1) illustrates the levels of the education system of the Kyrgyz Republic. Levels where teacher training takes places are in bold.

15.3   In-Service Teacher Training

15.3.1   Legal Framework

Article 29 of the Law on Education grants pedagogical professionals the right to professional development at the expense of the state budget. It also obligates them to do so at least once every 5 years. However, since opportunities to do so are missing, this provision is not being executed. The Education Development Strategy for 2012–2020 emphasizes the need to improve the quality of teaching in the SVET system and criteria for teacher assessment. The strategy includes the following SVET indicator: "The proportion of teachers who have participated in in-service training programs: baseline 2011 – 3 %, midterm forecast for 2014 – 30 %, provisional forecast for 2020 – 50 %" (cf. Ministry of Education, 2020, p. 22).

15.3.2 Opportunities for the In-Service Training of SVET Teachers

Colleges establish their own criteria for the in-service training of their teaching staff. Due to the lack of in-service training opportunities, the requirement set out in Article 29 of the Law on Education is often not fulfilled. However, for the teacher in question, this has no direct consequences. The state budget does not foresee funding for in-service training for SVET teachers.

Teachers use the following opportunities for in-service training:

- Teachers teaching both at a college and higher education institution can benefit from in-service training opportunities at the higher education institution.
- Teachers teaching both at a college and school use the in-service training opportunities provided at the school.
- The school uses its so-called special fund to finance in-service training of their teachers.
- In exceptional cases, teachers pay for in-service training themselves.
- Internationally funded projects.
- The Automotive College in Bishkek has a so-called school for young teachers, where experienced teachers pass on their knowledge to young teachers.

The Industrial-Pedagogical College in the city of Tokmok offers in-service training for teachers in both the primary and secondary vocational systems. In-service training is conducted for all 14 of the professional profiles that this college offers to students.[2] An in-service training course for teachers has 36 h ("2-week training") or 72 h ("4-week training"). While the college offers training for teachers from all over the country, the majority of participants come from vocational schools in Bishkek.

15.3.3 Workplace Learning for SVET Teachers

Among the few initiatives in this regard was a Schedule for the Practical Training of Engineering-Pedagogical Staff of Lyceums in the Training Centers of Employers for the second and third Quarters of 2017. The schedule had been agreed upon and signed by the VET sector (represented by the Agency for Primary and Secondary Professional Education and the Republican Scientific-Methodological Center), the Project Implementation Unit of the abovementioned ADB-funded project and five private or public/private entities of the industry. The schedule had the following key features:

---

[2]The College offers training in general subjects such as accounting and management as well as more specialized training in fields such as vehicle maintenance and use of agricultural machinery.

- It foresees workplace learning for teachers of lyceums and colleges in the training department/structures of the entities of the industry.
- The training sectors are construction, gastronomy, light industry, mining, and energy.
- Teachers will be trained in groups of 30.
- Training is scheduled between May and September 2017.

Unfortunately, this schedule was a one-off opportunity for TVET teachers to undergo professional training at the workplace.

15.3.4 The TVET In-Service Teacher Training Program Based on the TTQF

The TVET Teachers' Qualifications Framework served as basis for the development of a TVET in-service teacher training program. The program includes the results of a comprehensive training needs analysis, which was conducted with 42 primary VET institutions (lyceums) and 18 secondary VET institutions (colleges). For SVET teachers, the training needs analysis delivered the following results (percentages express the number of teachers that expressed a wish to undergo training in the respective field): teaching, 48%; assessment, 51%; social partnership, 60%; TVET system, 49%; and cross-cutting issues, 36% (cf. Asian Development Bank, 2016, 2017).

Like the TTQF, the program has three levels of expertise and responsibility for TVET teachers and four domains for their professional activity. It specifies the contents and goals of training as well as the training material to be used. The program for level 1 is currently being used for the in-service training of teachers of the primary vocational education system. It has thus far not been applied to the secondary vocational education system. The program can serve as a basis for the design of an in-service training program for SVET teachers. However, it requires adjusting to the specific needs of the SVET system.

15.3.5 Relevant International Initiatives

Some of the international experience mentioned in the section on "Pre-service Teacher Training" applies to in-service teacher training as well. In particular, the Common European Principles for Teacher Competences and Qualifications (CEPTCQ) and EQAVET (2020) (cf. part b) for the definition of Indicator 2 (Total amount of funds annually invested per teacher and trainer in teachers' and trainers' further education and training) provide useful guidance for the design of an effective in-service teacher training system.

The OECD survey on Creating Effective Teaching and Learning Environments includes a section on the professional development of teachers with a focus on the types of professional development, the support teachers need for professional development, barriers that prevent meeting demand, the impact of professional development, and recommendations for policy and practice. The survey also contains an international comparison of unsatisfied demand for professional development and the amount of professional development undertaken.

In 2013, the European Commission published The Survey of Schools: ICT in Education (European Commission, 2013). The survey provides interesting data about teacher in-service training in ICT in the countries of the European Union, such as time spent on training, types of professional development, and participation in professional development, classified by pedagogical and subject training. Although the survey focuses exclusively on ICT, the kind of data it produced for teacher in-service training can be used as a guideline for the collection of data in other subjects as well.

The 2009 Program for International Student Assessment (PISA) focused, among others, on aspects that make a school successful (OECD, 2010). The assessment report underscores the important role of school leadership for the professional development of teachers. The report includes a number of indices which summarize responses. Among the indices is an index of school principle leadership, which relates also to professional development (making sure that the professional development activities of teachers are in accordance with the teaching goals of the school and informing teachers about opportunities to update their knowledge and skills).

15.3.6   Major Gaps

The current SVET system lacks clearly formulated and system-wide requirements for the professional development of SVET teachers. It also lacks a wide range of opportunities for teachers to participate in professional development activities. Teachers of the SVET system have little, if any, opportunity to stay up to date with developments in their subject.

Available opportunities address teachers' needs only to a limited extent. Any requirements to be introduced need to differentiate between the different kind of qualifications needed by SVET teachers (a rough differentiation could be made between subject knowledge on the one hand and pedagogy and psychology on the other). Requirements for teacher professional development need to be matched by opportunities for teachers to meet them. For SVET, the TTQF requires adaptation to its specific requirements.

The current in-service TVET teacher training system lacks opportunities for teachers to develop their knowledge and skills in the field of entrepreneurship education. The system can benefit greatly from the resources which are available for teacher training in this field (European Commission, 2014). SVET teachers with training in entrepreneurship education will be able to make a considerable

contribution to ensuring that training equips students for the skills they need to succeed in their entrepreneurial undertakings.

15.4 Conclusions

The SVET teacher pre- and in-service training system continues to face considerable challenges. Effectively addressing those challenges will be key to transforming the current SVET system into a system that has the human resources it needs to face the challenges resulting from the transformations in society and economy in the twenty-first century (ETF, 2020). In-service SVET teacher training should allow teachers to address their individual professional development needs rather than addressing professional development through a standardized program for all teachers, regardless of their individual needs. Since an individualized teacher professional development system presupposes a radically different human resource development concept, serious efforts will be required to change the currently prevailing perception of human resource development. Current initiatives and long-term strategies of the Kyrgyz Republic's partners in educational reform show that this perception is changing and the necessity to address individual professional development needs is generally acknowledged (Ministry of Education, 2020; Schustereder, 2019).

The next steps toward reforming the VET teacher pre- and in-service training system will have to cover, in particular:

- A review of the current *Teacher Qualifications Framework* to ensure more clarity.
- Creating a strong link between institutions offering teacher pre-service training and industry.
- Allowing teachers to pursue individual professional development needs.
- The development of student-centered teaching skills.
- The advancement of competency-based training and assessment skills.
- Training teachers in developing students' transversal skills.
- A strong work-based learning component which allows both students and teachers to be in close contact with the world of work.

References

Asian Development Bank. (2016). *TVET teachers' qualifications framework*. ADB. https://www.adb.org/sites/default/files/project-documents/38298/38298-023-pcr-en.pdf. Азиатский Банк Развития (2016). Квалификационная структура для преподавателей профессиональн-о-технического образования и обучения. Бишкек

Asian Development Bank. (2017). *Kyrgyz Republic: Second vocational education and skills development project, monitoring and evaluation report*. ADB. https://www.adb.org/publications/kgz-2nd-voc-educ-and-skills-development-project-brief

EQAVET. (2012). *EQAVET indicators' toolkit. European Quality Assurance in Vocational Education and Training*. European Commission. https://skillman.eu/wp-content/uploads/2015/10/EQAVET_Indicators_Toolkit_final.pdf

EQAVET. (2020). *European quality assurance reference framework for VET (EQAVET)*. European Commission. https://www.eqavet.eu

ETF. (2020). *Torino process 2018–2020. Kyrgyzstan—National report. Kyrgyz Republic, Bishkek*. ETF. https://openspace.etf.europa.eu/trp/torino-process-2018-2020-kyrgyzstan-national-report

European Commission. (2013). *Survey on schools: ICT in education*. European Commission. https://ec.europa.eu/digital-single-market/en/news/survey-schools-ict-education

European Commission. (2014). *Entrepreneurship education: A guide for educators*. European Commission. https://suche.t-online.de/fast-cgi/tsc?q=European+Commission+%282014%29+Entrepreneurship+Education%3A+A+Guide+for+Educators.+Brussels&tstmp=1609533369645&mandant=toi&dia=suche&context=internet-tab&ptl=std&sb=top

European Commission. (2018). *Key competences for lifelong learning*. European Commission. https://op.europa.eu/de/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1

Ministry of Education. (2020). *Strategy for the development of education in the Kyrgyz Republic 2020–2040*. The Kyrgyz Republic, Ministry of Education and Science. https://akipress.com/news:630706:Kyrgyz_Education_Development_Strategy_until_2040_to_focus_on_quality_of_education/. Министерство образования и науки (2020) Стратегия развития образования в Кыргызской Республики на 2020-2040 годы. Бишкек

National Statistical Committee. (2011). *All-Republican classification of occupations for workers, employees and salary grades*. National Statistical Committee of the Kyrgyz Republic. Национальный статистический комитет (2011). Общереспубликанский классификатор профессий рабочих, должностей служащих и тарифных разрядов. Бишкек. http://www.stat.kg/en/publications/.

OECD. (2010). *PISA 2009 results: What makes a school successful?—Resources, policies and practices (volume IV)*. OECD. https://doi.org/10.1787/9789264091559-en

Schustereder, J. (2019). *Analytical paper on past assistance of the Asian Development Bank to the education system of the Kyrgyz Republic and recommendations for strategic directions for future assistance*. Project paper.

Short, P. (2016). *TVET teachers' qualifications framework (TTQF)*. Project paper.

Part III
Case Studies of Countries That Are Already Well-Developed (Countries in Transition) and Where TVET Already Plays a Role as an Important Factor for the Further Development of Those Countries' Society and Industry

Chapter 16
The Development of Malaysia TVET Teacher Training (TT-TVET)

Razali Hassan and Affero bin Ismail

Abstract This article provides an overview of the development of teachers' training in the field of Technical and Vocational Education and Training (TT-TVET) in Malaysia. The issues and challenges in the profession of TVET teacher are also highlighted, with a focus on the future of TT-TVET in Malaysia. TVET programme has made a massive contribution to human capital development in Malaysia by producing a skilled workforce. This article also reports on the action plan, the strategies and policies of the Malaysian government that will be implemented to strengthen TT-TVET in Malaysia in an attempt to improve the quality of TVET educators. This comprehensive article hopes to change, collaborate and transform existing TVET Teacher Training in Malaysia to create value in the long term towards Professional TVET Educators Standard.

16.1 Introduction

TVET teachers can be defined as persons who are involved in educational processes for general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge, which are related to occupations in various sectors of economic and social life (Tapsir et al., 2017). In particular, one of the roles of TVET educators is to imagine a viable future workforce for the country. The expertise of TVET educators is gathered from their experiences working in the industry, and their technical experience will further enhance their quality as teachers (Omar et al., 2019).

With the rapid development of new technology, new techniques and approaches to teaching should be taught to the teachers parallel to current technology

R. Hassan (✉) · A. bin Ismail
Malaysia Research Institute for Vocational Education and Training, Universiti Tun Hussein Onn Malaysia, Johore, Malaysia
e-mail: razalih@uthm.edu.my

advancement (Murati & Ceka, 2017). In Malaysia, there are several TVET institutions which produce a highly skilled workforce. However, in order to provide excellent and effective TVET graduates, competent teachers are essential for supporting the transformation of the entire economic sector in the country (Rasul et al., 2015). This change is vital for the development of well-educated and well-prepared teachers who are ready to face the challenges of globalisation and to support the educational system in fulfilling the needs and aspirations of a nation.

While training a young workforce, changes are demanded from all aspects of the educational and training system, and in particular, these must focus on high-quality vocational teaching and learning (Lucas, 2014). According to Ismail et al. (2018), TVET teachers must have a variety of methods on hand and be able to put them all into practice in order to ensure that they meet their teaching and learning objectives. These methods will:

- Provide knowledge about requirements at respective workplaces in TVET teacher education.
- Include teaching methods in TVET teacher education so that teachers can analyse workplaces and competency requirements in their future jobs.
- Be able to carry out research on TVET curriculum development and teaching processes in order to initiate national curriculum development processes and be able to compare competency requirements at the regional and international level, also concerning upcoming regional qualification frameworks.

Other than that, the effectiveness of teaching and learning in TVET is also determined by the teacher's vocational content knowledge as well as pedagogical decisions (Md Yunos et al., 2017a, 2017b). To enhance the performance of the students, TVET teachers need to choose appropriate pedagogy related to teaching and learning activities. Effective vocational teachers draw on a long list of teaching and learning methods and adapt their teaching to the needs of learners and the context in which the learning is taking place. This will improve the quality of teaching and learning and create a distinctive key element for improving the quality of vocational education (Lucas, 2014). Pedagogical decisions that are made by a TVET teacher are related to planning, implementation and evaluation of the delivery of the content of teaching ((Md Yunos et al., 2017a, 2017b). Teachers can make various pedagogical decisions, as described in Fig. 16.1. So, for example, when a teacher is considering their role, they will want to be thinking about which situations call for a more didactic approach and which will tend to be more effective if more facilitative (Lucas et al., 2012). The judgements require that teachers evaluate the content, successful outcome, method selected, student's characteristics and context (Fig. 16.1).

Facilitate	←	Role of teacher	→	Didactic
Authentic	←	Nature of activities	→	Contrived
Practice	←	Means of knowing	→	Theory
Questioning	←	Attitude to knowledge	→	Certain
Extended	←	Organisation of time	→	Bell-bound
Workshop	←	Approach to task	→	Classroom
Group	←	Visibility of process	→	Individual
High	←	Proximity to teacher	→	Hidden
Virtual	←	Proximity to teacher	→	Face-to-face
Self-managing	←	Role of the learner	→	Directed

Fig. 16.1 Elements of pedagogical decisions. Source: Lucas (2014)

16.2   TVET Teacher Development in Malaysia

The development of teacher competence is the same as that of other occupational professions through advanced in-service training. The creation of this expertise is essential to and critical for the exploration of areas of study, so that teaching and learning are in line with the requirements of the real working environment. Teachers play an important role in producing the workforce required by the industry for sustainable development. Therefore, teacher education must integrate elements of sustainability (Md Yunos et al., 2017a, 2017b).

Technical and Vocational Education and Training (TVET) is a key education and training sector that can make a real contribution to the economy of a country. The challenge for a developing country is ensuring that its human potential possesses the necessary attributes and qualities to meet the needs of the changing world (Ismail & Hassan, 2013). Following this goal, Malaysia has taken steps to strengthen policy guidance and regulatory frameworks for Technical and Vocational Education and Training to improve its governance and programme implementation through the development of Malaysia's TVET Educator Standard (Paryono, 2015; Spöttl, 2009).

The critical issue for the competitiveness of the economy in Malaysia is the qualification of TVET workers (Mohd Amin, 2016). Several factors influence the quality of the workers, such as not providing workers with qualified knowledge and skills; it shows that TVET teachers' quality is the most important factor among them (Pfeiffer, 2015). TVET teachers and trainers are known as the backbone of countries'

economic development, which means that the professionalisation of TVET teachers or trainers is a critical issue that affects the effectiveness of vocational education in generating skilled workers (Deitmer & Heinemann, 2009). Therefore, the quality of TVET teacher education is crucial for determining the skills of future workers. Without adequate numbers of professionally qualified teachers, TVET cannot produce qualified and skilled workers for the industry (Majumdar, 2011).

In order to ensure the quality of teachers in Malaysia, the Ministry of Education has come out with the Education Development Plan 2013–2025, which encompasses 11 transformation topics, and one of them is to improve the quality of teachers. Meanwhile, the Ministry of Higher Education has developed the Malaysia Education Blueprint for Higher Education 2015–2025 and has shifted to outcome orientation (MoE, 2015). The academic community needs to stay open to adopting these new ways of working, to collaborate with all stakeholders during this transformation and to promote the holistic, entrepreneurial and balanced mindsets, values and behaviours, expected from their students. The impacts of this transformation on the teachers are:

1. Enjoying more attractive career pathways and rewards based on their performance, which will support specialisations in teaching, research and institutional leadership.
2. Allowing practitioners and professionals more flexibility in participating in higher education and sharing of expertise.
3. Having the support they need to succeed in their new roles through targeted professional development programmes either from industry or cross-institution mobility programmes, as well as to leadership development programmes.
4. Enjoying greater decision-making rights around curriculum, financial management and talent management, to enable their institutions to move with greater agility and speed in responding to global and local trends.
5. Benefiting from closer integration with industry as well as local and international communities, through innovative partnership models on funding, teaching and learning, as well as research, development and commercialisation.

Above all, teachers' education can be viewed from the perspectives of recruitment, pre-service teacher education, curriculum and professional development, as shown in Fig. 16.2.

16.3 Teachers' Recruitment

With regard to the recruitment of pre-service teachers, the most critical issues that emerge are acceptance requirements, as well as the skills required to facilitate the recruitment of the most promising teacher talent (Ismail et al., 2017). Since 2007, Ministry of Higher Education (MoHE) requires qualified candidates that meet the minimum academic qualifications to sit for the Malaysian Educators Selection

Fig. 16.2 Teachers'
professional journey
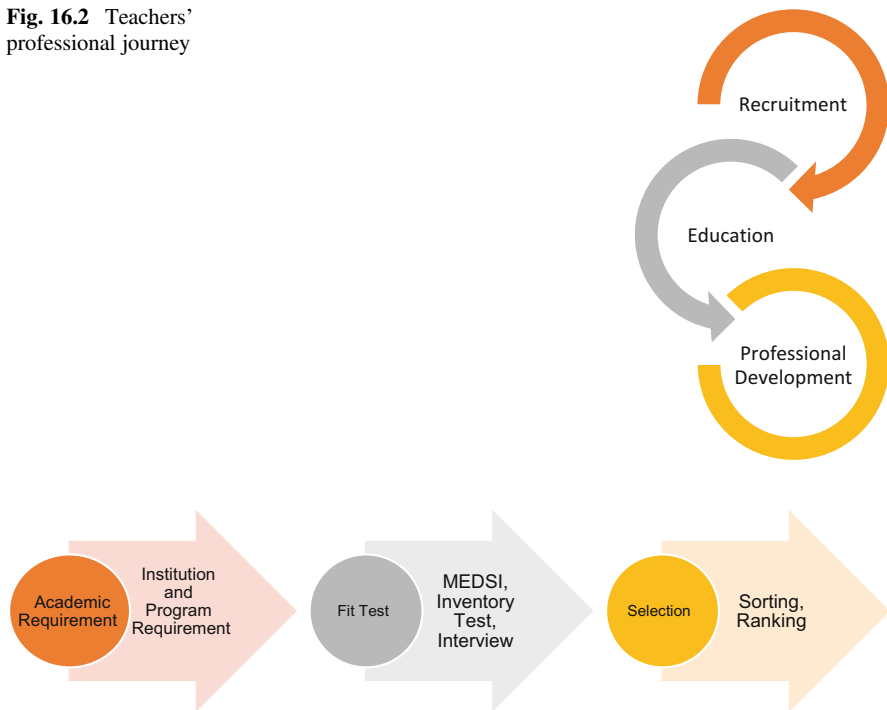
Fig. 16.3 Teachers' recruitment process

Inventory (MEdSI) test (Noah et al., 2012). Figure 16.3 shows the teachers' recruitment process in Malaysia.

The next step in teacher recruitment will be the interview session. This interview is usually conducted by three panels that examine the candidates' abilities. The selection of the candidate for interview phase is based on MEdSI performance, which depends on technical factors such as:

1. The number of candidates applying and the number of places available.
2. Competency in language.
3. Qualities in leadership.
4. Motivation and attitude towards teaching.

However, for specific specialisation subjects such as languages, arts, sports and music, candidates need to undergo specific practical screening processes. The marks scored for the different components, namely, the academic, MEdSI and the interview, will then be computed based on the weighting for each element, and candidates will be ranked (Noah et al., 2008). The candidates will then be selected based on their rank.

16.4   Pre-service Teacher Education Curriculum

TVET teachers and trainers are known as the backbone of the country's economic development, and TVET teachers are widely regarded as being critical to the effectiveness of vocational education in generating skilled workers (Bukit, 2007). As mentioned by Spöttl (2009), one of the crucial foundations for accommodating this unique requirement of TVET education to maintain qualified teachers is to develop a good learning culture for pre-service TVET teacher training.

Influenced by market demands and the importance of quality and human resource skills for the success of economic growth and for promoting and providing highly qualified workers, Ismail et al. (2018) argued that TVET teachers need to be equipped with skills and expertise in a particular field. Therefore, TVET institutions are given the autonomy to design their course of studies based on the National Occupational Skills Standard (NOSS) syllabus content and industrial feedback on curriculum which outlines occupational demand skills (Raja Rosly et al., 2019). Ismail et al. (2017) reported that the standards for vocational teachers must be a result of the standards of TVET teachers, including pedagogical approaches (see Fig. 16.4).

In general, courses for teacher education at universities across Malaysia contain three main elements. The first element is that of academic, cultural or ethical subjects, in order to provide them with the knowledge they will need for their subsequent teaching career. Next, the second element is an understanding of the educational principles in terms of social science disciplines such as psychology, sociology and philosophy. Finally, the third part consists of professional courses and school experience (Zakaria et al., 2015).

TVET teachers should be aware of the velocity of technological changes in the work environment. Pre-service TVET teachers' skills and knowledge should always be updated based on technological changes happening in the industry. TVET teachers should able to create a real workplace within the classroom by changing the learning culture, starting from pre-service teacher's preparation (Bukit, 2012).

Through teacher training, the teachers will actively bring the work environment into classrooms and be a valuable collaborator in pre-service TVET teacher

Fig. 16.4 Pre-service teacher education curriculum
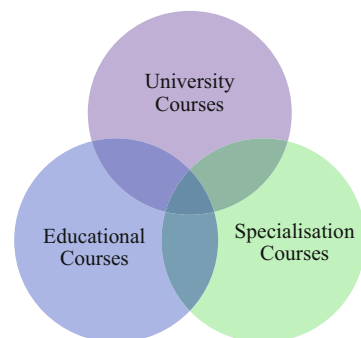
education. More importantly, TVET teachers who interact with students should experience and sense the rapidity of technological change in the world of work. In teaching skills and knowledge for pre-service TVET teachers, the trainers should always employ the most recent technology being applied in the real occupation of the industry and thus bring the real world of work into the classroom.

In addition to this, TVET teacher training should be concentrated on building more on competencies in learning culture and competencies in developing learning and teaching activity (Spöttl, 2009). Zhao and Rauner (2014) recommended that the focus of TVET teachers' research should also be shifted to occupational study and carried out in order to ensure the development and modernisation of occupational curricula (Kurnia et al., 2013). Research on the development and modernisation of vocational education, including occupational research, should be implemented into any pre-service TVET teacher preparation.

The primary purpose of TVET educator training needs to be the foundation and development of job competencies (Ismail et al., 2018). The skills being promoted should be specifically related to real-life practice so that TVET educators can meet the demands of teaching and professional life in the workplace. Therefore, this standard is crucial for achieving the following objectives:

1. Quality TVET educators for the nation's education transformation process.
2. Educators who can meet potential educational needs through correct and up-to-date knowledge of inventions and innovations.
3. The implementation of continuing efforts to improve the TVET education system, with the various sectors/divisions/agencies of the ministry.
4. The planning and implementing of plans for the future through the concerted efforts on the part of all TVET educators' education providers.
5. Work towards producing a new breed of educators in a hybrid profession.

Lucas (2014) concluded that there are a variety of teaching and learning strategies, and TVET teachers are expected to apply these strategies to increase students' knowledge and skills. Additionally, these various strategies will stimulate students to participate actively in the learning process in the classroom. The strategies proposed by Lucas (2014) are as follows:

1. Learning by watching.
2. Learning by imitating.
3. Learning by practising.
4. Learning through feedback.
5. Learning through conversation.
6. Learning by teaching and helping.
7. Learning by real-world problem-solving.
8. Learning through enquiry.
9. Learning by thinking critically and producing knowledge.
10. Learning by listening, transcribing and remembering.
11. Learning by drafting and sketching.
12. Learning by reflecting.

Table 16.1 TVET educators entry requirement

Level	Qualifications of teaching staff
Certificate/Level 1	Malaysia Skill Certificate (SKM) Level 3 in the relevant field; OR Certificate Level 3 in the relevant field; OR Diploma in the relevant field AND certification of teaching competency
Certificate/Level 2	SKM Level 3 in the relevant field; OR Certificate Level 3 in the relevant field; OR Diploma in the relevant field AND certification of teaching competency
Certificate/Level 3	Malaysia Skill Diploma (DKM) in the relevant field OR diploma in the relevant field AND certification of teaching competency
Diploma/Level 4	Malaysia Skill Advanced Diploma (DLKM) in the relevant field with 2 years of related working experience; OR Bachelor's degree in the relevant field with 2 years of related working experience AND certification of teaching competency; OR Bachelor's Degree in Education
Advanced Diploma/ Level 5	DLKM in the relevant field with 2 years of related working experience; OR Bachelor's degree in the relevant field with 2 years of related working experience AND certification of teaching competency; OR Bachelor's Degree in Education
Degree/Level 6	Master's degree in the relevant field with 2 years of related working experience; OR Bachelor's degree with 5 years of related working experience AND certification of teaching competency
Master/Level 7	PhD in the relevant field; OR Master with 3 years of related working experience AND certification of teaching competency
PhD/Level 8	PhD in the relevant field; OR Master with 5 years of related working experience AND certification of teaching competency

Source: MQA (2019)

13. Learning by being coached.
14. Learning by competing.
15. Learning through virtual environments.
16. Learning through simulation and role play.
17. Learning through games.

There are specific requirements that need to be fulfilled to become a TVET educator. The TVET programmes' qualification is based on the levels range from certificate, diploma and degree up until the postgraduate programme, as shown in Table 16.1. MQA (2019) stated that industrial experience must be significant in the Discipline Core Modules of the programme being taught. Any industry experts who do not fulfil the minimum qualification but possess more than 5 years of accumulated

related industrial experience may be considered to become TVET teachers. However, the certification of teaching competency is still a compulsory requirement for becoming a TVET teacher. TVET providers must have a collaboration with industry or stakeholders and provide for the involvement of professionals and practitioners in order to enhance the teaching and learning of the programme.

MQA (2019) list the qualifications needed for a teacher to teach in a certificate programme in any institution at either Level 1 or 2, which are that he or she must have at least Level 3 in the relevant field of Malaysia Skill Certificate (SKM). Next, Malaysia Skill Diploma (DKM) is the requirement to teach the Certificate at Level 3. Beyond that, in order to be a teacher for diploma, advanced diploma, or bachelor's degree programmes, TVET teachers must have at least Malaysia Skill Advanced Diploma (DLKM) in the relevant field with 2 years of related working experience or any bachelor's degree in a related field (see Table 16.1).

16.5   TVET Educator Standard

Standards in teacher training describe the requirements for the behaviour of teachers with regard to their competencies, abilities, skills as well as the attitudes of teachers for coping with their professional tasks (Spöttl & Becker, 2016). Improvements will be made over time to improve the standard of the TVET teacher education system. These changes are necessary to refine the framework to meet rising economic and societal demands and other socioeconomic patterns. For each adjustment, a programme has to endure the current difficulties in determining if the framework has to be modified or maintained. These reforms need to be in tandem for the current situation in order to ensure that the reforms can be successfully applied, particularly in TVET. The Industrial Revolution, which started in the eighteenth century in European countries, had a profound influence on industry worldwide. The fourth Industrial Revolution currently taking place must be included in all TVET preparation, so that TVET will fulfil the demands of rapidly evolving industries (Md Yunos et al., 2017a, 2017b; MQA, 2019).

Over the decade, numerous professional standards and competencies for teacher educators have been developed. However, not all the standards are acceptable for each country and communities of educators, since some of the countries have their specific standards (Ismail et al., 2018). Based on the evidence, there are three models which have been identified as essential for Malaysia TVET educator's competencies model. These are:

1. Malaysian Teacher Standard.
2. Vocational Training Operation (VTO).
3. Regional TVET Teacher Standard for ASEAN Becker et al., (2019).

The standard aims to integrate the core competencies for Malaysian TVET educators so that they can effectively prepare their students for the transition to employment (Ismail et al., 2018). These skills should be closely related to practice in
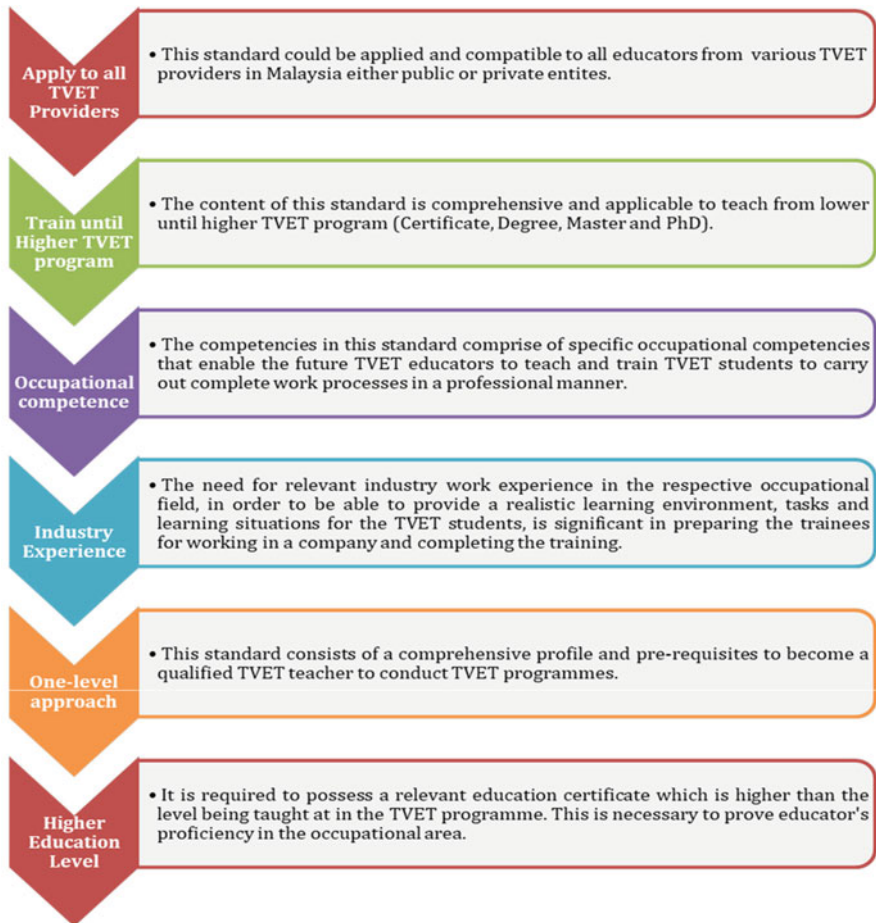
Fig. 16.5 Characteristics of Malaysian TVET educator standard

the working world, and teaching should be in line with technological advancements. The standard will serve as a guideline for the necessary competencies, skills, knowledge and abilities required to be successful TVET educators (Paryono et al., 2017). The standard also will focus on the comprehensive qualification of the educators. A qualified TVET educator will be able to streamline students' experience in order to help them develop skills, knowledge and attitudes according to the requirements of the economy and society. Figure 16.5 shows the characteristics of Malaysia TVET educator standards, separated into six main components.

Furthermore, Malaysia TVET educator standard consists of three main components: interpersonal and social skills, teaching and learning and technical knowledge, as shown in Fig. 16.6. These components can be further divided into 12 core competencies which define the skills set and pedagogical aspects (Ismail & Hassan, 2013). This standard gives comprehensive guidance for TVET institutions to
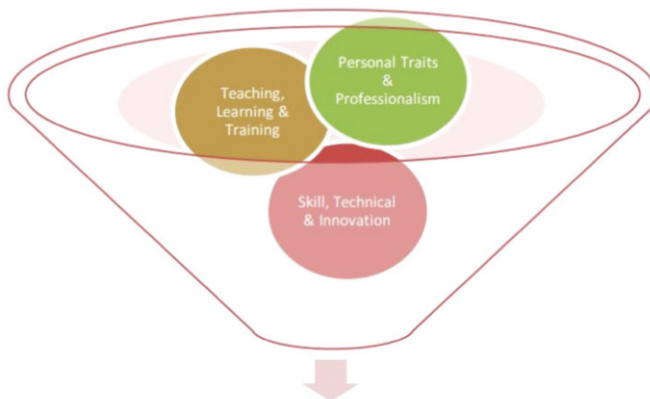
Fig. 16.6 Three main components of the TVET educator standard

cross-check and further align the competency of their TVET educator training. On the other hand, this standard can also be utilised by various ministries that offer the TVET programme.

These three components are parallel to regional TVET Teacher Standards for ASEAN which themselves also consists of three components. The first component is interpersonal and social skills, dealing with the role of TVET teachers in the environment of the TVET institute and the educational system. This first component describes the competencies of a TVET teacher in understanding the institution and the system. TVET teachers will continuously develop their skills and competencies via appropriate pedagogical training. Furthermore, this component also describes the teacher's skills in communication, empathy and utilising their soft skills and twenty-first-century skills in the learning environment. Next, the second component is teaching methodology and pedagogy of TVET teachers. This component outlines the knowledge and skills for teachers that can be applied in any situation which has the appropriate requirements throughout nationally and regionally diverse TVET school systems. Teachers need to have a comprehensive understanding of the didactic and methodological tools for a particular situation the situation, according to the requirements of the core curriculum. Lastly, the third component in this teacher standard is technical. This component highlighted crucial parts of every TVET teacher's education, including the theory and practice of teaching in diverse ways, including subject didactics which will further support the teacher's personality development. The subject didactic is based on education plans, curriculum requirements, practical applications, knowledge of pedagogy and psychology as well as the requirements of professional training.

Teaching standards for professionals are judged based on their performance, skills and knowledge, since teacher performance will affect students' learning outcomes, especially in developing and strengthening students' abilities (Tapsir et al., 2017). Being an academician in technical and vocational training is slightly different from doing so in the normal educational system, as technical and professional

training is more on hands-on and practical activity. Hence, the teaching skills or competency of a teacher often becomes a significant concern. Preparing TVET teachers or instructors for TVET is complex and somehow only partially solved, even in the most developed countries (Paryono, 2015). Most of these issues are shared with other areas of professional development. However, some are caused by TVET education's unique characteristics, which are in line with the characteristics of the world of work itself. One of the issues in TVET education is that the knowledge and skills of TVET teachers or instructors will more quickly become outdated and over a shorter period as a result of rapid technological change and the fourth industrial revolution (Gamble, 2013). Thus, maintaining qualified teachers on an ongoing basis requires developing the learning culture for pre-service TVET teacher training (Spöttl, 2009).

In order to sustain the standards and quality of the teaching and learning process, guidelines are needed in the new TVET teacher recruitment process which are in line with international standards. The standards for TVET teachers across all ministries need to be coordinated and standardised so that there is no duplication of tasks or confusion in programme accreditation. This standardisation will maintain the quality of TVET teachers being produced by the TVET institution.

Vocational Training Operation (VTO) is a compulsory course for the appointment of Assessing Officers (PP) for Malaysian skills instructors within government and private skills institutes that are accredited by the Department of Skills Development (DSD) (MQA, 2019). Instructors who possess other certificates, diploma or degree certificates in the relevant NOSS field but do not have VTO can teach, but cannot evaluate. This evaluation includes giving the assessment or signature to SKM, DKM and DLKM programme candidate portfolios. The instructor needs to possess at least a Malaysian Skill Certificate (SKM) as a vocational instructor or a vocational management certificate or a training certificate to be able to teach vocational courses. As outlined in the DSD article on November 26, 2019, Assessing Officers, according to Act 652 (NASDA) Standard 6, skills instructors must have at least an SKM in the field of vocational instructors to be recognised by the DSD. The minimum level for a skills instructor is SKM Level 3, except for specific fields that do not have Levels 1 to 3. However, DKM, DLKM, diplomas, academic degrees and related fields are acceptable. The training adopts the NOSS Vocational Training Operation (I-031-3:2014) as the basic guideline. The participant needs to attend 3.5 months of theory class at the Centre for Instructor and Advanced Skill Training (CIAST). Next, they need to complete 6 months of internship training at a public or private skill training institute. Later, the DSD will award the SKM VTO Level 3 for students who have completed their studies. Afterwards, they can apply to either become a Training Consultant, Training Manager, Training Executive, Training Officer, Training Instructor, Technician, Lab Assistant or Vocational Training Practitioner in any institution, either private or government sector (DSD, 2019).

Figure 16.7 indicates that for the sector of education and training specifically for the TVET job area of Vocational Education and Training Services, there are seven core areas that must be completed in order to be awarded a VTO. Each core has a specific module that needs to be completed by the student in a specific amount of

SECTOR	EDUCATION AND TRAINING
SUB SECTOR	TECHNICAL & VOCATIONAL EDUCATION AND TRAINING (TVET)
JOB AREA	VOCATIONAL EDUCATION AND TRAINING (VET) SERVICE
NOSS TITLE	VOCATIONAL TRAINING OPERATION
JOB LEVEL	THREE (3)

JOB AREA CODE	I-031-3:2014

←COMPETENCY→   ------- COMPETENCY UNIT ------→

| CORE | TEACHING AND LEARNING IMPLEMENTATION

I-031-3:2014 C01 | COMPETENCY CURRICULUM DEVELOPMENT

I-031-3:2014 C02 | COMPETENCY ASSESSMENT DEVELOPMENT

I-031-3:2014 C03 | TEACHING AND LEARNING MATERIALS DEVELOPMENT

I-031-3:2014 C04 |
| | CO-CURRICULUM ACTIVITIES IMPLEMENTATION

I-031-3:2014 C05 | TRAINING FACILITIES SAFETY AND SECURITY ADMINISTRATION

I-031-3:2014 C06 | INSTRUCTIONAL DELIVERY

I-031-3: 2014 C07 | |

Fig. 16.7 VTO competency profile chart

time. The NOSS competency chart has been developed to ensure the quality of VTO and standardise it across all of the training centres.

16.6 TVET Teachers Provider

The term educator could be used for teachers, trainers and lecturers. Malaysian TVET educator refers to teaching personnel in several ministry agencies providing TVET programmes such as the Ministry of Education, Ministry of Human Resources, Ministry of Youth and Sport, Ministry of Community Development, state governments, Ministry of Defence, Ministry of Agriculture and private providers.

16.6.1 Institute for Teacher Education Campus Technical Education (IPGKPT)

The idea of establishing a Technical Teachers Training Colleges (TTTC) began with the establishment of a distinctive committee which formed the Engineering College consisting of Officers Education of Canada and the Government of the Federation of Malaya. Under the Third Malaysia Plan, TTTC has been allocated 2.5 million Malaysian Ringgit, for building the Resource Centre Complex, a trading room, computer rooms, language labs and dorms. At the end of 2012, the College of Technical Education Campus Institute of Education moved into its vibrant new building complete with various facilities at the City Educational Complex, Nilai, Negeri Sembilan. TTTC has been renamed as the Institut Pendidikan Guru Kampus Pendidikan Teknik (IPGKPT) and continues to build new infrastructure for Vocational Technology Education (PTV). IPGKPT has been built to meet the needs and provision of education for teachers, both pre-service and in-service, in line with the Ministry of Education's mission and desire to produce more skilled people in technical and vocational areas. The main programme offered under IPGKPT is Design Technology, Mathematics and Science.

16.6.2 The Centre for Instructor and Advanced Skill Training (CIAST)

CIAST began operations in 1983 through the Japan International Cooperation Agency (JICA) and continued these until 1991. From 1991 to May 2007, CIAST was operated entirely by the Human Resources Department (JTM), Ministry of Human Resources (MoHR), before being transferred to Development Department

Skills (JPK), which is in line with the vital role of CIAST in empowering the skills of educators nationwide. CIAST is a training centre in Shah Alam Selangor that provides training with the goal of producing highly skilled instructors for vocational training institutions (CIAST, 2017). CIAST offers instructor skills training courses and advanced skills trainings for skilled instructors, supervisors and coaches in the industry, as well as skilled employees in both the public and private sectors in Malaysia and abroad, such as ASEAN and the Third World countries. It is also responsible for providing supervision and development skills training for reskilling and upskilling existing instructors, either in public or private training institutions. Locally, CIAST trains instructors and awards graduates with three types of certificate, namely:

1. Vocational Training Officer (VTO) Certificate.
2. Vocational Trainer Advanced Diploma.
3. Malaysian Skill Diploma with Vocational Training Officer Certificate.

After completing the course, they can apply for related positions in related industries, either the private, government, manufacturing, construction or any other sector. They can apply for a position as a Training Consultant, Training Manager, Training Executive, Training Officer, Training Instructor, Technician, Lab Assistant or Vocational Training Practitioner (DSD, 2012).

16.6.3 Malaysian Public Universities

In Malaysian public universities, there are several in-service teaching programmes that the Ministry of Higher Education (MoHE) has almost exclusively demanded, including a programme called PKPG (Special Programme for Graduate Teachers). Those who were chosen were given complete or partial paid leave to undertake their studies. MoHE also conducts numerous in-service courses, whenever there are changes in policies, such as professional development courses and workshops for a positive impact on all teachers. There are several public universities involved in TVET teacher programmes such as UTHM, UPSI, UTM and UPM.

16.6.3.1 Universiti Tun Hussein Onn Malaysia (UTHM)

The Faculty of Technical and Vocational Education (FPTV), Universiti Tun Hussein Onn Malaysia (UTHM), was formally known as the Faculty of Technical Education (FTV). FPTV, UTHM, has developed to become the major provider of high-quality Teachers Training in Technical and Vocational Education and Training (TT-TVET), as well as research and consultancies. Starting in 2002, UNESCO-UNEVOC Bonn has entrusted the FPTV at UTHM, to carry the role of UNEVOC Associate Centre, and, ultimately, in 2005, it became the UNEVOC Centre for Malaysia. FPTV at UTHM offers seven bachelor's programmes in Vocational Education, namely,

Catering, Electric and Electronic, Building and Construction, Multimedia Creative, General Machining, Welding and Metal Fabrication and Air Conditioning and Refrigeration.

After completing their first degree, learners can apply to be a vocational college teacher or to work in their related industry. FPTV, UTHM, has developed its education degree with SKM Level 3 that is already being accredited by MQA. Hence, students do not only have their degree certificate, but they also have their SKM Level 3. Apart from bachelor's degree programmes, FPTV also offers master's and PhD programmes in Technical and Vocational Education. The students must have their first and second degree in a related field and must be accredited by MQA as a requirement to be postgraduate students of TVET programmes at UTHM.

16.6.3.2   Universiti Pendidikan Sultan Idris (UPSI)

UPSI, through the Faculty of Technical and Vocational Education (FTV), offers three major programmes in the field of Technical and Vocational Education: Bachelor of Education (Home Economics) with Honours, Bachelor of Education (Life Skills) with Honours and Bachelor of Education (Agricultural Sciences) with Honours. In addition to the bachelor's programme, FTV at UPSI also offers master's and PhD programmes in Technical and Vocational Education, Agricultural Science as well as Engineering Technology. Graduates may apply to become secondary school teachers or trainers in polytechnics or other relevant institutions in the respective industries, either in the public or private sector.

16.6.3.3   Universiti Teknologi Malaysia (UTM)

Universiti Teknologi Malaysia (UTM) has been the oldest public university producing TVET educators. However, UTM is focused on its Engineering Education and Living Skills programmes. Most of their graduates have been posted to secondary school, including Technical and Vocational schools, and have determined their content for MoE-based standards. In addition to the bachelor's programme, UTM also offers master's and PhD programmes in TVET through its School of Education. The prerequisite to enrol as a master's student in TVET at UTM is having an initial qualifying degree in Science, Education, Computer and Education Technology from any institution of higher learning which is recognised by the UTM Senate. Nevertheless, if applicants have a bachelor's degree or equivalent, the candidates in this category must meet the requirements for basic subjects of education as determined by the faculty. Later, after completing the programme, the graduates could apply to become instructors, tutors or lecturers, either in a private or public institution based on their field.

16.6.3.4 Universiti Putra Malaysia (UPM)

Universiti Putra Malaysia (UPM) has been established as a TVET teacher provider, offering three major programmes, namely, Home Science Education, Agriculture Science Education and Information Technology Education under the Science and Technical Department in the Faculty of Educational Studies. Graduates who have a degree in this programme are then qualified to serve in the public school system in Malaysia. The department also offers Doctor of Philosophy (PhD), Master of Science (MS) and Master of Education (M.Ed.) programmes at the graduate level in Technical and Vocational Education with a specialisation in Agricultural Education, Home Science Education, Technical Education Management and Vocational and Trade Education, Business Education and Entrepreneurship Education. UPM has set the requirement for master's applicants as having a bachelor's degree in a relevant field, and the PhD applicants should possess a master's degree in which they carried out research in a relevant field or a master's degree achieved by completing coursework in a relevant field.

16.7 Further Developments in TT-TVET

Teacher and instructors are the most important individuals in TVET institutions because they need to be responsive to any changes in the industry in order to produce graduates who are highly skilled and whose skills are compatible with the current and future work requirements of the country (Ahmad et al., 2015). It is essential to describe the teacher's training in TVET as the principal function in providing the skill. Training is concerned with the creation of information and skills to be used immediately or very soon. It involves the improvement of established skills for those who already possess them (Mohamad et al., 2009).

16.7.1 ASEAN

The ASEAN education ministers have devoted themselves to establishing regional standards for TVET personnel. The ministers approved the updated ASEAN Work Plan on Education 2016–2020 at their meeting in June 2016 (Paryono et al., 2017). From the perspective of the diversity of TVET systems throughout the Southeast Asian countries, a regional standard could not adequately replace national standards. Furthermore, these standards serve as a guideline for the core competence, skills, knowledge and abilities that a successful teacher of TVET should have (Ismail et al., 2018). Countries in the region accepted that TVET teacher standards have the potential to serve as guidelines for national teacher training education systems and can thus improve the comparability of TVET teacher's quality. In regard to enhance

the effectiveness of TVET teachers, it could result in increased recognition of TVET personnel and boost TVET's relevance in the ASEAN countries (Paryono, 2015). The standard is meant to provide a common understanding of TVET teachers' competencies. When establishing or reforming national standards, the competencies defined by them may be used as a guideline to national standards or even for benchmarking to ensure that equivalent and high-quality TVET practitioners are delivered to the ASEAN member states (Paryono et al., 2017). In line with the regional plan and standard for TVET teacher, Malaysia has taken a step forwards towards ensuring that the quality of TVET teachers meets the criteria set by the regional standards.

16.7.2 Malaysia

Empowering human capital is one of the pillars in the 11th Malaysia Plan. The review of the 11th Malaysia Plan shows previous achievements and shows the way forwards for strengthening TVET to meet industry's demand (Omar, 2019). Finding graduates with the right skills set has been a challenge for many years and has been a primary concern for many industries. With growing demands for jobs that require IR4.0 related skill sets, and the new era of digitalisation, job mismatch is becoming an issue.

11th Malaysia Plan also strengthens teachers' competency development through various professional programmes. These programmes are improved with more training and placement programmes in related industries. In addition, encouragement is also given for retired industry practitioners to serve as instructors or lecturers in TVET institutions (Economic Planning Unit, 2015). On September 26, 2019, the former Minister of Education announced the establishment of one body that will focus on the accreditation, funding and empowerment of TVET Certification and that this would be governed by National Single Brand TVET. The establishment of the National TVET Empowerment Committee is seen as being able to unite TVET under one roof by developing a more sophisticated single system (DSD, 2019). This effort is seen as being capable of addressing all the problems of TVET in the country, in particular the development of a single standard for professional educators. In 2015, the Malaysian Board of Technologists, known as MBOT, was established and was officially launched by the former Ministry of Science, Technology and Innovation. MBOT was established as a professional body through the Technologists and Technicians Act 2015 (Act 768), in order to register and recognise professional technologists as well as certified technicians as professionals. It was instigated at the recommendation of the tenth Malaysia Plan (10MP), which has identified the need for setting up a professional body to register and recognise graduates of skills and technology. Today, technologists and technicians have been acknowledged as professionals who have exclusive titles, just like engineers and architects (MBOT, 2017).

16.8 Conclusion

TVET teaching skills are defined as a set of technological, learning and methodological skills, which are identified as an integrated collection of technical skills, learning and methodological skills, as well as interpersonal and social skills. These skills are required for effective performance in various teaching contexts and will be approached in a didactic manner. In the context of Malaysia, TVET educators are primarily involved in teaching, learning, preparing, organising, managing, implementing and evaluating a variety of curricula preparation and design in educational programmes. Teachers are expected to engage in research and innovation activities while monitoring the progress of students in some projects. TVET teachers are an ideal role model for future generations, as they are prepared with the robust standards and experience that TVET students need. For example, TVET teachers with industrial experience can enhance students' anticipation of and interest in learning TVET curricula. Many professional standards and competencies have also been developed for teacher educators over the last decade. Unfortunately, not all of these standards apply to the global professional community of educators, as there are clear country-specific standards that do not indicate all the standards that meet the standards of all countries. The continuous development of TVET teaching quality for all institutions is, therefore, essential to ensure that the skill of teachers will encourage the transformation of TVET education in Malaysia in light of the Industrial Revolution 4.0. In terms of quality of teaching and learning towards teaching licensing, Malaysia is looking forwards to the coordination of accreditation across all ministries since the implementation of the Code of Practice for TVET Programme Accreditation (COPTPA) by MQA and DSD throughout the country. Furthermore, MBOT has been appointed as a professional body to elevate the standing, visibility and recognition of technologists and technicians. A comprehensive structure of TVET teacher education will be endorsed by the government authority to become the national standard for TVET teachers. This structure will involve various ministries and agencies which offer TVET programmes. It is also aligned with the TVET programme's rating system, which is being coordinated by the special task force under the Ministry of Human Resources.

References

Ahmad, M. J., Jalani, N. H., & Hasmori, A. A. (2015). TEVT di Malaysia: Cabaran dan harapan. Seminar Kebangsaan Majlis Dekan-Dekan Pendidikan Awam, October, pp. 340–346.

Becker, M., Spöttl, G., Paryono, Heusinger, W., & Bock, C. (2019). *Regional TVET Teacher Standard for ASEAN: Essential competences for TVET teachers in ASEAN*. SEAMEO VOCTECH AND GIZ.

Bukit, M. (2007). Pendidikan Guru Kejuruan Memasuki Standar Internasional. In *Proceeding in Seminar Internasional: Revitalisasi Pendidikan Kejuruan Dalam Pengembangan SDM Nasional. UNP Padang, 3–6 June 2008*. UNP.

Bukit, M. (2012). *Strengthening TVET teacher education*. Report of the UNESCO-UNEVOC online conference, June 25 – July 6, 2012.

CIAST. (2017). *Laporan Tahunan Pusat Latihan dan Kemahiran Lanjutan*. CIAST. https://www.ciast.gov.my/wp-content/uploads/2018/10/Laporan_Tahunan_2017.pdf

Deitmer, L., & Heinemann, L. (2009). TVET and R&D evaluation: Potentials of optimising TVET. *Informacion, Cultura y Sociedad, 30*(1), 105–126. https://doi.org/10.1007/978-1-4020-5281-1

DSD. (2012). *Standard Kemahiran Pekerjaan Kebangsaan (NOSS)*. http://jpkmalaysia.com/wp-content/uploads/2012/08/I-031-3.pdf.

DSD. (2019). *Syarat Lantikan Guru Vokasional@Pegawai Penilai: VTO sahaja? November 26, 2019*. http://jpkmalaysia.com/category/vto/.

Economic Planning Unit. (2015). *Eleventh Malaysia plan: Anchoring growth on people. Rancangan Malaysia Kesebelas. Eleventh Malaysia Plan: 2016–2020* (pp. 1–372). Economic Planning Unit. https://doi.org/10.1017/CBO9781107415324.004

Gamble, J. (2013). Why improved formal teaching and learning are important in technical and vocational education and training (TVET). In *Revisiting global trends in TVET: Reflections on theory and practice*. UNESCO-UNEVOC.

Ismail, A., & Hassan, R. (2013). Issues and challenges of technical and vocational education & training in Malaysia for knowledge worker driven. *National Conference on Engineering Technology*, 1–11. https://doi.org/10.13140/2.1.4555.2961. 2014, 2013 (2015).

Ismail, A., Hassan, R., & Rosli, D. I. (2017). The skill and competency of Technical and Vocational Education and Training (TVET) personnel for the development and implementation of a national teacher standard in TVET in Malaysia. *Pertanika Journal of Social Sciences and Humanities, 25*(S), 109–120. ISSN: 0128-7702.

Ismail, A., Hassan, R., Abu Bakar, A., Hussin, H., Mat Hanafiah, M. A., & Asary, L. H. (2018). The development of TVET educator competencies for quality educator. *Journal of Technical Education and Training, 10*(39), 38. https://doi.org/10.30880/jtet.2018.10.02.004

Kurnia, D., Dittrich, J., & Ilhamdaniah. (2013). Occupational competence needs analysis as a basis for TVET curriculum development. *TVET@Asia, 2*, 1–13.

Lucas, B. (2014). *Vocational pedagogy: What it is, why it matters and what we can do about it*. 157 Group.

Lucas, B., Spencer, E., & Claxton, C. (2012). *How to teach vocational education: A theory of vocational pedagogy*. City & Guilds.

Majumdar, S. (2011). Teacher education in TVET: Developing a new paradigm. *International Journal of Training Research*. https://doi.org/10.5172/ijtr.9.1-2.49

MBOT. (2017). Laporan Tahunan 2016/2017. *Statistical Field Theory, 53*. https://doi.org/10.1017/CBO9781107415324.004

Md Yunos, J., Lai, C. S., & Hamdan, N. H. (2017a). Changes and challenges in sustainability of technical and vocational education and training-teacher education programme: A case study. In *2016 IEEE 8th International Conference on Engineering Education: Enhancing Engineering Education Through Academia-Industry Collaboration, ICEED 2016, January 2018* (pp. 80–85). ICEED. https://doi.org/10.1109/ICEED.2016.7856099

Md Yunos, J., Lai, C. S., & Hamdan, N. H. (2017b). Sustainability of TVET TE programme: An exploratory sequential mixed method design. *Advanced Science Letters, 23*(1), 220–222. https://doi.org/10.1166/asl.2017.7138

MoE. (2015). *Malaysian polytechnic standards\46 years of TVET legacy and excellence*. MoE. https://www.pkb.edu.my/images/muatturun/MyPOLYStandards2.pdf

Mohamad, M. M., Saud, M. S., & Ahmad, A. (2009). The need in training and retraining for TVET teachers in Malaysia. *Journal of Technical Education and Training, 1*(1).

Mohd Amin, J. (2016). *Quality assurance of the qualification process in TVET: Malaysia Country*. www.tvet-online.asia.

MQA. (2019). *Code of practice for TVET programme accreditation (COPTA)*. MQA. https://www2.mqa.gov.my/QAD/garispanduan/2019/COPTPA%20050919.pdf

Murati, R., & Ceka, A. (2017). The use of technology in educational teaching. *Journal of Education and Practice, 8*(6), 197–199. www.iiste.org

Noah, S. M., Karim, A. M. A., & Othman, J. (2012). *The construction of the Malaysian Educators Selection Inventory (MEdSI) for the selection of Bachelor of Education Students in Public University in Malaysia*. Pedagogi.

Noah, S. M., Malek, A., Karim, A., Jaafar, W. M. W., Ghazali, M., Borhan, L., & Yusop, M. (2008). Pendekatan P-P FIT dalam Proses Pemilihan Calon Guru di Institusi Pengajian Tinggi Awam di Malaysia. *Malaysian Education Deans' Council Journal, 2*, 71–82.

Omar, A. (2019). *TVET Malaysia—The way forward*. https://tvet2019.ppks.edu.my/pdf/TVETMalaysiaTheWayForward.pdf

Omar, M. K., Abdullah, M. R., & Mohd Puad, M. H. (2019). "What Makes Me Stay in Teaching?" Exploring retention factors of TVET teachers in Malaysia. *International Journal of Advanced Science and Technology, 28*(8s), 130–139.

Paryono. (2015). *Approaches to preparing TVET teachers and instructors in ASEAN member countries*. www.tvet-online.asia

Paryono, Heusinger, W., & Bock, C. (2017). *Report on regional TVET teacher standard for ASEAN. Essential competencies for TVET Teachers in ASEAN*. SEAMEO VOCTECH and GIZ-RECOTVET. https://sea-vet.net/39-e-library/467-regional-tvet-teacher-standard-for-asean

Pfeiffer, S. (2015). *Effects of Industry 4.0 on vocational education and training. November, 2015, 51*. http://epub.oeaw.ac.at/ita/ita-manuscript/ita_15_04.pdf

Raja Rosly, R. N., Hussin, H., Sidek, S., & Pang, Y. J. (2019). Malaysian TVET lecturer and industrial training through national occupational standard skills. *Humanities & Social Sciences Reviews, 7*(2), 212–219. https://doi.org/10.18510/hssr.2019.7223. eISSN: 2395-6518.

Rasul, M. S., Hilmi, Z., Ashari, M., Azman, N., Amnah, R., & Rauf, A. (2015). Transforming TVET in Malaysia: Harmonizing the governance structure in a multiple stakeholder setting. *TVET-Online Asia, 4*, 1–13.

Spöttl, G. (2009). Teacher education for TVET in Europe and Asia: The comprehensive requirements. *Journal of Technical Education and Training, 1*(1), 1–16. http://eprints.uthm.edu.my/550/

Spöttl, G., & Becker, M. (2016). Standards—An instrument to enhance the quality of TVET teacher training. *TVET@Asia*, (7), 1–16. http://www.tvet-online.asia/issue7/spoettl_becker_tvet7.pdf .

Tapsir, S. H., Mazlan, A. S., Manaf, Z., Talib, Z. A., Bakar, A. R., & Mood, N. Z. (2017). *Technical Vocational Education &Training (TVET) in Malaysia: Selected works*. http://mycc.my/document/files/PDF Dokumen/Technical Vocational Education%26Training (TVET) in Malaysia Selected Works.pdf.

Zakaria, A. R., Mohsin, M., Darusalam, G., & Mohamed, M. F. (2015). Malaysia's teacher education curriculum: Outcome and issues in developing human capital through educational reform. In ICIBSoS (Ed.), *Interdisciplinary Behavior and Social Sciences—Proceedings of the 3rd International Congress on Interdisciplinary Behavior and Social Sciences, ICIBSoS 2014, October 2016* (pp. 267–271). ICIBSoS. https://doi.org/10.1201/b18146-49

Zhao, Z., & Rauner, F. (2014). *New frontiers of educational research*. Springer. https://doi.org/10.1007/978-3-642-55352-3

Chapter 17
TVET Teachers Training in Thailand

Siripan Choomnoom

Abstract This paper seeks to describe the education and training of TVET teachers in Thailand in 2020. According to the 20 years National Strategy 2018–2037 (cf. Thadphoothon, Thai school teachers' attitudes towards Thailand's 20-year national strategies, 2019), the strategy for Human Capital Development and Strengthening is a major component of this system. Teacher capacity building is a means for achieving the goal of educational reform for a more humane development strategy in order to accommodate changes which new skills of the twenty-first century necessitate, as well as economic and social development goal of the country. Improved roles for teachers are necessary in order to facilitate the implementation of new methods and contents of learning processes.

17.1 Introduction

TVET teachers are faced with new requirements for TVET graduates in light of changing technological innovations for businesses within industry processes and overall human resource development of the country, as well as with the impacts forced on education by the Covid-19 pandemic. Since TVET teachers have graduated from universities without occupational experiences, various models of up-skilling which include industrial-based training have now been provided by the Office of Vocational Education Commission (OVEC). Those models include in-house training, industrial-based training, online, and independent or self-study. The endorsement and accumulation of these training hours obtained within various models are considered to improve teachers' professional academic standing and thus represent incentives for the self-development of teachers. The annual Individual Development Plan (ID Plan) which every teacher is required to develop and submit

S. Choomnoom (✉)
Cornell University, Ithaca, NY, USA

Office of Vocational Education Thailand, Bangkok, Thailand

for approval by the administrator is an integral part of teacher training programs (United Nations, 2019).

Training programs are offered at the central level or by the OVEC, as well as at the institutional level. Programs which provide experience in industry are important components of the TVET teacher training process as well as of the involvement of industrial representatives in the designing, implementing, monitoring and evaluation of the programs. A model for the Professional Learning Community (PLC) which required teachers to have professional academic standing in order to be promoted was implemented by the Ministry of Education in 2017. This PLC model is designed to facilitate cooperative work, problem-solving, as well as teachers' sharing knowledge and experiences with each other within an institution or college. Professional Teacher Clubs (PTC) have been also enhanced by OVEC for cooperative learning of teachers in the same professional areas across the country. Industrial representatives also engage in PLC in order to communicate about changes in related industries through the Public and Private Committee for Vocational Education Development, Dual Vocational Training Programs, and other cooperative committees. A number of specialized training programs are also offered through Professional Teacher Clubs within each field of occupation.

In addition to these learning experiences TVET teachers can have in the workplace, in 2020 there are four more new models for teacher training programs organized by the Bureau of Vocational Education Teacher and Personnel Competency Development (cf. Oungthong et al., 2019):

- Model I: Capacity building of TVET teachers towards occupational standards
- Model II: Intensive academic capacity building
- Model III: Capacity building of TVET teachers in general study (such as math, sciences, social skills, etc.)
- Model IV: Training for TVET teachers in the Excellence Center Institution

The objectives and outputs of each model are different. However, there are also time-based models of TVET teacher training which include short-term, medium-term, and long-term training programs.

All TVET training models are provided with incentives for professional teachers, through endorsement and accumulation of their academic standing if they are seeking promotion, engagement with industries, industrial experience program, and online and self-guided learning. In order to ensure or further progress, TVET teacher training programs could increase their engagement with industries, universities, and related agencies. The teacher Individual Development Plan is also an integral part of decision-making processes for financial or other models of support of TVET teacher training program delivery.

In the future, as a result of the rapid expansion of digital technology, and the impacts of COVID-19, there should also be an extension and further implementation of more online and self-learning as well as industrial experience programs. The participation and engagement of industrial representatives in those areas of TVET teacher training that need qualified TVET manpower will be strengthened and extended.

17.2   Status of TVET Teacher Education and Training

17.2.1   Teacher Education

TVET teachers in Thailand are required by the Ministry of Education to have at least a bachelor's degree. Therefore, graduates of every university can apply for a teaching position and need to obtain teaching license after their bachelor's. However, TVET teacher education is mainly provided by universities of technology. Those universities included ten institutions as follows:

1. King Mongkut's University of Technology North Bangkok
2. King Mongkut's University of Technology Thonburi
3. King Mongkut's Institute of Technology Ladkrabang
4. Rajamangala University of Technology Krungthep
5. Rajamangala University of Technology Thanyaburi
6. Rajamangala University of Technology Phra Nakhon
7. Rajamangala University of Technology Lanna
8. Rajamangala University of Technology Srivijaya
9. Rajamangala University of Technology Suvarnabhumi
10. Rajamangala University of Technology Isan

Core study programs are offered in industrial areas such as mechanical, civil, electrical and communication, mechatronics, architecture, industrial product design, etc. Other areas of study such as TVET Teacher Education programs in agriculture, computer science, business administrative, home economics, and arts are also provided.

The total number of TVET teachers produced by these ten universities are 2500–3000 graduates each year, depending on the needs of institutions and individuals. A number of TVET teacher education graduates are also employed by various industries to serve as higher-level technical staff and as in-company trainers for newly recruited staff.

Four and 5-year bachelor's degree TVET education programs are offered. In the 5-year program, 1 year consists of additional internship training in a TVET institution. After completing this training and passing the university exam, they will receive a teaching license. For those who attend the 4-year program, they have to take the test of Teacher Council in order to obtain a teaching license. The 5-year program was cancelled by the Minister of Education in 2019, following the recommendation of the Teacher Education Dean Council and Teacher Council. This was a result of the excessively long period needed to produce teachers as well as the fact that the quality of the graduates was not significantly different from that of the 4-year program. In addition, the 5-year program was not attractive to learners. Thus, the 4-year program of teacher education has been promoted. For TVET, the institutions and colleges do need teachers who have occupational knowledge and experience. An education qualification may be provided through additional in-service training. Therefore, those who completed the 4 years bachelor's degree program in any

field are qualified to be TVET teachers. They can apply to take an exam in order to obtain their teaching license later.

The 4-year bachelor's degree program in TVET education consists of 120–150 credit hours comprising at least 30 h of general subjects (such as math, science, social, language, etc.), 84 credit hours in a specialized field, and 6 credit hours of elective subjects. This program includes one semester internship in a TVET institution. The new development of TVET education program and industrial experiences in related field of study is all also added.

17.2.2 Teacher Training

For TVET in Thailand, teacher training is considered very important, especially in an era of rapid changes of economy and industrial processes. In the National Strategy 2018–2037 (National Strategy Secretariat Office, 2018), learning reform for twenty-first-century skills has been focused on the following issues:

- Strengthen education management.
- Enhance lifelong learning.
- Develop digital learning platforms.
- Promote enthusiasm of Thai citizens as active ASEAN and international community citizens.
- Strengthen educational system to promote academic excellence at the international level.

Even further education for teacher's development focuses on facilitating learning in twenty-first-century skills, mainly comprised of both life skills or transversal skills and occupational skills, but every issue of learning reform is mainly aimed at teacher quality. Therefore, teacher training strategies have become a great challenge for the Office of Vocational Education Commission (OVEC). Under OVEC, the Bureau of Vocational Education Teacher and Personnel Competency Development is mainly responsible for providing pre-service and in-service training to TVET teachers (cf. Potang, 2018).

Three main objectives of teacher training programs are:

1. To increase knowledge, skills, and competence of TVET teachers and promote these training program as necessary for an academic standing and promotion requirement
2. To strengthen and expand partners and networks with related agencies as well as business and industries in order to improve TVET teacher quality
3. To enhance good quality of TVET teacher work and link the improvement of teaching and learning to requirements for promotion for teachers

Two main programs offered for TVET teacher training include in-house training, which are organized at the central level in cooperation with university partners, businesses and industries, and related agencies. The industrial experience program is

also an integral part of TVET teachers' in-service training program. Since the new National Vocational Education Qualification Framework (NVEQF) required the integration of occupational standards into the curriculum or content of each subject, TVET teachers need to understand occupational standards and be able to translate them into learning standards. TVET teachers are required to spend at least 2 weeks to 1 month learning in related business and industry. Learning experience in the workplace does not only help TVET teachers to keep abreast with changing industrial processes, equipment, and other requirements, but relationships and networks with industries are also strengthened and extended. The following solutions are being implemented:

- Pre-service training for new TVET teachers is provided for 1–2 weeks. This program is mainly focused on related rules and regulations of TVET institution and OVEC as well as how to carry out teaching and learning and assessing processes efficiently.
- For in-service training, existing TVET teachers are provided with knowledge and skills in specialized fields through cooperation with business and industries as well as related professional agencies.

Furthermore, TVET teacher training in Thailand is provided not only by the central authority but also at the provincial and regional level. Public and Private Sub-Committee for TVET in each area of specialty as well as TVET. The Professional Teacher Clubs also played important roles in organizing and providing specialized training programs for TVET teachers. Competency-based training and assessment are the main requirements for TVET teachers' improvement. Therefore, cooperation and partnership with business and industries are the main processes required for designing and implementing in-service training programs for TVET teachers.

17.3   Requirements for TVET Teachers

As mentioned above, TVET teachers in Thailand are required to have at least a bachelor's degree. However, they also need to obtain a teaching license from the Teacher Council of Thailand. The teaching license will be awarded to TVET teachers in two ways, as follows:

- The accreditation of those with Bachelor of Education degree programs at the university.
- Those who did not graduate from an educational degree program must be trained in the Graduate Diploma Program for Teacher Education at the accredited universities for 1 year.

Teaching licenses are required for full-time teachers only. Visiting or part-time teachers who are mostly specialists in each occupational area are not required to have a teaching license. Special training program such as assessment and feedback may be developed for them if required. This policy has made TVET institutions work

efficiently with experienced and qualified personnel in industries. Expanded participation of industries and experts in the fields can be assisted by more flexibility and less bureaucracy.

For OVEC, competitive examinations have been organized for the recruitment of new TVET teachers. Two aspects for applicant qualifications are required, as follows:

General Qualifications

- Thai nationality
- 18 years old
- Not politician
- Not a monk, a novice, or a priest, etc.
- Good background

Education Qualifications

- Obtain a bachelor's degree in education or related fields.
- The bachelor's degree program is accredited by the Teacher Council of Thailand so that the curriculum is offered in line with the standards.
- The graduates obtained a teaching license.

For the bachelor's degree program which is not accredited or one which has been earned in another field, graduates must acquire a license before entering the selection process.

In 2018, the Teacher Council reviewed the teacher standards with an effort to improve knowledge, experiences, and characteristics. Three teacher standards are required:

1. Teaching professional knowledge and experiences standard
2. Teaching performance standards
3. Teacher professional code of ethics

For TVET teacher standards, OVEC adds the following requirements:

- Keeping abreast with the changing world of work and changing technology in specialized areas of study
- Analyzing occupational standards and identifying competency requirements
- Translating occupational and competency standards into learning standards
- Designing competency-based teaching and learning and assessing processes
- Developing qualification quality assurance system
- Spending at least 6 months in an industrial experience program and continuing to network and learn from industries
- Developing a sustained relationship with industrial partners in order to facilitate quality improvement of learners and placement of graduates
- Application of digital learning platform

These requirements for TVET teachers of OVEC are fulfilled through in-service training programs. Individual development plans for each teacher are required to be developed and submitted for consideration. Details of the training model are described in the next section.

17.4 Relevant Models of TVET Teacher Training

As mentioned above, TVET teacher training of OVEC has been organized by pre-service and in-service training programs. Models of TVET teacher training can be classified, as explained below.

17.4.1 In-House Training

In-house training will be organized by OVEC or at the central level. This training is mainly based on educational policy at higher levels, such as English, ICT, STEM for TVET, or other general competency which are required for every occupational area. Specialized areas of occupational training are also organized in cooperation with business, industries, and related agencies. Management systems for in-house training programs can be divided into three levels:

- Organized at the central level or OVEC
- Organized at the provincial or regional level
- Organized by TVET institutions or colleges

17.4.2 Industrial Experience Programs

TVET teachers in Thailand are mainly recruited from those who have graduated from universities. They have no occupational or industrial experience; therefore, OVEC, in cooperation with business and industries, provides 1 month industrial experience program to teachers during the summer time. Additional industrial experience program can be continuously organized at the provincial or regional level or at the institutional or college level. Within this program, teachers are required to analyze and report what they learned in the industry and how they would change teaching and learning process. Not only new knowledge and experience in this program but also relationships with industry are developed and expanded.

17.4.3 Professional Learning Community (PLC)

PLC has been promoted at the TVET college level (cf. Mahimuang, 2018). All teachers are required to engage in PLC for at least 50 h every year for 5 years which will be the basis for achieving a particular academic standing in order to be considered for promotion. The main objectives of PLC are to improve teaching and learning and thus the quality of learners.

Three principles of PLC include as follows:

1. A focus on learning
2. A culture of learning
3. A focus on results

Five components of PLC are as follows:

- Shared vision
- Collaborative team work
- Shared leadership
- Caring community
- Supportive structure

PLC is a tool for teachers to collaborate and work together sharing knowledge and experiences as well as solving their problems. College administrators will facilitate teachers learning and working cooperatively with their colleagues. Records of PLC process and output will be endorsed by the administrator. These became incentives for teachers to continue improving themselves for a better delivery of knowledge and experience to learners. Relationships between and synergy of teachers are strengthened.

17.4.4 Professional Teacher Club (PTC)

In addition to PLC that helps teachers in an institution or college work collaboratively as described above, OVEC also organized "Professional Teacher Club." There are more than 30 Professional Teacher Clubs that are organized and supported by OVEC across the country. Every teacher who teaches in the same profession, for example, welding, electricity, ICT, and etc., joins PTCs in order to learn from each other. Industrial representatives within each professional group are also involved in PTC. Not only informal knowledge sharing through workshops, meetings, and seminars, training programs are also organized in order to upgrade and update teachers in each professional area. Cooperation and collaboration with industry were also developed, extended, and sustained through PTC. Improvement of curriculum, teaching and learning process, industrial experience programs for teachers, and work-based learning of students as well as placement of students are outputs of the PTCs (cf. Pagram & Pagram, 2006).

17.4.5   New Models of TVET Teacher Training

OVEC, through the Bureau of Vocational Education Teacher and Personnel Competency Development, in cooperation with Professional Qualification Institute (TPQI), Professional Teacher Club (PTC), and related agencies, developed new models of TVET teacher training. In order to keep pace with the rapid development of digital technology and the challenges of COVID-19, digital learning platform has become a major component of those new models. Four new models which have been implemented in 2020 are as follows:

17.4.5.1   Model I: Occupational Standards Capacity Building of TVET

Steps:

All partners work collaboratively through workshops, focus group, and consulting process in needs analysis for training programs, in finalizing, and submitting training programs for a certification of academic standing, in order to qualify for promotion, for approval

Recruited trainees take part in the following:

1. Online learning programs are provided to trainees.
2. Online testing.
3. Those trainees who pass the test will be provided with 10 days of face-to-face practical training program.
4. After training, the trainees develop a project and implement at the institution about 1–3 months.
5. Online communication and consultation among trainers, groups of trainees, and supervisor continue.
6. Trainees apply to take Professional Qualification Tests and receive a certificate from Thailand Professional Qualification Institute (TPQI) and OVEC certificate.

Model I aims to have teachers develop their professional qualification in order to ensure that they can effectively transfer knowledge and experiences into teaching and learning plan.

17.4.5.2   Model II: Intensive Academic Capacity Building Program

Steps:

1. Selected trainees for an intensive academic program developed by OVEC in cooperation with partners.
2. Trainees take online tests.
3. Those who pass online testing will spend 7 days in face-to-face training which includes:

   (a) Practical training
   (b) New teaching methods
   (c) Digital teaching and learning
   (d) Action research in classroom project-based teaching
   (e) Presentations

4. Trainees then return to institutions and develop and implement a project through online communication and consultation with trainers and their group.
5. Meeting face to face with trainers for 3 days for knowledge and experiencing sharing and improving their teaching and learning techniques and a final presentation.
6. Trainees are provided with a certificate of achievement (10 days/70 h of training) in order to achieve academic standing for promotion.

17.4.5.3   Model III: General Subject Capacity Building (Math, Science, Social Skills, etc.)

Steps:

1. Training programs are divided into three levels which include:

   (a) The basic program which lasts 10 days
   (b) The medium program which lasts 7 days
   (c) Higher program which lasts 5 days

      • Online application and testing before beginning each level
      • Online learning program under supervision and consultation with trainers
      • Face-to-face training (5–10 days)

2. Capacity building for innovative teaching and new methods of teaching
3. Ability to use ICT for learning management
4. Action research in classroom presentation, including:

   (a) Developing relationships with trainees and their group through social media
   (b) Submitting learning report and being involved in sharing knowledge
   (c) Sharing experiences from the training with the trainers, the group, and the supervisor
   (d) Disseminating learning experience through printed materials and creating online articles
   (e) Presentation in academic seminars and obtaining certificate from OVEC

17.4.5.4 Model IV: Excellent Center Institution Teacher Training Program

Steps:

1. Designing training program in cooperation with industries, the Thailand Professional Qualification Institute (TPQI), and related agencies to ensure relevance of innovation and technology.
2. Identify elements of training units.
3. Recruiting TVET Excellent Center teachers for the program.
4. Online registration and learning are required.
5. Online testing.
6. After the trainees pass the test, they will take part in face-to-face training for 15 days.
7. Attending an industrial experience program for 60 days, after which they have to develop an action research and innovation from what they learn.
8. Present action research and innovation to trainers and group.
9. Sharing knowledge and experiences and learning more from trainers and group (15 days).
10. Trainees return to the institution and implement their new teaching plan and continue to carry out online communication and consultation with trainers, and then there is a group presentation of trainees' work.
11. Obtaining certificates from OVEC and applying for professional qualification.
12. Testing and certificate.

In addition to these four new models of TVE which were developed in 2020 to meet urgent needs, there are three more models: short-term, medium-term, and long-term training programs. Details are as the following:

17.4.5.5 Short-Term Training Program

- This program is designed to upskill teachers.
- The length of training is 20 h per year. At least 800 teachers are expected to attend this program in 2020.
- Online learning is 40%, and face-to-face training is 60%.
- After completing the online learning, successfully passing the test, and then meeting with trainers, they have to spend 15–20 days in industrial experience programs.
- Project design and implementation in the classroom are required and will be reported to trainers and supervisors through online consultation.

17.4.5.6 Medium-Term Training Program

- The time period of program is 1–3 years.
- The training content is linked to a master's degree program through a university partnership. Institutions include King Mongkut's Institute of Technology Ladkrabang in AI program and King Mongkut's University of Technology North Bangkok in Automotive Technology program.

- Connecting programs with international community are also planned.
- Components of program include online learning and face-to-face training
- Learning with university partners, 1 year.
- Accreditation for training and education are planned and accumulated into a master's degree program.
- Scholarships for university study are provided.

17.4.5.7 Long-Term Training Program

As a result of rapid changes in the working world, OVEC needs master teacher or experts in various occupations to carry out improvement of teachers' skills. Therefore, a long-term training program for doctoral degree program has been design in order to train specialists who will be ready to work in 3–5 years. The program will focus on areas of industrial development and areas with a personnel shortage. Close work with universities and industries is planned for this program.

17.4.5.8 Further Development

In Thailand, TVET teacher training is very important and has become a major issue for TVET reform. Therefore, there are a number of recommendations, comments, and guidelines for the further development of TVET teacher training, especially in an era of disruptive technology, changing structure of work, and the challenges of the COVID-19 pandemic (cf. Thadphoothon, 2019). Digital technology has become an integral component of teacher education and training. However, other challenges must be emphasized:

- TVET teacher education at universities should provide an opportunity to students to have industrial experiences in the fields they are studying in.
- Incentives for TVET teacher training programs should involve scholarships and continuously offer academic support.
- Participation and engagement of industrial representatives in learning experiences and teacher training programs will be strengthened and expanded.
- Online learning and sharing knowledge and experiences should be acknowledged and made use of.
- Digital learning platforms for TVET learners and teachers should be fully promoted and supported by the government.
- Important skills of TVET teachers should be included in the process of training.
- Learning experiences and training of TVET teachers will accrediting the experiences and training of TVET teachers in order to guarantee their academic standing and ability to seek promotion and further education in higher educational institutions.

17.5   Conclusion

Thailand has implemented several models of TVET teachers training in 2020.

These models are not all new, but they are derived from learning experiences of OVEC in their attempts at improving and expanding capacity building of teachers. A decentralized system of teacher training has been considered as well as expanding partnerships with all stakeholders. Special features of TVET teacher training programs can be concluded as follows:

- All TVET teacher training programs are focused on the need to strengthen the quality of learners according to the economic and social development plan of the country.
- Incentives in the TVET teacher training program include the endorsement and accumulation system of training hours for the "Professional Teacher Academic Standing for Promotion" and further education at higher educational institutions.
- All TVET teachers are required to develop an ID, or Individual Development Plan, which is approved by the administrator and online register at the Bureau of Vocational Education Teacher and Personnel Competency Development of OVEC.
- Every TVET teacher is selected for a training program according to their needs and ID plan.
- Industrial experience programs as well as TVET teacher standards are integral parts of TVET teacher training programs.
- Participation of industrial representatives in these processes is essential for designing and implementing the program. This process has already had success through the work of Public and Private Committee for TVET at both the national level and local levels, as well as in the PLC and PTC program.
- Networking and partnership with all stakeholders, especially local agencies, industries, and universities, are very important for successful TVET training program.
- Online self-study for TVET teacher training programs is increasing and expanding; this includes online testing and ongoing communication with groups and trainers as well as industrial partners.

References

Mahimuang, S. (2018). Professional learning community of teachers: A hypothesis model development. In *International Academic Research Conference in Vienna*. Faculty of Education, ICBTS. http://www.ijbts-journal.com/images/main_1366796758/36)%20VI18-1116_Full%20 Paper-Sucheera%20Mahimuang.pdf

National Strategy Secretariat Office. (2018). *National strategy 2018–2037 (summary)*. Office of the National Economic and Social Development Board: National Strategy Secretariat Office. https:// www.bic.moe.go.th/images/stories/pdf/National_Strategy_Summary.pdf

Oungthong, M., Pupat, P., & Pimdee, P. (2019). Key performance indicators of knowledge competency of technical teachers in Thailand: The 21st century. *Mediterranean Journal of Social Sciences, 10*(2), 113–122. https://doi.org/10.2478/mjss-2019-0028

Pagram, P., & Pagram, J. (2006). Issues in E-learning: A Thai case study. *Electronic Journal of Information Systems in Developing Countries, 26*(6), 1–8. https://doi.org/10.1002/j.1681-4835.2006.tb00175.x

Potang, A. (2018). *Expert meeting: TVET teacher training programmes and institutions*. UNESCO. https://bangkok.unesco.org/content/expert-meeting-tvet-teacher-training-programmes-and-institutions-asia-and-pacific-region

Thadphoothon, J. (2019). *Thai school teachers' attitudes towards Thailand's 20-year national strategies*. Faculty of Arts, Dhurakij Pundit University. https://doi.org/10.13140/RG.2.2.28659.17440

United Nations. (2019). *Thailand - Annual report of 2018*. United Nations Country Team Thailand, United Nations Thailand UNDP. http://www.un.or.th/wp-content/uploads/2019/09/UN-Thailand-Annual-Report-2018.pdf

Chapter 18
Positioning TVET Lecturer Identities at the Centre of TVET Lecturer Education and Training in a Post-COVID-19 Context

Ronel Blom, James Keevy, Withfield Green, Michelle Mathey, Gerda Magnus, and Sello Sethusha

Abstract The Technical and Vocational Education and Training (TVET) college sector in South Africa is seen as central to skills development and the revival of the economy. However, the sector remains one of the weakest in the post-school system. This chapter provides a synopsis of the evolution of the post-apartheid college sector context in South Africa, the nature of the new programme offerings for pre- and in-service training as well as increasing moves towards professionalisation of the sector. This discussion is presented against the backdrop of the broader policy context in the country, specifically considering the different needs of current TVET lecturers, who range from unqualified; academically qualified, but without workplace pedagogy; trained for the schooling sector; to the ideal—those who are both academically and professionally qualified. While this rather lopsided continuum is not unique to South Africa, the way it is being addressed is important to articulate and reflect on. The changes in the management and governance of the colleges prior to the establishment of the Department of Higher Education and Training (DHET) and the impact these changes had on lecturers' job security and conditions of employment are key factors that we will explore in our contribution. The college sector lost lecturing staff during this time, further reducing its capacity to meet the training needs of the country. While seemingly intractable problems such as slow uptake of newly introduced qualifications for TVET lecturers and compliance

R. Blom
Regent Business School, Durban, South Africa

J. Keevy (✉)
JET Education Services/UNEVOC Centre, Pretoria, South Africa
e-mail: james@jet.org.za

W. Green · M. Mathey · G. Magnus · S. Sethusha
Department of Higher Education and Training, Pretoria, South Africa

oriented continuing professional development (CPD) programmes can be overcome, the impact of COVID-19 on this sector should not be underestimated. Of course, this uncertain future also offers an opportunity to make changes that may previously have been politically unpalatable. In this chapter, we try to imagine what a more explicitly conceptualised workplace pedagogy would comprise to produce a pipeline of well-trained and professionally orientated TVET lecturers.

18.1 Introduction: The TVET Context in South Africa

The TVET college sector is seen to be central to skills development and the achievement of social and economic goals in South Africa. Indeed, talk of this dual mission has been persistent since 1994. On the one hand, the DHET is clear that "the purpose of these colleges is to train young school leavers, providing them with the skills, knowledge and attitudes necessary for employment in the labour market" (cf. DHET, 2013b, p. 11); but on the other hand, the sector is *increasingly* seen to be the solution to the social problems of poverty and unemployment. This dual mission has been amplified in recent years with the unfolding of the massive youth unemployment crisis in the country. Moreover, increasingly, the role of TVET colleges is seen as 'building skills for work and life that contribute to poverty alleviation through the sustainability of families, communities and the planet, as well as those that promote productivity and the greening of economies' (cf. McGrath & Powell, 2015, p. 1).

However, this sector remains one of the most vulnerable in the post-school education and training (PSET) system (cf. DHET, 2011). While several reports have highlighted multifaceted problems experienced in the sector, it is only when one looks at the bigger picture of the sweeping changes the sector was subjected to in the recent past that contemporary problems with TVET lecturer development can be understood. Prior to democracy in 1994, the TVET sector, then known as the technical college system, 'was a complex mix of historically-white institutions, with considerable autonomy; historically-black urban colleges, with far less autonomy; plus ex-homeland colleges and lower level training centres' (McGrath, 2004, p. 138). To address these historical disparities, and with the dual mission in mind, the public college sector has been subjected, starting in the early 2000s, to a range of far-reaching changes. These changes include the merging of 152 technical colleges into 50 larger, multi-campus institutions, as part of the drive to establish one system and to deracialise education and training provision (McGrath, 2004).

The college sector also experienced several shifts in identity and focus: prior to the mergers, technical colleges largely fulfilled the role of offering the theory for apprenticeship programmes as well as an alternative school-leaving certificate and pre-university post-school programmes; after the mergers, colleges were renamed Further Education and Training (FET) Colleges, as a 'symbolic attempt both to shed the negative images of the old technical college system and to highlight the importance of bringing together educational values and relevance to the workplace'

(McGrath, 2004, p. 138). In the most recent identity change, in 2013, the colleges were again renamed as Technical and Vocational Education and Training (TVET) Colleges (DHET, 2013b). Moreover, the sector was governed by the Further Education and Training (FET) Act (Act 98, of 1998), which essentially limited education and training delivery to the FET band (National Qualifications Framework, NQF, levels 2–4). This change resulted in an anomaly in the system, as colleges continued to offer their traditional qualifications in the pre-university, post-school sector, as a highly popular alternative to university education, as well as programmes in the pre-post-school arena.

Furthermore, due to conflicting policy impulses, the colleges were limited in their ability to respond to industry needs by the establishment of Sector Education and Training Authorities (SETAs) under the Department of Labour (DoL). While the Department of Education (DoE) had been responsible for the funding of old and new vocational programmes offered at the colleges, the DoL was responsible for the funding of industry-generated programmes supported by the National Skills Development Strategy (DoL, 2005). This meant that colleges lost their (tenuous) linkages with the DoL and business, learnerships and skills programmes (McGrath, 2004). In addition to these changes, the FET Act 98 of 1998 (Republic of South Africa, 2005) encouraged autonomy, local responsiveness and flexibility. For example, in a DoE report in 2001, it was envisaged that colleges would become increasingly autonomous over time (DoE, 2001).

However, as the Green Paper for Post-School Education and Training pointed out 'many of [the] institutions were not ready for [autonomy]' (DHET, 2011, p. 10), and these moves led to a loss of staff who were not willing to be employed by College Councils which they did not trust. Many lecturers opted to be redeployed to positions in provincial departments of education or other provincial services. The Green Paper further concluded that 'with [TVET colleges'] present capacity, colleges can neither absorb significantly larger numbers of students nor achieve acceptable levels of throughput' (ibid), thereby putting paid to the ambitions indicated above. However, despite these acknowledgements, the TVET college sector experienced substantial growth in the next few years. By 2013, the headcount was as follows: from just over 345,000, in 2010, to an estimated 650,000 in 2013, with an intended increase to one million by 2015 and 2.5 million by 2030 (cf. DHET, 2013b, p. xii). This number has, however, stabilised at around 700,000.

By the start of the 1990s, the linkages with apprenticeship had radically declined, which reflected a worldwide trend, but had devastating effects in the college sector in South Africa (McGrath, 2004; Powell & Hall, 2002).

In addition, in the late 2000s, a new vocational programme, the National Certificate Vocational [NCV], was introduced, which increased the distance between the college sector and the industries it was meant to serve, partly due to a lack of trust in the new programmes. In the Green Paper (DHET, 2011, p. 10), the department pointed out that these 'General vocational programmes have not yet had time to mature and be tested in the labour market'. Lecturing staff also felt ill-prepared to offer these programmes as the new programmes resembled a 'school-like' qualification quite unlike the programmes previously offered at technical colleges

(cf. Blom, 2014). The scope of delivery therefore remained quite narrow, with a limited number of colleges venturing into industry-related programmes, including 'learnerships'—a new form of apprenticeship which was originally thought to be a replacement for apprenticeships (Blom, 2016).

Despite an unprecedented focus on the sector since the establishment of the DHET in 2009 (DHET, 2009), the public TVET college sector has been struggling to find traction and legitimacy. Nevertheless, substantial government investment has been made from the public purse, and there is a great deal of pressure on the system to show some return on investment (Institute for Professional Studies, IPSS) (IPSS, 2020). Furthermore, 'while there has been some improvement in levels of achievement in the National Certificate Vocational (NCV) and National Technical Educational (NATED) programmes, there are still persistently poor areas of performance in colleges' (IPSS, 2020, p. 7). With almost 60% of students on National Student Financial Aid Scheme (NSFAS) bursaries funded by the department, it is imperative to improve teaching, learning and assessment as well as make meaningful links with the formal and informal economy (ibid).

At the national level, the importance of the TVET sector and TVET lecturer development is highlighted in two critical plans for South Africa: the National Development Plan (NDP) 2030 (National Planning Commission, NPC) (NPC, 2012) and the Human Resource Development Strategy for South Africa (HRDSA) 2010, revised in 2017 (Human Resource Development Council of South Africa, HRDCSA) (HRDCSA, 2017) (also see IPSS, 2020). Both plans highlight the need for South Africa to transform its resource-based economy to a knowledge economy for the twenty-first century. In order to achieve accelerated economic growth, a key objective is to increase the number of appropriately skilled people to meet the country's economic and social development priorities. The TVET sector is seen to have the potential to play an important role in developing the correct skills for the labour market, thus helping to transform the South African economy into a knowledge economy. Yet teaching capacity in TVET colleges is identified in the HRDSA as a serious challenge, especially lecturers' poor levels of knowledge and experience of industry (HRDSA, 2017). The TVET college sector thus remains a perplexing and complex sector. Moreover, it is multifaceted and diverse. Lecturer development is bound to reflect these complexities.

18.2   A Qualifications-Driven Approach

The introduction of a National Qualifications Framework (NQF) in South Africa in the late 1990s came about as a result of the deep-seated inequalities built into the pre-democracy system. The NQF came to be the embodiment 'of the government's strategy to overcome the major divisions inherited from the apartheid system, namely racial divisions in the management, funding and resources within and across the education and training sub-systems' (Blom, 2006). A central concern was the disparities of esteem between racially structured systems and the consequent

disparities of esteem assigned to qualifications achieved in different parts of the system. Standardised levels and qualifications therefore became a key mechanism for achieving parity.

Nevertheless, as in many countries of the world, qualifications for the preparation of TVET lecturers are a relatively new phenomenon. Furthermore, prior to the advent of democracy in South Africa in 1994, the TVET sector laboured under the perception that it was a second-class option. Certainly, at the time, very little, if any, attention was given to programmes that encompass the theory and practice that will enable lecturing staff to enact a curriculum which 'faces both ways' (Hordern, 2014, p. 8). In the past, qualifications for TVET lecturers were adapted from those developed for schoolteachers. These were mostly offered by the former Technikons (now Universities of Technology). In addition, the sector was regulated by policies developed for the schooling sector, including policies relating to the minimum qualifications needed for employment as TVET lecturers (DHET, 2013a, p. 6).

A qualifications-driven approach thus increasingly gained traction, with a broad consensus that the sector needs focussed qualifications for the development of TVET lecturers. In 2001, in an attempt to align TVET lecturer professional qualifications with developments in the professional teacher sector, some higher education institutions adapted a schooling 'capping' qualification for TVET lecturer education and offered the Postgraduate Certificate in Education: Further Education—Vocational Education (PGCE: FE-VE), while others latched onto a modified version of a programme developed for underqualified school teachers, the National Professional Diploma in Education (NDPE). The Advanced Certificate in Education (ACE) was a legacy qualification at the time, which the NDPE articulated with. The intention with this programme was to address the diverse education and training backgrounds of lecturers in the TVET sector. This programme became known as the NDPE, Further Education and Training (Vocational Education). Most lecturers also completed short courses accredited by various SETAs such as the facilitator, assessor and moderator courses.

Despite these developments, the situation remained unsatisfactory, and in 2010, some higher education institutions introduced a 30-credit programme called the Vocational Education Orientation Programme (VEOP). The focus was on increasing TVET lecturers' capacities with respect to the skills environment and relevant policies that impact the TVET context; abilities in the interpretation and enactment of curricula and assessment requirements; awareness of the needs of learners and conducive learning environments; and management abilities (DHET, 2013b, p. 7). However, the VEOP was not a qualification and could not serve as a minimum requirement for employment as a TVET lecturer. It was seen to be a 'placeholder' for the policy that was first proposed in 2009 (DHET, 2009) but had not yet been concluded at the time. The VEOP also served to inform the full suite of the qualifications in the policy. In 2013, for the first time in South Africa, the Policy on Professional Qualifications for Lecturers in Technical and Vocational Education and Training Colleges in South Africa presented 'a set of professional qualifications designed specifically for TVET lecturers' (DHET, 2013a, p. 7).

The extent of the problem of TVET lecturing staff capacity became apparent when the DHET conducted a survey in 2014 which resulted in a report titled Qualification Profile of Lecturers Employed in Public TVET Colleges in South Africa (DHET, 2014). While a relatively small sample responded to the survey, it was nevertheless possible to develop an understanding of the programmes needed for particular target groups. Based on the results, four categories for the qualification requirements of lecturers in the TVET sector were developed, namely (ibid):

- 'Academically qualified but professionally unqualified lecturers' (38%)—these lecturers hold an academic qualification of 'at least 3 years of post-school, full-time study and is deemed to be at NQF level 6 or above' (DHET, 2014, p. 15) but are not professionally qualified as teachers
- 'Academically qualified and professionally qualified, but for the schooling sector', represent 34.5% of the sample
- 'Academically and professionally qualified as a college lecturer' (15%) (DHET, 2014, p. 16)

In a more recent survey (2016), a similar picture emerged, except that an even smaller number of staff appeared to be academically and professionally qualified (4.8%) (DHET, 2016), indicating the urgency for the introduction and implementation of TVET lecturer qualifications.

18.3   Professionalisation and an Emerging Workplace Pedagogy

The initial shift towards a more qualifications-driven approach evolved into one with a stronger focus on professionalisation but still lacked an explicit conceptual approach. Following the publication of the suite of qualifications in 2013, the White Paper for Post-School Education and Training: Building on Expanded, Effective and Integrated Post-School Education (DHET, 2013b) emphasised the need to professionalise the lecturing staff within the TVET and Community Education and Training (CET) college sectors. It became evident that college lecturing staff are often recruited from the pool of top-performing students and from TVET college students who proceed to university and come back to the system (DHET, 2017b; also see Gaffoor & Van Der Bijl, 2019). Therefore:

> whilst there are still many contestable issues with regard to TVET colleges, there appears to be a generally accepted urgency about the need to train college graduates for the 4th industrial revolution and how colleges need to be prepared for that eventuality. (IPSS, 2020, p. 7)

This is because 'research has shown that key to improving teaching and learning and ensuring quality provision are, inter alia, the on-going training and development of TVET teaching staff, and adequate student support services' (IPSS, 2020, p. 7).

Table 18.1 TVET lecturer qualifications policy (*IPQ* initial professional qualifications, *CPDQ* continuing professional development qualifications, *PGQ* postgraduate qualifications)

NQF level	Degree	Diploma	Certificate
10	Doctorate (360 credits) *PGQ*		
9	Master of Education (M Ed) (180 credits) *PGQ*		
8	Bachelor of Education (B Ed) Honours (120 credits) *PGQ*	Postgraduate Diploma (PG Dip) in Technical and Vocational Education and Training (120 credits) *PGQ*	
7	Bachelor of Education (B Ed) in Technical and Vocational Teaching (480 credits) *IPQ*	Advanced Diploma (Adv Dip) in Technical and Vocational Teaching (120 credits) *IPQ*	
		Advanced Diploma (Adv Dip) in Technical and Vocational Education and Training (120 credits) *CPDQ*	
6		Diploma (Dip) in Technical and Vocational Teaching (360 credits) *IPQ*	Advanced Certificate (Adv Cert) in Technical and Vocational Education and Training (120 credits) *CPDQ*

The notion of a workplace pedagogy was largely implicit, although key elements were starting to show (DHET, 2015).

Currently, every TVET lecturer is required to maintain their professional registration with the South African Council for Educators (SACE), and employment in the sector is dependent on meeting the requirements for the government personnel system (Section 3 of the SACE Act, 31 of 2000), one of which is SACE registration. This professional registration can only be achieved if an educator has an appropriate professional qualification. TVET college lecturers are currently registered in two categories by SACE: those who are professionally qualified, whether for the TVET sector or for the schooling system, enjoy full registration status; those who are only academically qualified have been provisionally registered and have to renew their registration annually (about 1808 TVET lecturers are conditionally registered with SACE because they are professionally unqualified). However, this trend is gradually changing, and, at the very least, every lecturer will have a recognised qualification which could be within the subject area they teach or, alternatively, an educational qualification.

The full suite of qualifications laid out in the *Policy on Professional Qualifications for Lecturers in Technical and Vocational Education and Training* (DHET, 2013a) is shown in Table 18.1.

There are a range of professional undergraduate degree qualifications that have credit allocations from 360 credits upwards depending on the notional time required

for the qualification. The B Ed is a 4-year (full-time), 480 credit qualification, implying 120 credits per year or 1200 notational hours per year. The extra notional hours relate to the need to accommodate significant time for the practice components of the programme. The policy indicates that institutions can choose a suitable qualifier for their programme when naming it—for example, a Master's in TVET Leadership or suchlike. The B Ed is an initial professional qualification. The holder is deemed academically and professionally (pedagogically) qualified to teach in a TVET college. Any qualifications concluded after the B Ed are further professional qualifications that lecturers may choose to do. However, not many higher education institutions have been accredited to offer this qualification. Most of the current institutions active in the TVET lecturer arena have opted for the Advanced Diploma (Adv Dip) in Technical and Vocational Teaching (120 credits), which can be studies on a full-time or part time basis. Most existing, employed lecturers who enrol for the programme will study through a part-time, blended learning modality.

The TVET Lecturer Qualifications Policy embraces the notion of integrated and applied knowledge, or 'strategic knowledge', and postulates that the types of learning associated with the acquisition, integration and application of strategic knowledge for lecturing purposes are disciplinary learning; pedagogical learning; practical learning; situational learning; and fundamental learning. Depending on the nature and purpose of a specific qualification, these areas of learning would be afforded specific weightings in the qualification but, essentially, are included in all the qualifications of the TVET suite of programmes. In terms of practical learning in the initial professional qualifications, a suitable practical learning component in teaching workplaces and in industry workplaces is prescribed (Makgato & Moila, 2019).

At the time the policy was published in 2013, no universities were ready to deliver and offer the new qualifications, and it was agreed that the policy would be progressively implemented as university capacity was developed. Following the introduction of the policy, the DHET decided to focus on the development of the initial professional qualifications as their immediate priority and set a 5-year target of ten universities accredited to offer these qualifications by 2020. With funding support from the European Union through the Teaching and Learning Development Sector Reform Contract, the DHET implemented the College Lecturer Education Project, investing R60 million to support 14 universities to develop these qualifications. The programmes are to be offered in blended delivery modalities to enable working lecturers to access them.

To this end, seven universities have had their initial professional qualifications accredited by the Council on Higher Education (CHE); but since 2019, only two, the Nelson Mandela University (NMU) and Tshwane University of Technology, have rolled out the initial professional qualification, the Advanced Diploma in TVET. NMU then had 213 students registered in six centres based in TVET colleges for the first-year level. In 2020, student numbers increased, and, with two additional centres, over 500 students were registered in both the first- and second-year levels in NMU's eight centres. In addition, two universities achieved accreditation by the CHE for their post-professional qualifications.

As these initial professional qualifications come online, attention is also being given to the provision of a suitable range of continuing professional development and postgraduate lecturer development programmes to ensure a sustainable and vibrant TVET sector. Work has already started on the continuing professional development and postgraduate programmes, with the University of the Western Cape (UWC) and the University of Pretoria (UP) already offering the PG Dip in Technical and Vocational Education and Training, focussed on developing curriculum and administrative leadership competence. UWC is also finalising a doctoral programme focussed on TVET. The PG Dip in TVET is described as being specialised in Curriculum Development (UWC) and TVET College Management (UP). The PG Dip is a further professional qualification. It can only be taken by lecturers who are already academically and professionally qualified. It allows for further specialisation and is meant to develop people who are in or are aspiring towards leadership positions in the sector—it therefore focusses on specific areas of specialisation. For example, UWCs PG Dip is focussed on curriculum leadership in TVET, while the UP's PGDip is focussed on TVET College management and leadership.

Further, to create a strong TVET research environment, considerable investments have also been made through the College Lecturer Education Project, to support five collaborative TVET-focussed research projects and, through these projects, to support 31 master's and 12 doctoral students. One of the five projects involves support for the establishment of a new journal, the *Journal of Vocational, Adult and Continuing Education and Training (JOVACET)*, which has already published three issues and is now seeking accreditation from the DHET to be recognised on the national journal listing. It is thus evident that significant steps have been taken to build teaching and research capacity in universities to support the TVET college sector. However, it is still early in this development, and the seeds that have been planted must continue to be nurtured so that the goal of a viable, attractive, sustainable, effective TVET sector in the country is achieved.

A specific gap at present is the lack of a suitable qualification pathway for teaching staff in the colleges who are qualified artisans or workplace practitioners but do not have the prerequisite qualifications to access the suite of university qualifications contained in the *Policy on Professional Qualifications for Lecturers in Technical and Vocational Education and Training* (DHET, 2013a). While the recognition and assessment of prior learning (RPL) provides an alternative access pathway, this must be applied on an individual case-by-case basis. The whole notion of RPL means that learning and competence is deemed to be in place and equivalent to traditionally trained individuals and is assessed as such. However, it is probably not realistic to require this cohort to undertake a full 3-year university qualification. It is proposed that a suitable occupational qualification be developed for this group.

18.4 'Trade First, Teacher Second'

Alongside the development and implementation of the policy and strategies for TVET lecturer development, Centres of Specialisations (CoS) emerged as an important approach. A CoS is defined as:

> ... a department within a public TVET college campus dedicated to training, in partnership with employers, successful, quality artisans in one or more of the priority trades in sufficient numbers to meet the needs of the Strategic Integrated Projects (SIPs) and other strategic projects. (DHET, 2016, p. 6)

The DHET has established the CoS programme to address demands for 13 priority trades[1] needed to implement the NDP and to build the capacity of TVET colleges in delivering trade qualifications with employer partners (DHET, 2016). The trades involve new occupational programmes related to the 13 priority trades, which are quality assured by the Quality Council for Trades and Occupations (QCTO) and delivered through the CoS at the public TVET colleges. These new QCTO qualifications combine learning in the workplace with technical and vocational education and training at a public TVET college in one integrated programme—also referred to as the dual apprenticeship system or the artisan of the twenty-first-century (A21) apprenticeship.[2]

In the CoS programme, there is a move towards a much more integrated delivery model involving industry and the college. Lecturers with trade qualifications are appointed, rather than those with a degree or teaching qualification. While the CoS programme is at an early stage, it is anticipated that learners taught by qualified tradesmen/women will be better prepared for the workplace at the end of their studies. Importantly, the occupational programmes delivered through the CoS are based on the dual apprenticeship model borrowed from the German system. The apprentice will undergo learning and development during a 3-year apprenticeship contract which continuously weaves together three learning components, namely:

- *Theoretical learning in the classroom* (also referred to as the knowledge training component), which is located at the public TVET college
- *Simulated practical learning in the training workshop* (also referred to as the practical training component), which may be located at the public TVET college or may be located at an external training centre with whom the public TVET college forms a partnership arrangement
- *Workplace-based learning* (or in layman's terms 'learning-on-the-job') *at the workplace*, which may be at one or multiple physical sites, depending on where the range of trade skills are used for the creation of goods or the delivery of services

---

[1]The 13 priority trades are: Bricklayer, Electrician, Millwright, Boilermaker, Plumber, Mechanic including Automotive Mechanic, Diesel Mechanic, Carpenter and Joiner, Welder, Rigger, Fitter and Turner, Mechanical Fitter; and Pipe Fitter.

[2]https://nadsc.dhet.gov.za/.

The introduction of the new occupational programmes into the TVET colleges not only expands the type and nature of offerings available but also results in the introduction of a new role, namely, the TVET college facilitator. The introduction of this role has provided the opportunity for the appointment of staff on different terms and conditions of employment from those of current TVET college lecturers. The main difference is that the minimum entry requirement for the new TVET college facilitator is for a candidate to be a qualified artisan in a specific trade. The new TVET college facilitator will also be required to visit the employers where the apprentices undergo workplace-based learning to strengthen the relationship with employers and also monitor the learning progress of the apprentices in the workplaces. These industry engagements required by the TVET college facilitators are not currently part of the terms and conditions of employment for TVET college lecturers. Nevertheless, the facilitators need to teach the entire scope of the curriculum, teaching theory and practical elements.

Importantly, the minimum requirements for one to be employed as a lecturer in a TVET college is a 3-year post-matric qualification or a post-NQF level 4 qualification with either a full registration or conditional registration with SACE. The SACE requirements for full registration is a qualification that is in line with either the policy on professional qualification for lecturers in TVET (PPQLTVET) or minimum requirements for teacher education qualifications (MRTEQ). The SACE conditional registration is any 3-year trade-based or vocation-based national diploma or degree.

While it is important to have higher level qualifications that develop leadership capacity in specific areas, including in curriculum (knowledge and pedagogy), these will increasingly become available as demand increases for them. At present, as explained above, there are at least two postgraduate diplomas and a number of master's degree programmes in place for this purpose. The challenge in South Africa is that there are TVET lecturers with master's degrees but without the prerequisite industry experience and, as a result, without trade qualifications, hence the necessary focus on 'trade first, teacher second'. While the CoS is still a pilot programme, and may or may not continue in its current form, it is critical to note that the programme is underpinned by the understanding that colleges and industry must work seamlessly together to provide students with the skills which are required by industry. This would make it possible to ensure a skilled and capable labour force. The CoS programme is therefore a first significant attempt at the reform of the TVET sector and its lecturing staff. In addition, there is work presently underway in the area of non-formal qualifications, most notably in the development of a framework for continuing professional development. However, while consultations with all stakeholders have taken place, there is no formal approval yet for the implementation of the system. Nevertheless, according to the Public College Administrative Measures (PCAM) document (DHET, 2020b) Section I.1.1, 'All lecturers may be required by the employer to attend programmes/activities for continuing professional development (CPD), up to a maximum of 80 h per annum', and these programmes will be funded through the skills levy funds allocated to colleges. The emerging CPD framework aims to make it compulsory for staff to accumulate a

specified number of credits in a 3-year cycle. Both formal and non-formal qualifications can be pegged to this framework (DHET, 2019).

There is an understanding that within the South African TVET system the relationship between TVET colleges and industry is fragile. This is, however, gradually improving as various industries have partnered with the DHET in the Dual System Pilot Project (DSPP) and the CoS to offer apprenticeships to students and work-integrated learning (WIL) to lecturers. Further, new developments are underway to conclude a partnership with the SASOL Foundation to offer lecturer development initiatives in the engineering fields. However, strong criticism remains that lecturers (and the curriculum) have not remained abreast with industry advances. To remedy this, more emphasis is being placed on the work placement of lecturers. The number of lecturers receiving work placement or industry exposure has been set as a target in the strategic and operational plans of each college. It is also a target which the department must report on annually to parliament. Work placements must be focussed and address specific shortcomings of lecturers and must add value to the participating lecturer.

While lecturer placement in workplaces is gaining purchase, it remains difficult to enforce and to find workplaces willing to take lecturers on. There has, nonetheless, been positive feedback from lecturer placements that have been conducted by the joint WIL project implemented by the Swiss South African Cooperative Initiative (SSACI), the Education, Training and Development Practices SETA (ETDP SETA) and the DHET: the project aimed to improve teaching and learning in TVET colleges through providing industry-based WIL to college lecturers as part of their CPD. In 2017, a collaboration between the Manufacturing, Engineering and Related Services SETA (merSETA), the Chinese Cultural Centre and TVET colleges saw 40 TVET lecturers placed in industry in China for a period of 5 weeks. Lecturers gained practical and technical experience which was relevant to their fields of specialisation from these placements in industries.

A further initiative which has been undertaken is the development of a Lecturer Support System (LSS). The LSS is a platform which lecturers can access for guidelines and information in the form of videos which supplement their programme delivery. Lecturers must register as LSS users and can access the required material and work offline with this material. Since 2015, 35 resource packages have been developed, mainly for the NC(V) programme, and uploaded into the LSS; approximately 18,000 staff including lecturers and support staff (of which lecturers make up about 12,000) were trained in the various packages. The LSS was also utilised to run a Lecturer Needs Survey which elicited lecturers' biographical information, including qualifications, programmes and subjects they teach and developmental needs. Approximately 52% of the over 12,000 lecturers responded to the survey, and rich data was collected, which assisted in the planning of new development packages. Attention is also being given to the digital literacy of lecturers. It is acknowledged that there is much work needed in this regard, and while current disruptions have had adverse effects on the TVET system, it is hoped that some of the digital developments will assist and support lecturers to acquire these critical skills.

18.5   A Working Model for the Future

In many ways, TVET lecturers are expected to have multiple identities: they should have industry knowledge and experience, education knowledge and pedagogical skills and twenty-first-century skills and identify as teachers, facilitators, agents of social justice, as communicators and as industry/occupational specialists (Organisation for Economic Cooperation and Development, OECD) (OECD, 2014). Moreover, they are expected to keep up to date with the latest technologies and be skilled in appropriate pedagogies in varied contexts. Additional minimum expectations include an understanding of the diverse challenges experienced by learners in the system (such as barriers to learning) as well as knowledgeability regarding curriculum differentiation and adaptation. Lecturers are also expected to demonstrate an awareness of the TVET context and the role of the sector in achieving social and economic targets. It is expected of all lecturers to be competent in the Language of Learning and Teaching (LOLT) and to be able to converse with basic communicative competence in at least one official African language.

Moving forwards, this emerging notion of multiple TVET lecturer identities provides a useful point of reference for a more coordinated and conceptually informed model for lecturer education and development. Many of its elements are already in place and have been described in this chapter. In this instance, the function is following the form, to use a phrase from the business world, as opposed to the inverse. The form, in this case, the design of qualifications and programmes, and even a move towards professionalisation, was always going to be found wanting when the function was not being explicitly articulated. Whereas the function—in this case, a vision of multiple lecturer identities—followed an articulation of the form in nascent integrated models in the CoS programme; in the types of learning associated with the acquisition, integration and application of strategic knowledge for lecturing purposes; and in the set of minimum competences articulated in the lecturer qualifications policy, inter alia, effective communication, classroom, workshop and laboratory management, ICT literacy, ethical practice and reflective skills, it now becomes vital to retrospectively interrogate the form through the lens of the emerging function. These developments are closely linked to the growing recognition that vocational education and training is not 'one thing'. The sector is diverse and sub-sectors will draw on different combinations of pedagogical approaches (Blom, 2016). Shulman (2005, cited in Lucas, 2014, p. 9) refers to these as 'signature pedagogies' which:

> form habits of the mind, habits of the hand and habits of the heart . . . they prefigure the culture of professional work and provide the early socialisation into the practices and values of the field. Whether in a lecture hall or lab, in a design studio or a clinical setting, the way we teach will shape how professionals behave . . .

Furthermore, it is becoming more evident that strong links between colleges, business and industries will enhance the development of occupational identities and outlooks through the '. . . socialization of the individual into the culture of a particular occupation' which tends to '. . . remake its members in its own image'

(McLean & Wilson, 2009, p. 1xxvii). Encouragingly, this realisation now provides an important working model for the DHET and all key actors to strengthen the sector.

Although college lecturers are registered by SACE, the White Paper indicates that an official decision will need to be made about whether a separate statutory professional body for college lecturers should be established to regulate lecturer development or whether this responsibility should continue to be fulfilled by SACE, 'which tends to be overwhelmingly absorbed with the concerns of the much larger number of school teachers' (DHET, 2013b, p. 17). In this regard, the White Paper proposes the creation of the South African Institute for Vocational and Continuing Education and Training (SAIVCET) that will aim to partner with non-governmental organisations (NGOs) and universities that hold the expertise needed by TVET colleges. Nevertheless, SACE continues to register TVET lecturers, CETC lecturers and office-based educators. The idea that one body can successfully oversee and integrate the registration and continuing professional development of schoolteachers and TVET college lecturers has, however, been questioned, with evidence of some lecturer resistance to SACE assuming this role.

The lack of incentives for businesses to contribute to improving TVET colleges was identified by Hofmeyr (2017) in an evaluation of the DHET and South African Chapter of the Swiss Chamber of Commerce and Industry Southern Africa (SwissCham) College Improvement Project (CIP). The CIP aimed to develop a model for college-industry partnerships that could help raise the quality of public TVET colleges from 'average' to 'excellent'. The CIP was implemented in six fields of study at Ekurhuleni West College and Western College and later in South West Gauteng College. The expected outputs of the CIP intervention included an expanded programme of workplace exposure for students and lecturers and lecturer development leading to improved student results. However, ultimately very few Swiss companies, colleges, students and lecturers participated, and the objectives were not achieved. While this project did not meet expectations, it provided valuable lessons for policymakers and planners on the complexities of implementing industry-TVET college linkages.

The importance of WIL (also known as workplace-based learning [WPBL]) for lecturer development cannot be emphasised enough, because it affects the quality, relevance and credibility of lecturers' teaching. In this regard, the findings of the summative evaluation by Smith (2017) of an ETDP SETA project to train 280 lecturers from 28 colleges through WIL were incredibly positive. The research concluded that WIL for lecturers can be a robust intervention to improve their competencies, provided WIL becomes part of lecturers' CPD. The lessons from this project and its evaluation need to be considered when designing WIL for lecturers in future (Van der Bijl & Taylor, 2018; DHET, 2019).

18.6   Concluding Comments

The TVET sector in South Africa carries the burden of high expectations in terms of its dual mission of mid-level skills supply as well as delivering social justice through poverty reduction. Moreover, the sector is still considered to be second class, but as more colleges are upgraded and a pipeline of TVET lecturers is established, this situation is slowly changing. The development and implementation of a coherent and coordinated approach to lecturer development as described in the *Lecturer Development Strategy* (DHET, 2017a) have the potential to ramp up the gains already attained. The main building blocks for a reimagined workplace pedagogy for TVET lecturers in South Africa are in place but will have to be followed through to ensure systemic implementation.

The expansion of the notion of TVET lecturer identities and the creation of multiple development pathways, drawing on the learnings from the CoS programme, the qualifications-based approach and development of the LSS, may offer a suitable, contextually relevant approach to lecturer education and development in South Africa. The establishment of an engineering lecturer training centre at the Ekurhuleni East College, Springs through collaboration between the KfW (a German Development Bank) and the DHET is a good step towards enhancing capacitation of lecturers in engineering and Fourth Industrial Revolution (4IR)-related skills and competencies (also see Makgato, 2019).

Work underway in the conceptualisation of WIL by the DHET and SSACI, based on the Kolb learning cycle (see Taylor & Van der Bijl, 2020), also shows great potential, with the curriculum framework that is being collaboratively developed by a number of universities and through engagement with TVET colleges already completed as this chapter was being prepared. The core description of a TVET lecturer in South Africa can find its realisation in a set of professional standards and graduate attributes (Pitso, 2018), which in turn can become a key reference point for qualifications, programmes and the move towards professionalisation already evident in the current approach. The notion of workplace-based values also resonates well with this model (Paterson et al., 2017).

This renewed effort at positioning TVET lecturer identities at the centre of TVET lecturer education and training will require improved coordination of TVET policies by the DHET, accompanied by the necessary capacity and resources which have been lacking to date (DHET, 2019, 2020a, b). The impact of the COVID-19 pandemic on the TVET sector specifically, but also more broadly on the economy, business and employment opportunities, cannot be ignored (NPC, 2020). In a manner that could not be predicted, this may also provide the very opportunity to strengthen the training of TVET lecturers based on a more explicit workplace pedagogy in a post-COVID-19 world, wherein many playing fields should be levelled. This is the opportunity to position TVET lecturing as a first-choice career, with a clearly delineated pathway and, by implication, also with particularly good employment opportunities. Let us not waste this opportunity.

References

Blom, J. P. (2006). *The ideal of an integrated national qualifications framework*. Unpublished doctoral thesis. University of Pretoria.

Blom, R. (2014). Throwing good money after bad: The barriers South African vocational teachers experience in becoming competent educators. In *Inaugural International Research Conference, 11–13 July, 2014*. Oxford University: Further Education Research Association.

Blom, R. (2016). *Towards a vocational pedagogy for South African TVET educators*. Occasional Paper for the Centre for Researching Education and Labour at the University of the Witwatersrand.

DHET. (2009). *National Education Policy Act 27, 1996: Call for comments on the national policy framework for lecturer development in FET colleges in South Africa*. Government Gazette, 3259. Author.

DHET. (2011). *Green paper for post-school education and training*. Pretoria: DHET.

DHET. (2013a). *Policy on professional qualifications for lecturers in technical and vocational education*. Pretoria: DHET. Unpublished.

DHET. (2013b). *White paper for post-school education and training: Building an expanded, effective and integrated post-school education*. Pretoria: DHET.

DHET. (2014). *Qualification profile of lecturers employed in public TVET colleges in South Africa*. Pretoria: DHET. Unpublished.

DHET. (2015). *Policy framework for workplace-based learning in an integrated and differentiated South African post-school education and training system*. Pretoria: DHET. Draft.

DHET. (2016). *Lecturer survey*. Pretoria: DHET. Unpublished.

DHET. (2017a). *Lecturer development strategy*. Pretoria: DHET. Unpublished.

DHET. (2017b). *Draft national plan for post-school education and training*. Pretoria: DHET. Unpublished.

DHET. (2019). *Continuing professional development framework for TVET college lecturers: CPD4TVET*. Pretoria: DHET. Unpublished draft.

DHET. (2020a). *DHET Strategic Plan 2020/2021–2024/2025*. Author.

DHET. (2020b). *Public college administration measures*. Pretoria: DHET. Draft. Unpublished.

DoE. (2001). *A new institutional landscape for public*. Further Education and Training Colleges. Pretoria: DoE.

DoL. (2005). *National skills development strategy*. Pretoria: DoL.

Gaffoor, A., & Van Der Bijl, A. (2019). Factors influencing the intention of students at a selected TVET college in the Western Cape to complete their National Certificate. (Vocational) Business Studies Programme. *Journal of Vocational, Adult and Continuing Education and Training, 2*(2), 23–42.

Hofmeyr, J. (2017). *Summative evaluation report of the DHET*. SwissCham College Improvement Project. Unpublished report.

Hordern, J. (2014). How is vocational knowledge recontextualised? *Journal of Vocational Education & Training, 66*(1), 22–38.

HRDSA. (2017). *Human resource development strategy for South Africa*. Pretoria: HRDSA.

IPSS. (2020). *Understanding the TVET College Sector: A concept note. DHET-NSF Research Programme on TVET*. Pretoria: IPSS. Unpublished.

Lucas, B. (2014). *Vocational pedagogy. What it is, why it matters and how to put it into practice*. Report of the UNESCO-UNEVOC online conference, 12 – 26 May 2014. UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training.

Makgato, M. (2019). *STEM for sustainable skills for the Fourth Industrial Revolution: Snapshot at understanding the TVET college sector: A concept note*. IntechOpen.

Makgato, M., & Moila, O. (2019). Partnerships between TVET colleges and industry to enhance work-related skills. *World Transactions on Engineering and Technology Education, 17*(3), 332–337.

McGrath, S. (2004). Reviewing the development of the South African further education and training college sector ten years after the end of apartheid. *Journal of Vocational Education and Training, 56*(1), 137–160.

McGrath, S., & Powell, L. (2015). Skills for sustainable development: Vocational education and training beyond 2015. Learning for sustainable futures. Making the connections. In *13th International Conference on Education and Development. 15–17 September, 2015, University of Oxford*.

McLean, R., & Wilson, D. (2009). *International handbook of education for the changing world of work: Bridging academic and vocational learning*. UNEVOC, International Centre for Technical and Vocational Education and Training: Springer Science+Business.

NPC. (2012). *National development plan – Vision for 2030*. Pretoria: NPC.

NPC. (2020). *Education and skills for the economy and links to labour markets in South Africa*. Pretoria: NPC.

OECD. (2014). *A skills beyond school review of South Africa*. OECD Reviews of Vocational Education and Training. Paris: OECD.

Paterson, A., Keevy, J., & Boka, K. (2017). *Exploring a work-based values approach in South African TVET colleges to improve employability of youth: Literature review*. JET Education Services.

Pitso, K. (2018). *Designing a framework for the advancement of lecturer capacity in developing graduate attributes at a TVET college*. PhD thesis. University of the Free State.

Powell, L., & Hall, G. (2002). *Quantitative overview of the further education and training college sector: The new landscape*. Department of Education.

Republic of South Africa. (2005). *Further education and training colleges Act, 16 of 2006*. Government Printer.

Smith, J. (2017). *Summative evaluation of an ETDP SET. A project to train 280 lecturers from 28 colleges through WIL*. Unpublished.

Taylor, V., & Van der Bijl, A. (2020). *Implementation guidelines for workplace-based work-integrated learning in industry, business or community-oriented work environments in professional qualifications for TVET and ACET educators and lecturers*. Draft.

Van der Bijl, A., & Taylor, V. (2018). Work-integrated learning for TVET lecturers: Articulating industry and college practices. *Journal of Vocational, Adult and Continuing Education and Training, 1*(1), 126–145.

Chapter 19
Education and Training of Vocational Education and Training (VET): Teachers in the Republic of Moldova

Oana Vodita, Ecaterina Ionascu-Cuciuc, and Lilian Hincu

Abstract This article analyses the current situation of education and training of VET teachers in Moldova within the context of extensive reforms in the field of vocational education and training (VET), including the development and consolidation of a dual VET system as a viable alternative to the traditional, school-based VET. Most of the teachers involved in the teaching process have relatively good theoretical training in their field of specialization, but have fewer modern teaching skills, and thus do not display the competences and methodological skills necessary to impart action-oriented approaches and meet the demands of new technologies. This negatively affects the quality of the training process and the interest of the students in enrolling in VET programmes. Currently in Moldova *there is no system (In the 2021/2022 study year was launched for the first time an inservice master programme for VET teachers with an engineering background.) in place for the pre-service* training of VET teachers. Usually, VET teachers are recruited from among fresh graduates of technical colleges and universities; thus they lack teaching and industrial experience, which can hinder efforts at transferring the relevant work culture to their students. Most of the *continuous training* programmes for teachers are not tailored to the specifics of teaching in the field of VET, nor to the needs of VET teachers. To address this issue, both initial and further education and training of VET teachers should be one of the strategic areas targeted as being crucial for the improvement of the VET system in Moldova, so that this system is better able to ensure high-quality training, according to the needs of the business sector, which is a core element for economic growth and employment development.

O. Vodita (✉) · E. Ionascu-Cuciuc · L. Hincu
Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ, Bonn, Germany
e-mail: oana.vodita@giz.de

19.1   Zum

For more than 5 years, Moldova has implemented extensive reforms in the field of vocational education and training (VET). The reforms are in line with Moldova's VET Strategy 2013–2020 and seek to transform and to modernize the VET system offer according to the needs of the private sector. The first steps were to restructure the network of VET institutions, along with the adaptation of the regulatory framework for a more responsive VET system. A new approach was undertaken for the process of curricula development with creating more practical and work relevant competence in students.

Beginning in 2015, the dual VET system has been successfully adopted and developed. The essence of this change consists of broader involvement of bodies representing particular economic sectors, as well as individual enterprises, in shaping and implementing dual VET. Nevertheless, the reform process already produced clear results from the beginning, based on the provisions of the Education Code, the legislature approved. The government approved the regulation on dual VET (Dual, 2018). This regulation establishes clear roles for the three institutional actors: public VET providers, companies and the Chamber of Commerce and Industry. As such, today Moldova is the only country in the CIS that offers a dual VET system with clear-cut shared roles (VET schools, companies, chambers of commerce).

These reforms are intended to bring about greater efficiency in the VET system and better outcomes for learners, workers and employers.

However, room for improvement remains. Possibly the most pressing situation is that the needs of the companies exceed the capacities of public VET institutions to ensure high-quality training at school.

A serious obstacle to the quality of the training process is that teaching staff in vocational schools is relatively old (ETF, 2020)[1]—many of them were trained in the previous system—thus not displaying the competences and methodological skills needed to impart action-oriented approaches or to meet the demands of new technologies. This is also due to the extremely low status and level of remuneration of VET teaching staff.

19.2   Historical Overview and Status of VET Teacher Training

In line with Moldova's commitments under the Association Agreement with the EU, the main regulatory and strategic documents that relate to the professional development of teachers, in particular VET teachers, are the Education Code (cf. Education Code, 2014) of the Republic of Moldova and the Development Strategy of VET

---

[1] One out of six VET teachers is of retirement age and 2000 teacher's shortage for the 2018/2019 school year – this number increased in comparison with the previous year (ETF, 2020).

2013–2020 (VET, 2013–2020). The relevant provisions place great emphasis on VET as an instrument for economic improvement which is envisaged as a way to provide a better match between the supply of human capital and the current and future needs of the labour market. Training of VET teaching staff does feature in these strategies. The strategy implies that VET teachers will be able to implement new curricula and they will also impart competences which are relevant for learners and employers.

In the framework of the ongoing VET reform, it was proposed that the Centres of Excellence (CE) would provide continuous education for VET teaching staff. According to the CE Regulation, these institutions should act as laboratories for development of qualifications and curricula. It is expected that they will inform the teachers and instructors about the latest developments and will offer courses to the VET teaching staff, with the understanding that this information will get into classrooms immediately. However, these institutions have been created as a result of technical and financial support from the EU without serious consideration of the demand side. Most of them are located in the capital city or its immediate proximity. Currently, the CE have neither the capacity nor the resources to carry out this important function (Ministry of Education and Research) (cf. MoER, 2018b).

In Moldova, the Ministry of Education, and Research[2] sets priorities for VET teacher training (MoER, 2018b).[3] Training providers (mainly centres for continuous education within universities) may suggest training programmes that address these priorities, which must be approved by the MoER and accredited by the national quality assurance agency (ANACEC). Universities also carry out a quality assurance process for their own teacher training programmes (ETF, 2020).

The system of general psycho-pedagogical training of teachers is quite well established in Moldova. Several entities offer psycho-pedagogical training courses: the Institute of Educational Sciences, the Institute for Continuous Education, as well as Departments for Continuous Education within several universities in Moldova. However, none of them provide continuous training specifically designed for teaching in VET except for the Centre for Continuous Education within the Technical University of Moldova (TUM).

In Moldova there is no system in place for the pre-service training of VET teachers. Currently a model of pre-service training programme for VET teachers is

---

[2]In 2021 the Ministry of Education Culture and Research has been reorganized as the Ministry of Education and Research.

[3]Priorities are set nationally in accordance with national strategies. The Ministry of Education and Research and the Ministry of Labour and Social Protection elaborate national policies and strategies on human resource development, based on the national development and action plans for governance programs and sectoral strategies, including adult qualifications and training, which it presents for approval to the government.

in the process of development by experts from the Technical University of Moldova and other relevant stakeholders with the support of German experts.[4]

Usually, VET teachers are recruited from among fresh graduates of technical colleges and universities, thus lacking teaching and industrial experiences. This lack of an industrial working culture among VET teachers might hinder the efforts of transferring the working culture to the students.

Successful reform requires that those working in the VET system, teachers and principals, are able and willing to implement these changes. Meanwhile, the vocational workforce is largely female (76% of teachers) and relatively old (one out of six teachers of VET is of retirement age; middle-aged teachers make up 61%). Only 13% of teachers are under 30. Most vocational teachers have no or little experience of working in the vocational fields that they are teaching: 68% have no practical experience at all. Teachers are formally qualified. Most vocational teachers completed vocational studies either during their initial studies or subsequently (ETF, 2020).

According to ETF Survey on CPD of VET teachers in Moldova (cf. ibid), only a minority of VET teachers appear to be strongly motivated and satisfied in their work. Teachers were most positive with respect to their own learning and improvement (43% strongly agreed). However, 26% said that they were not motivated to master challenges, and 78% of teachers and 75% of school directors said that they thought that the teaching profession was not valued in Moldova.

19.3   Requirements for Teachers

As mentioned earlier, VET teaching staff benefits from the continuous training courses offered by the Higher Education system at the request of VET institutions. However, these courses are not planned in advance. Participation is largely at the discretion of the teachers themselves. For those who reside in proximity of Chisinau, the task of training is easier to achieve, but for those from rural areas who want to get continuous training, the situation is more complicated. On one hand, teachers in the attestation process must have a minimum of a certain number of hours of training attendance; on the other hand, the offer of such services is quite limited and depends, to a great extent, on the teachers' initiative (MoER, 2018b).

In January 2018 the Regulation for the attestation of teachers in general, technical and vocational education and psycho-pedagogical assistance services was adopted (cf. MoER, 2018a). Teachers' attestation is carried out by the Ministry of Education and Research, local specialized bodies in the field of education and educational institutions in collaboration with branch trade unions.

---

[4]The Programme was officially launched and started implementation in September 2021 with an intake of 12 persons. It has the perspective to be offered by the Technical University of Moldova in partnership with the Otto von Guericke University of Magdeburg.

Teachers' certification is to be carried out every 5 years for the confirmation (mandatory) or consecutive conferring of the second, first and higher degrees (optional).

During the period preceding the attestation (5 years), the applicants for didactic degrees participate in continuous training courses, organized by relevant service providers in the field of psycho-pedagogy along with specialized, methodical and technological training courses. Attendance in continuous capacity development events are rewarded with different amounts of professional credits, according to the number of hours and complexity of the service.

Teachers who have accumulated a minimum of 75% of the required number of professional credits[5] for the degree being worked towards have the right to submit the application for conferring the didactic degree. At least 20 credits have to be accumulated from the attendance of the in-service activities. The rest is expected to be accumulated from the ongoing evaluated teaching, scientific-methodical, community and mentoring activities (MoER, 2018b).

There is an expectation that teachers undertake continuous trainings as required by the School External Evaluation Framework. Teachers are also encouraged to develop a professional development portfolio by participating in continuous professional development programmes. In fact, the system is relatively formal. The professional career prospects of teachers or their status or salary benefits from teachers' continuous trainings are not yet clear. Thus, continuous professional development is not clearly linked to the development of professional careers; hence, vocational teachers do not see these trainings to improve their performance, to take on additional responsibilities and to advance their careers (ETF, 2020).

19.4 Relevant Models of VET Teacher Trainings in Moldova and Further Developments

Most of the continuous training programmes for teachers are not tailored to the specifics of teaching in the field of VET, as well as to the needs of VET teachers. Even if some of the providers have various teacher training programmes in their educational offerings, e.g. oriented towards psycho-pedagogy or modern methods of teaching, most of them have a more general approach and usually target teachers from a wide range of institutions, including those from general education.

Several entities offer psycho-pedagogical training courses: the Institute of Education Sciences, the Institute of Continuing Education, as well as departments for continuing educations within several universities in Moldova (cf. MoER, 2018a). However, only the Centre for Continuing Education within the Technical University

---

[5] The granting and confirmation of the second degree (50 credits; first degree) 60 credits; higher degree 80 credits.

of Moldova (TUM) offers continuous training specifically designed for training VET teachers as a result of Liechtenstein Development Service (LED) intervention.

19.4.1 Continuous Training Programme for VET Teachers Provided by TUM

The programme has been developed with the support of the CONSEPT[6] Project, implemented by Liechtenstein Development Service (LED) that strengthened the Centre for Continuing Training of the Technical University of Moldova in providing in-service trainings for the VET teaching staff. The programme includes several modules designed for teaching in the field of VET:

- *Basic fundamentals of vocational pedagogy* (development of curricula products: short term and long term; implementation of VET curriculum; use of the methodological guide; active participatory education and learner-centred approach; opportunities for increasing efficiency in the educational process; constructive communication in social and didactic environment; monitoring your own learning and training process—10 credits, 75 h)
- *Training of practical skills* (implementation of normative/legal documents in the field of activity; adjusting the physical environment and safety rules depending on the profession; designing didactic activities for practical skills development; applying adequate algorithms for development of practical skills—12 credits, 90 h)
- *Training of teaching skills knowledge* (designing specific training strategies for teaching-learning-assessment of facts, concepts, principles, processes and procedures; creation of project-type curricula, learning matrix "performance content" in theoretical training; creation of project type curricula, didactic project based on 5D model—12 credits, 90 h)
- *Training of skill evaluation in schools*—12 credits, 90 h
- *Training of evaluators*—10 credits, 75 h

---

[6]The overall objective of the project is to support the school partners in the provision of high-quality vocational education and training that aligns to the labour market needs. The project aims to complement the efforts of other actors engaged in VET with an intervention strategy that yields tangible results at different levels:

On the macro level: CONSEPT develops curricula for selected occupations. These curricula are complemented by meaningful assessment procedures.

On the meso level: CONSEPT further strengthens the Centre for Continuing Training of the Technical University Moldova and helps the country to get a high-quality training structure for the continuing training for the VET system.

On the school level: CONSEPT supports up to 22 VET schools in implementing high-quality training according to the new curricula. Reforms on policy level and introduction of more relevant curricula make only sense, if the schools can live up to the new standards.

- *Development of visual teaching materials* (creation of visual didactic materials according to learning outcomes and educational approaches; adopting an individual approach to visualizing educational contents; elaboration of visual didactic materials using diverse artistic and technological approaches; assessment of the quality of didactic visual materials: format, spatial balance, style, abstraction level, colour harmony, etc.—12 credits, 90 h)
- *Learning through cooperation and developing critical thinking*—10 credits, 75 h
- *Assessment of practical skills* (assessment of learning outcomes; creation of assessment criteria for objective evaluation of learning outcomes; development of test instruments for the assessment of learning outcomes; application of procedures for increasing validity and reliability of test instruments; interpretation of assessment results to improve the quality of training—12 credits, 90 h)

Approximately 20 professional schools selected by the LED project benefited from these training courses. LED envisages revising the training offer of the Centre for Continuing Training at the Technical University of Moldova (TUM) and transforming it into a blended learning course. LED continues to support the TUM Centre for Continuous Education in the further development and updating of the above-mentioned training programme. Currently, training courses are provided by the TUM at the systemic level. However, VET schools that are not selected for participation in the LED project have to pay for participation in these courses.

However, it is important to mention that other development agencies also provide support in this regard by organizing training activities for VET teachers.

19.4.2 Modern Methods of Training in the Context of Dual VET (GIZ)

A major obstacle for ensuring quality and demand-oriented training is the limited capacities of the teaching staff in VET (dual-partner companies are not satisfied with the quality of theoretical training at VET institutions). Therefore, several training sessions on "modern teaching methods in the context of dual VET" have been organized by the German cooperation through its project "Support to the VET in the field of Green Economy", implemented by GIZ, as support measure for VET teachers to use new pedagogies in order to be able to implement new curricula which are more responsive to the private sector needs.[7]

In this respect, since 2018, the project supported the organization of several rounds of trainings for teachers and instructors who were involved in the implementation of dual training programmes, on the topic "Modern methods of training in the

---

[7]The project "Support to the VET in the field of Green Economy" financed by the German Ministry of Economic Development and Cooperation (BMZ) and co-financed by the Swiss Development Agency (SDC) implemented by GIZ contributed to the modernization of 13 occupational profiles and curricula for the most demanded by the private sector trades and specialties.

context of dual VET". About 230 teachers and instructors involved in dual VET programmes, from different regions of the country, participated in teacher training activities delivered by German trainers. The training sessions focussed on the deepening and consolidation of skills in the field of the knowledge transfer to the learners, as well as the application of new methods (action-oriented training process, participatory teaching approaches, techniques and modern technologies in the field, etc.).

The training agenda included subjects such as:

- The psychology of learning
- Action orientation—success factors for the transfer of theoretical knowledge
- Use of methods in the design of learning processes
- Action-oriented macromethods
- Micromethods—as constituents of the lesson
- Methods for practical (hands on) training * Use of ICT-based e-learning formats in VET

In order to ensure the sustainability of these efforts, the project envisages supporting stakeholders to authorize the training programme as a blended[8] modular learning course. To this end, the GIZ has partnered with the Cahul State University "B.P. Haseu" in order to authorize the programme under national regulations.

19.4.3 Pre-service MA Study Programme at the Technical University of Moldova

The GIZ project, "Support for Vocational Education in the field of Green Economy", in Moldova was requested by the MoER to support capacity development in the creation and roll-out of an initial training programme for VET teachers in Moldova.

Several consultations about a stakeholder's platform took place in the period from 30 September to 03 October 2019 and involved both the project team in Moldova and specialists of the UNEVOC Centre in Magdeburg (representing the GIZ Academy for International Cooperation in Magdeburg and the "Otto von Guericke" University Magdeburg). Relevant dialogue partners at the national level, such as MoER, HE institutions and the National Accreditation and Quality Assurance Agency (ANACEC), and dual partners from both VET providers and the business sector analysed and discussed the various elements and necessary steps to be considered for the study programme development. This includes adjustment of the normative framework, accreditation procedures, teaching and learning material development as well financial aspects. Last but not least, the need for the further

---

[8]The concept has been proposed by the German facilitator as a blended modular training course consisting with nine modules and a total of 300 h, from which 224 h are e-learning and 76 offline.

capacity development of potential lecturers to be incorporated into the implementation of the MA study programme in Moldova has been identified.

As a result, a draft work plan with milestones, activities and deliverables was outlined and agreed with the objective to start the implementation of the MA study programme at the Technical University of Moldova from September 2021. Thus, the Technical University of Moldova would establish an institutionalized systematic offering of pre-service education and training for VET teachers (master's programme of study according to the UNESCO standard curriculum framework) which will ensure improvement of performance, efficiency, quality and demand orientation of the VET sector in Moldova.

In addition to other interventions for the continuous training of VET teachers with the support of development partners, the training module "Entrepreneurship Basics in Vocational Schools" (CEDA, 2020) is supported by the LED project, and trainings in "Development of ICT Skills" (ADA, 2020a) and "Career Counselling Issues" (ADA, 2020b) are realized through the support of Austrian Development Agency (ADA)[9] project.

In addition, the project "Support for Vocational Education in the field of Green Economy" implemented by the GIZ in Moldova aims at strengthening the dual VET component in sustainable economic development and supports capacity development measures for VET teaching staff who are involved in the implementation of dual VET for education for sustainable development (ESD).

19.5 Conclusion

The teachers who can best meet the needs of students within this learning environment are those who have the relevant industrial experience as well as pedagogical training. Thus, the in-service and pre-service education programmes must give teachers more exposure to the industry.

Although a new approach has been undertaken in the process of curricula development, focussing on more practical and relevant competencies of students, VET teaching staff is less effective in adopting more engaging, action-oriented pedagogies in order to motivate learners to have better vocational commitment and to pursue their vocational profession.

Most of the teachers involved in the teaching process have relatively good theoretical training in their specialist field, but with fewer modern teaching skills, and thus do not display the competences and methodological skills to impart action-oriented approaches and meet the demands of new technologies. This negatively affects the quality of the training process and the interest of the students in enrolling in VET programmes.

---

[9] https://www.entwicklung.at/weltnachrichten#!/de/ajnDeyol/weltnachrichten/.

Evaluating prior experiences and the results of short and mostly fragmented approaches to further training for teaching staff in VET institutions led to the conclusion that the impact of these interventions was rather limited; therefore resources used for this purpose can be considered as not entirely effective.

To address this issue, both initial and further education and training of VET teachers should be one of the strategic areas targeted as being crucial for the improvement of the VET system in Moldova, so that this system is able to ensure high-quality training according to the needs of the business sector as a core element for economic growth and employment development.

References

ADA. (2020a). *Digital skills for employment in the modern economy project*. Austrian Development Agency and implemented by Pro-Didactica Centre and Association of Information and Communications Technology Companies (ATIC). https://www.entwicklung.at/en/projects/detail-en/digital-skills-for-employment-in-the-modern-econom

ADA. (2020b). *Re-engineering vocational orientation and career counselling for Moldovan Labour Force Competitiveness REVOCC 2, Project. Panorama, Weltnachrichten* (p. 1). Author. https://www.entwicklung.at/weltnachrichten#!/de/ajnDeyol/weltnachrichten/

CEDA. (2020). *Training activity in the field of entrepreneurship and employment in the field of work in Moldova*. Phase IV (MEEETA IV 201702020). Liechtenstein Development Services Foundation (LED). Ministry of Education, Culture and Research. https://ceda.md/meeeta-4/

Dual. (2018). *New regulation on organization and conduct of dual Vocational Education and Training (VET)*. Author. http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=373978

Education Code. (2014). *Education code of the Republic of Moldova, Law, NO 152, from 17.07.2014*. Author. http://lex.justice.md/md/355156

ETF. (2020). *Continuous professional development of vocational teachers in Moldova 2018*. Author. https://connections.etf.europa.eu/wikis/home?lang=enus#!/wiki/W5d6783a44efb_4f07_b375_e897124cc465/page/Moldova%20-%20CPD%20Survey%202018

MoER. (2018a). *Regulation for the attestation of teachers in general, technical and vocational education and psycho-pedagogical assistance services*. The order of the MoER, no. 62. Author. https://mecc.gov.md/sites/default/files/regulament_atestare.pdf

MoER. (2018b). *MoER report on framework for cooperation between the Ministry of Education and Research and Development Partners supporting development of VET System in Moldova*. Author.

VET. (2013). *Technical vocational education development strategy for the years 2013–2020*. Government Decision No. 97. Author. http://lex.justice.md/md/346695/

Chapter 20
TVET Teacher Education and Training in Bosnia and Herzegovina

Vesna Puratić

Abstract This paper presents an overview of the development of teacher training for technical and vocational education and training (TVET) in Bosnia and Herzegovina. TVET teacher training is an important and integral part of all education systems in the country. The institutional set-up as well as an overview of pre-service and in-service teacher training will be presented along with different models of teacher training programmes, many of which have been developed and provided by international organizations. Some deficiencies in the TVET training programmes, which are related to the very complex constitutional set-up in Bosnia and Herzegovina, will be discussed as well. The paper also highlights further developments in TVET teacher training programmes in terms of accreditation, the modernization of curricula based on the skills required by the labour market as well as the integration of entrepreneurial learning and digitalization as a key competence approach. Constant changes in the labour market as well as rapid developments in technology require a competent workforce in the educational sector in Bosnia and Herzegovina as an absolute precondition.

20.1 Introduction

Bosnia and Herzegovina (BiH) is a complex state, composed of two entities—the Federation of BiH (FBiH, composed of ten cantons) and the Republika Srpska (RS)—and one district, Brčko District BiH (BDBiH). The field of education and training is under the sole and undivided jurisdiction of the entity Republika Srpska, the 10 cantons in the Federation of BiH and the Brčko District BiH, in total 12 responsible ministries of education. There are also two ministries responsible for coordination of education and training, while the Federal Ministry of Education and Science plays a coordination and advisory role. At the level of BiH, since 2003

V. Puratić (✉)
Freelancer, Sarajevo, Bosnia and Herzegovina

(when it was established), the Ministry of Civil Affairs has jurisdiction over coordinating activities between all other ministries of education and is responsible for EU integration activities, as well as cooperation and representing the state at the international level in the field of education and training.

BiH currently has the status of a potential candidate country for the European Union (EU) membership, and all levels of government are committed to this goal. The EU supports BiH on this path in its numerous reforms in the field of education and training through the Instrument for Pre-Accession Assistance for candidate and potential candidate countries to EU membership (IPA) programmes.

In recent years the EU focus in the field of education and training has been on employability and education for employment, and therefore the reforms in higher education and secondary TVET as highly significant for employability are also in the focus of education and training reforms in BiH. EU strategic documents for candidate countries build on the assumption that a country's development mostly depends on its human resources. A competent and flexible workforce with adequate skills and innovative potential can boost economic development. TVET is thus recognized as a way to combat unemployment, in particular among younger members of the population, bridging the gap between the world of education and employment and the transition of TVET graduates to the labour market.

In post-war BiH, education and training reforms in TVET, which have been carried out for over two decades, have resulted in progress in the fields of teaching and learning and improved links between the world of labour and employment and that of education and training. They have also increased work-based learning and led to new curricula (often modular) based on learning outcomes and key competencies, all to the benefit of the graduates and future students.

20.2 Historical Overview and Status of TVET Teacher Training

Technical Vocational Education and Training in Bosnia and Herzegovina is an integral part of the education system (cf. Fig. 20.1). It provides skills and knowledge related to certain vocations in accordance with labour market needs. It is also a basis for continuing education and training with the goal of providing active integration of TVET graduates into work processes or providing possibilities for further education (cf. Framework Law on Secondary VET, 2003). It includes various types and forms of training and education through initial, continued, full-time or part-time education and practical training, for the vocational training of children, youth and adults.

BiH, as one of the countries of the former Yugoslavia, has a long tradition of providing technical vocational education and training through formal secondary vocational schools. These are divided into technical schools (ISCED 3A—EQF[1]

---

[1]European Qualification Framework (n.d.).
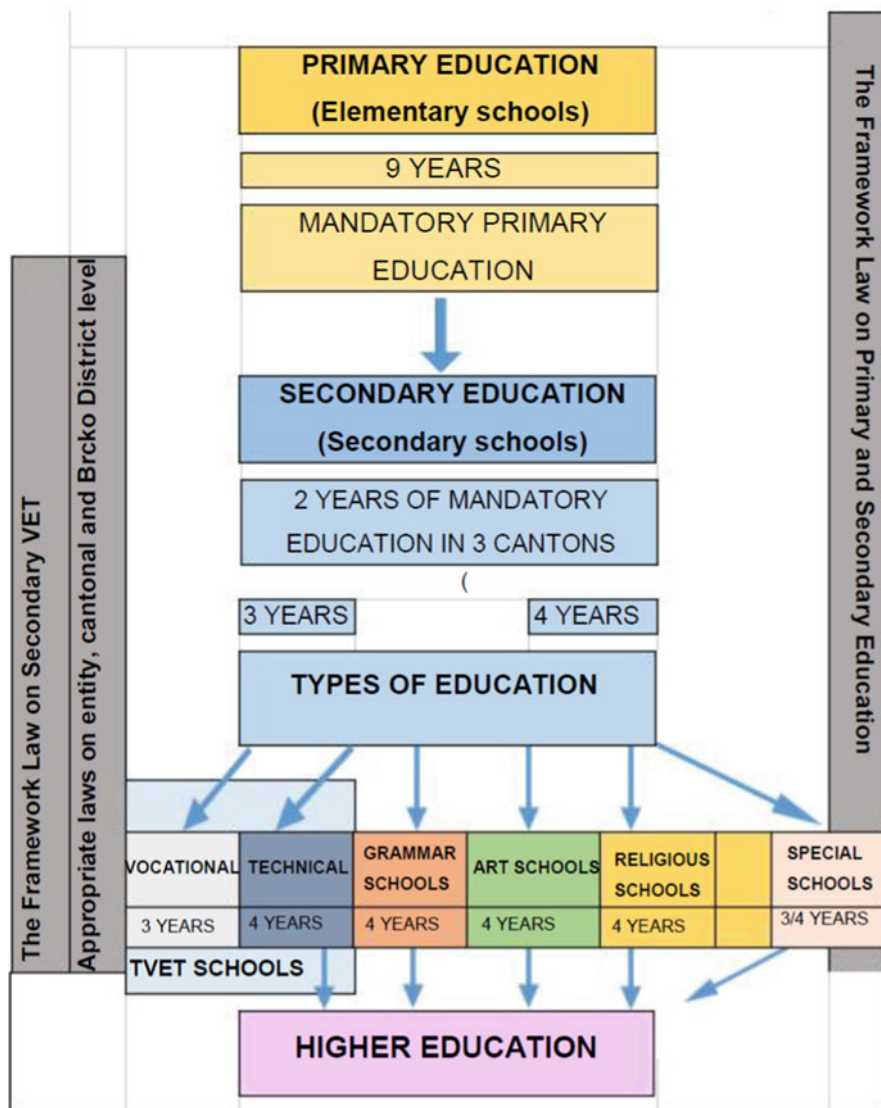
Fig. 20.1 Education system in BiH. (Source: GIZ, Schweizerische Eidgenossenschaft, 2020)

level IV), where the curriculum and syllabuses last 4 years and, after the graduation from this type of school, offer a vertical transition toward the next education level, and vocational schools (ISCED 3C—EQF level III), where the curriculum and syllabuses last 3 years (cf. Brankovic & Brank, 2013). After their graduation, students are not guaranteed acceptance to the next level of education and are also required to pass additional exams. However, professional vocational advancement is still possible, and after 2 years of full work, these students are entitled to pass the

programme "majstorski ispit/exam", and if successful, they receive the title of "majstor" (master craftsmen; EQF level V).

As of the past several years, in accordance with the Framework Law on Secondary Vocational Education and Training BIH (cf. Framework Law on Secondary VET, 2003), vocational programmes may last less than 3 years in duration, if they are based on the needs of the local labour market (semi-skilled workers; EQF level 2). Certain cantons in the federation of BiH (Sarajevo Canton, Bosnia-Podrinje Canton Gorazde, Una Sana) have taken advantage of this possibility and do offer such possibilities according to the corresponding laws. Secondary education which is less than 3 years in duration is also available in RS, based on local laws. A shorter technical vocational education and training course of 2 years, instead of 3 years, is also an option for children with special needs or children from disadvantaged backgrounds (also at EQF level 2).

Strategic Directions for the Development of Education in Bosnia and Herzegovina with its Implementation Plan (2008–2015) and other strategic documents passed in BiH in various entities and cantons (cf. National Report, 2015) emphasize that sound and motivated teaching staff is the key factor for successful implementation of education reform. Improvement of pre-service and in-service teacher training, as well as systems of monitoring and assessment of teachers' work, has been identified as important strategic objectives.

Pre-service and in-service teacher training is also made a priority in the Strategic Planning Document for IPA II Programming, and these projects are set to be implemented through EU financial mechanisms in 2021–2023. Through IPA 2016 financial assistance (https://ec.europa.eu/neighbourhood-enlargement/instruments/funding-by-country/bosnia-herzegovina_en), the project's focus will be on the development of new study programmes—based on learning outcomes and key competencies, with a focus on entrepreneurial and digital skills—at higher education institutions for the teaching profession and will also include programmes for TVET teachers.

Training of TVET teachers is regulated by different laws and by-laws: by the state-level Framework Law on Secondary Vocational Education and Training in Bosnia and Herzegovina (which recognizes a need for continuous professional development of the TVET teachers) and by the TVET laws of the responsible education authorities (ten cantons, RS and BDBiH). Additionally, it is regulated in detail by by-laws of each responsible education authority in BiH (cf. Framework Law on Secondary VET, 2003).

Pre-service teacher training is regulated by the Framework Law on Higher Education in BiH which was adopted in 2007 after the accession of BiH to the Bologna Process in 2003 (cf. Framework Law on Higher Education, 2007). Each responsible education authority has its own law in higher education, and these are harmonized with the Framework Law on Higher Education in BiH (RS, ten cantons in Federation of BiH and BDBiH) and with the Bologna Process. The framework law defines the status of higher education institutions (HEIs) whether they are universities or colleges: a university organizes teaching and research activities and provides academic degrees through all three cycles and must offer a minimum of five

study programmes in at least three different subject areas, while colleges provide degrees in the first cycle within at least one study programme and one subject area. In addition to the aforementioned institutions, there are also Academies and Religious Faculties (cf. Sabanac et al., 2017).

The Framework Law on Higher Education in BiH incorporated the main principles of the Bologna Declaration, introducing three cycles of studies and the corresponding European Credit Transfer System (ECTS) credits for each course of study (Article 5 of the HE Law). Within academic HEIs, bachelor's studies provide 180 to 240 ECTS (for 3- or 4-year programmes, respectively) and master's studies— along with BA studies—300 ECTS: either 60 ECTS (pre-Bologna studies accounted for 240 ECTS) or 120 (pre-Bologna studies accounted for 180 ECTS). After master's studies consisting of 300 ECTS, PhD studies provide 180 ECTS credits.

Therefore, regardless of how a study programme is organized, after completing their bachelor's and master's studies, a student ought to have a total of 300 ECTS (180 + 120 in the case of 3 + 2 years, or 240 + 60 in the case of 4 + 1 years) before becoming a teacher. Students enrolled in HEIs can be either full-time, part-time or distance learning students.

Eight public universities and a number of private universities and colleges provide training for the teaching profession. At this stage, all public universities are accredited, as are most of the private ones. Only diplomas from the accredited HEIs are recognized and are a precondition for employment in public sector, i.e. TVET schools.

The Agency for Development of Higher Education and Quality Assurance in BiH (cf. National Report, 2015) is responsible for external quality assurance and accreditation of all HEIs and colleges. It keeps the register of all accredited HEIs in BiH. Republika Srpska has its own accreditation agency (the Higher Education Accreditation Agency of Republika Srpska, EAARS), which is responsible for the external evaluation and accreditation of HEIs, once they receive the HEA's approval (cf. Brankovic & Brank, 2013).

With regard to pre-service teacher training, HEIs provide training for the teaching profession for pre-primary, primary and secondary schools in general subjects and all relevant fields, such natural science, humanistic and social science, languages and literature, art, sport, civic and religious education (cf. Agency, 2018).

There is no specific study programme which provides pre-service teacher training for TVET teachers. TVET teacher training is being provided by public and private HEIs in several broad fields of study, such as Electro-Engineering, Engineering, Civil Construction, Manufacturing and Construction, Agriculture and Food Processing, Forestry, Veterinary, Information and Communication Technologies (ICTs), Health and Welfare and Services.

Study programmes for the teaching profession include subjects related to pedagogy, psychology and methodology in specific fields. They cover subjects on general psychology and pedagogy; methodology of specific fields of study with a certain number of hours of practical placement; methodological innovations; development of curriculum; students' assessment, teaching tools and their usage; and inclusive and intercultural education which, in total, is at least 60 ECTS. For TVET

teachers, it is mandatory to pass a module/group of similar subjects before entering the school (cf. ETF, 2016).

It is important to note that teacher training study programmes should be accredited and student-centred, based on learning outcomes and key competencies, in line with requirements of new digital technologies and ICT. More research is to be encouraged in cooperation with the working world.

All the decisions related to in-service teacher training programmes and content are made at the level of responsible ministries of education in cooperation with their pedagogical institutes. The integration and set-up of pedagogical institutes within the education sector follow the constitutional set-up of BiH. There are eight of them in the Federation of BiH (two cantons in federation do not have their own pedagogical institutes and are under the jurisdiction of the Pedagogical Institute of Mostar (Zavod za školstvo) and the Pedagogical Institute of West Herzegovina Canton), Pedagogical Institute of RS and Pedagogical Institute of BDBiH. Pedagogical institutes are, in most cases, responsible for the development of curricula, introduction of new approaches and methods in teaching processes, training of teachers, expert supervision of teachers' work as well as the quality of teaching processes. Traditionally, quality of TVET was insured through general supervision and subject to professional supervision mostly based on the teachers work in classroom and specific supervision related to irregularities or a new issue or situation in a school.

In 2017/2018, a process of self-evaluation and external evaluation has been introduced and piloted based on the European Quality Assurance in VET (EQAVET). Some pedagogical institutes are responsible for training and supporting teachers in TVET schools to enable them to conduct self-evaluation and for the external evaluation of TVET institutions in cooperation with independent experts.

In-service TVET teacher training is organized by pedagogical institutes, but higher educational institutions, companies and other providers (including non-governmental organization (NGOs)) can also be engaged. A critical issue in pedagogical institutes is the available human capital in terms of their own capacity to support teachers and, in particular, to support TVET teachers. Specifically, there is a tendency to have a lack of advisers for TVET in pedagogical institutes.

Generally, with the exception of a few good practise examples, training programmes which are provided by pedagogical institutes are not necessarily tailored to the specific or current needs of TVET teachers. There is no catalogue of training programmes, and training programmes are not accredited. TVET teachers have no opportunities to select programmes according to their individual professional needs. Due to a lack of financial resources, cheaper programmes are often selected. Rapid development of modern technology and new skills demanded by the labour market also require very specific and targeted training programmes for TVET teachers. Lack of opportunities for high-profile training programmes is a serious shortcoming in the education system. Companies or associations of employers are a good resource for market-focussed training programmes, but they could be expensive for education systems. Public-private financial arrangements should become the model for improving the quality of education and training even more in continuous teacher training.

One critical, but very often overlooked, aspect of professional development is the evaluation of teachers' performance. The assessment and evaluation of teachers' performance are regulated by different legislation in different parts of the country. Teachers are obliged to participate in evaluation procedures—according to the Framework Law on Primary and Secondary Education in Bosnia and Herzegovina (BiH, Framework Law on Primary and Secondary Education). According to legislation, in general, teachers have to be visited by advisors from pedagogical institutes and/or inspectors once every 2 years in order to be evaluated. The score they receive can range from unsatisfactory through satisfactory and good to excellent. However, the evaluation of teachers is in a process of change as a result of the implementation of quality assurance (QA) for TVET, a model which is completely based on the European Quality Assurance in VET (EQAVET). A model of QA in BiH comprises seven standards and quality indicators. Out of the seven, two are related to teaching and learning and human resources. Based on the quality indicators, teachers should be evaluated by external evaluators. External evaluation, introduced recently, should have an impact on career development. The process is at an early stage and requires additional measures and different kind of interventions from the responsible ministries. The implementation of quality assurance systems in TVET and appropriate training for all relevant stakeholders are a priority for ensuring the quality of TVET teachers, as well as their satisfaction and motivation.

The European Training Foundation (ETF, 2016) carried out a study on in-service professional development of TVET teachers in BiH in 2016. The results show that 40% of teachers had received no professional training at all in the 12 months prior to the study, while only 30% of them had training related to their vocational specialization (ibid). In general, there is a lack of appropriate training for TVET teachers. Furthermore, training programmes are short; usually only 52 h per school year are mandatory. This creates a vicious cycle since, in order to be successful, reforms should be implemented by motivated and high-quality teaching staff.

However, there has been a certain progress in the field of in-service teacher training in BiH. In 2018, with the technical and financial support of ETF (ETF, 2017), the Agency for Pre-Primary, Primary and Secondary Education (APOSO) developed the Guidelines for Development of Standards for the Accreditation of Training Programmes for VET Teachers in Bosnia and Herzegovina (agency for pre-primary, primary and secondary education, 2018) (cf. Agency, 2018). This document provides the standards and procedure for the accreditation of training programmes for TVET teachers. It is important that these guidelines are incorporated into the legislation of the relevant education ministries in BiH. The accreditation of training programmes will support an increased quality of teaching processes in TVET. In the past, there have been attempts by some education authorities in BiH to licence teachers, but they have not been successful because of resistance from teachers. In the area of education and training, however, BiH will have to (re)-introduce licencing of the teachers as part of EU integration.

20.3   Requirements for TVET Teachers

Before entering a classroom, all teachers in primary and secondary education including TVET teachers are required to complete two cycles of higher education with 300 ECTS points (180–240 ECTS points in the first cycle and 60–120 ECTS points in the second cycle of higher education). The required qualifications are at level VII of the Qualification Framework in BiH (QFBiH) and at the same level of European Qualifications Framework so all new teachers have to complete a master's course of study (BiH, Baseline Qualification Framework). All teachers take the professional exam after completing 1 year of teaching practice at school under a mentor's supervision. Each educational authority regulates requirements for teachers in its own law and by-laws as well as in rulebooks for professional development of teachers.

"Old" teachers with more than 10 years of teaching practice can still continue to teach if they have completed pre-Bologna study programmes of four academic years or a Bologna bachelor's programme with 240 ECTS.

Furthermore, individuals who have not completed the course for teacher education have to complete additional education, such as modules in pedagogy, psychology, methodology and didactics, in order to be employed as teachers. TVET teachers are recruited from different HEIs from the fields TVET schools require. Usually, for university graduates, the TVET teacher profession is mostly the second choice.

All new teachers should have passed the mentoring phase before passing their professional exam, and new teachers must have mentors who observe their classes. Mentors are responsible for verifying and monitoring the work of the new teachers during the mentoring phase. However, there is no specific training for mentors, so teachers with more experience are generally selected to become mentors. The policy on mentorship varies in different parts of country (cf. Fig. 20.2).

Precise requirements and procedures for becoming a teacher in a TVET school are in place at the level of the relevant education authority at cantonal, RS and BDBiH levels; the mentorship process for new teachers is also regulated, but it varies in different parts of country and is nevertheless almost identical across BiH.

Each canton in the FBiH, the RS and the BDBiH define key issues related to requirements and procedures for in-company trainers in an own way due to the different jurisdictions. There are no unified approaches at the state level. Although great efforts have been done and a lot has been achieved so far, there is still a huge potential for improvement which should be realized in the near future.

Furthermore, very few university graduates are willing to work at TVET schools. Level of remuneration and benefits for teachers are deciding factors. At the same time, the private sector is partly competing for the same qualified people.

There are many challenges to be tackled in the future reform of TVET teacher training. It is important to consider that students enrolled in higher education institutions should have additional modules in subjects related to the teaching process (modules in pedagogy and psychology, methodology of teaching, curricula development, inclusive education), as well as greater access to digital models of
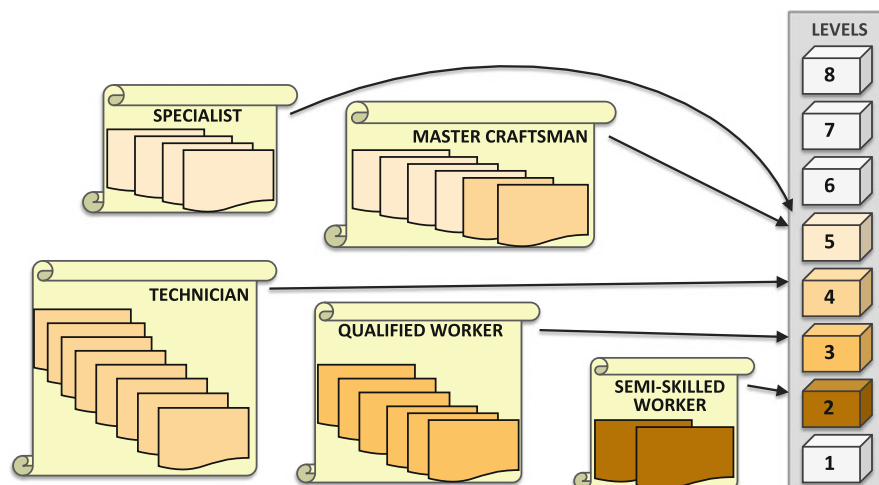
Fig. 20.2 Type of TVET qualifications. (Source: Manual for Enhancement of VET Qualifications)

learning and research in cooperation with companies and TVET schools. The mobility of future TVET teachers should be increased. During their pre-service training, interested students should have practical placements in TVET schools, and their professional development should be tailored to the needs of practise in specific fields as well as labour market requirements. This change would make a contribution to the quality of teaching process in TVET schools.

20.4 Models of TVET Teacher Training in BiH

Reforms in higher education, including pre-service teacher training, started after the adoption of the Bologna Declaration and of the Framework Law in Higher Education in BiH as well as the respective laws of all responsible education authorities in BiH. The EU and Council of Europe supported the development of Qualification Framework for Higher Education in BiH (Agency for Development of Higher Education—cf. National Report, 2015) and most of the reforms for modernization of study programmes in the field of subject teaching in foreign languages, study programmes in the field of education in pre-primary and primary education and field of veterinary, architecture, nursing and care. The process of curricula modernization based on learning outcomes and key competences in line with qualifications standards, QFBiH and EQF is ongoing. Participation in Tempus and ERASMUS+ (starting in 2015) programmes fostered the reforms and enabled mobility of students and teachers as well as the internalization of higher institutions. Further internalization and mobility of students and teachers of higher education in general, but especially

in the area of teacher training, would greatly contribute to exchanges and to the import of best practices in this area.

TVET reforms in in-service teacher training over the last 20 years were focussed mainly on the reform of curricula and syllabi which enable better mobility and flexibility among different levels of education and better employability of TVET graduates. It was supported through a number of EU-funded projects such as EU VET I, II, III and IV, as well as through the Qualification Framework for VET and Adult Education through IPA financial assistance and international organizations (GTZ/GIZ, KulturKontakt Austria, starting in 1998). The introduction of a flexible modular TVET system was one of the key priorities of a number of projects mentioned above.

During the entire period of development of modular curricula and syllabi, numerous teachers underwent various trainings. The TVET training covered, for example, the adjustment of curricula to labour market needs, pedagogy of teaching, pedagogy related to curricula, development of teaching manuals and the usage of ICT. Recent EU projects had their focus on the development of a qualification framework for lifelong learning, and TVET teachers were trained in basic elements of qualifications framework such as learning outcomes, standards of occupations and qualifications, etc. Further development and full implementation of the qualifications framework in BiH is one of the priorities for all levels of government in BiH (cf. Mirkovic et al., 2016).

According to the reports of the EU VET 4 project and the Ministry of Civil Affairs, about 3000 teachers underwent trainings in the field of vocational education and training, which is almost 30% of the total number of TVET teachers (7877 in technical and VET schools (cf. Agency for Statistics, 2020)). During multiannual trainings, a group of 60 teachers was selected and completed trainings to train TVET teachers in the future in the development of modular curricula and revising them according to labour market needs (ETF, 2017).

KulturKontakt Austria implemented training in administration and entrepreneurship for teachers in schools of economics and in tourism and catering schools. The GIZ, through its support for vocational schools, provided training in schools for engineering and metal processing and provided them with adequate equipment for practical work. Pilot training programmes provided by international organizations represent a good foundation for education authorities and pedagogical institutes to plan and provide more training for TVET teachers with a variety of providers such as companies, TVET schools and chambers of commerce.

Recently, new programmes in occupations which are attractive and sought after in the labour market have been developed by TVET schools with the support of international organization (GIZ), universities, centres for lifelong learning and NGOs. These include programmes for CNC operators, welders, web designers in wood processing and technicians for metal processing, among others.

Capacity building of teachers and pedagogical advisors in the field of entrepreneurial learning was originally implemented as part of the EU project Entrepreneurial Learning in Education Systems in BiH. A model for supervision and integration of the key entrepreneurial competence was designed and adopted by responsible

education authorities. In general, key competence approach has become a significant part of TVET teacher training in BiH.

In line with the further development and implementation of a qualification framework for lifelong learning in BiH through the EU project in 2018, extensive training programmes have been delivered to TVET teachers in 25 TVET schools which support the development of occupational and qualification standards and appropriate curricula based on learning outcomes.

In processes of developing and implementing QA in TVET as part of this project, a number of TVET teachers and school management personnel have been trained in self- and external evaluation. In the future, this process should be led by responsible education authorities, with the participation of TVET teachers and school managers, pedagogical advisors and external evaluators. The TVET teachers have been trained in enhancement of VET qualifications followed by production of a Manual for Enhancement of VET Qualifications (cf. Mrsic, 2017).

The training content is comprised of the following topics with 170 training hours:

- Basic concepts in qualifications systems.
- Learning outcomes and VET qualifications.
- Methodology and processes for the development of VET qualifications (development of proposals and validation).
- Development of occupational standards.
- Development of qualification standards.
- Use of qualification standards and occupational standards for the development of curricula.
- Use of occupational standards, qualification standards and curricula for components of internal and external quality assurance systems.
- The concept of modules; advantages and modes of using modules; and correlations with other elements of curricula.
- Modes of using modules.
- Didactical procedures and methods for experts and trainers (presentations, examples, questions and answers).
- Development of transversal competences of experts and trainers.

GIZ contribution to the specific skills training of TVET teachers in schools and in-company trainers in the metal industry has contributed to the development of sufficient skills which meet new technology requirements in companies. It has also created a better linkage between TVET schools and companies. Manuals have been delivered for future capacity building in the field of metal professions. Training programmes for mentors and students have also introduced public-private financing mechanisms which have to be seriously considered as a good model for future training.

The results of the GIZ study (GIZ Study, 2018) show that of 294 graduates who provided complete responses to the questions, 67% graduates confirmed a lack of practical skills during their learning process (GIZ, TVET Graduates in BiH). The implementation of sufficient models of work-based learning (e.g. dual organized education and training) could improve both teaching and learning processes. This

has been demonstrated through pilot projects in Canton Sarajevo, Middle Bosnia Canton, Herzegovina-Neretva Canton and Republika Srpska. Additionally, piloted dually organized education and training model which are supported by GIZ requires legislation and policy approaches to become sustainable (cf. Turčilo et al., 2019).

The need for financial and technical support to increase the capacities of authorities dealing with the further professional development of teachers at all levels in BiH should be recognized. The need for in-service training of TVET teachers is recognized by the teachers themselves, and some activities have been implemented, but, due to different internal and external factors, implementation is mostly performed on an ad hoc basis, with assistance often provided by other stakeholders (international organizations, NGOs, companies).

The international donor community, as noted already, is very active in the TVET sector with significant capacity building support and related expertise being provided, but all these efforts and results will not make significant systematic change since a systematic approach as well as the political will to do so are often lacking. Governments at all levels of BiH have not done enough to make TVET teachers' positions more attractive or to optimize the teaching workforce or attract private sector practitioners to become (part-time) trainers in TVET.

There is a need to develop policy measures at the systemic level in the area of education and training. This would ensure the sustainability of previous reforms and guide up and focus future ones.

The latest review of the efficiency of services in pre-university education in BiH which the World Bank prepared has highlighted that "the most valuable resource that BiH has is its people; they are its real wealth and the main engine in prosperity". But in order to reach their potential, people need exactly the skills and education that are needed for the labour market. It is unfortunate that deficiencies in education undermine the future of the population and the country as whole (World Bank, 2020). For further development of pre- and in-service TVET teacher training, education authorities have taken this into serious consideration.

20.5   Future Developments

Pre-service teacher training is an important part of the ongoing reforms in higher education in BiH as required by the European standards and guidelines for HE.

In this regard, accreditation of study programmes is a key mechanism through which HEIs, with the assistance of the responsible education authorities, can provide quality education and enhance the employability of their graduates. As BiH strives to be an equal partner with all other members of the Bologna Process and European Higher Education Area, development of learning outcomes (expressed as knowledge, skills and responsibility and autonomy) and key competency-based study programmes, which include standards of occupations and qualifications, are an absolute priority for HE reform in BiH.

New study programmes for pre-service teacher training, based on learning outcomes and key competencies, should be developed within the new EU IPA-funded project that is set to commence in 2020 and will hopefully contribute to BiH making progress in this direction. With EU support to BiH concentrated on HE and pre-service and in-service teacher training over the next 3 years, it will be necessary to concentrate other donors' support on TVET. Only thus will responsible education authorities have the much needed support to be able to equally concentrate on the two areas of education that can directly influence employability of their pupils and students, HE and TVET.

The skills mismatch between labour market needs and the education and training provided by HEIs and VET schools has been recognized by relevant authorities in BiH. They all agree that teacher training provision is an important part of the reform of education systems and thus has to be implemented based on relevant EU recommendations.

The Ministry of Civil Affairs and responsible education authorities with relevant partners from employment sectors, with the support of KulturKontakt Austria/OeAD, are in the process of preparing new strategic priorities based on the Riga conclusions adopted by ministers of all EU countries, EU candidate countries, EEA countries along with social partners and the European Commission in Riga in 2015 (Riga Summit, 2015). They set up five mid-term deliverables for modernizing VET education by 2020. One of the goal is related to teacher training: "introduce systematic approaches to, and opportunities for, initial and continual development of VET teachers, trainers and mentors in both education and work-based setting" (cf. Developing Skills for Labour Market—EU Policy, 2020).

Implementation of the new strategic priorities based on the Riga conclusions will have an impact on further development of TVET teacher training in the future. Priorities envisage the improvement of study programmes based on learning outcomes and qualification standards with a module on methodology of teaching processes, increasing hours for practical training and increasing research in VET teaching in pre-service teacher training. In-service education prioritizes accreditation, licensing of the teachers, regulation of mentors and student's practical training, advancement of mentorship and career guidance for new teachers.

The quality of teachers, trainers and mentors remains a crucial factor in determining that students and individuals develop adequate skills in education and training.

20.6   Conclusions

TVET teacher training (pre-service and in-service) is defined by the laws and by-laws of responsible education authorities in BiH. Improvement of TVET teacher training along with the quality of teaching is identified as a strategic priority at all levels of government.

The quality of TVET teacher training (pre-service and in service) in BiH should be improved. Teaching methods should be reformed to promote a student-centred approach, key competence approach and more interactive learning. Applied knowledge and critical thinking skills should be the core focus of teaching.

TVET teacher training within pre-service study programmes should have additional modules in pedagogy and methodology of innovative teaching with a greater focus on practical training, such as the introduction of an internship period, which could be arranged in consultation with local employers.

The quality assurance systems should be continuously reinforced through self-evaluation and external evaluation in line with EU quality assurance systems in higher education and in TVET, which will lead to increased transparency and quality of teaching processes.

Rapid technology development needs modernization of teaching and learning process. New jobs require new skills which TVET institutions and pedagogical institutes cannot provide on their own. Therefore, close partnerships between companies, chambers of commerce and social partners should be established. Their active participation in the relevant councils of the HEIs and TVET schools in deciding on curriculum design and recruitment issues is needed.

In order to provide adequate in-service teacher training, new financial mechanisms should be considered through public-private funding in order to increase investment in human resource development.

Development and implementation of strategic priorities in TVET based on the Riga conclusions will improve the quality of VET teaching programmes in line with EU recommendations and requirements.

This country needs a competent and flexible workforce for further economic progress and development of society as a whole.

References

Agency. (2018). *Agency for pre-primary, primary and secondary education*. The Guidelines for Development of Standards for the Accreditation of Training Programs for VET. https://aposo.gov.ba/publications/2018.

Agency for Statistics. (2020). *Education statistics 2017–2018*. Agency for Statistics of BiH. http://www.bhas.ba/?lang=en

Brankovic, J., & Brank, N. (2013). *European integration of higher education and research in the Western Balkans overview of higher education and research Systems in the Western Balkans Country Report: Bosnia and Herzegovina*. NORGLOBAL. https://www.researchgate.net/publication/324040772_Bosnia_and_Herzegovina_Overview_of_Higher_Education_and_Research_Systems_in_the_Western_Balkans

ETF. (2016). *Report on continuous professional development of VET teachers in Bosna and Herzegovina* (pp. 19–23). European Training Foundation. www.etf.europa.eu.//

ETF. (2017). *Torino process report for Bosnia and Herzegovina, 2016–2017*. European Training Foundation. www.etf.europa.eu//web.nsf/pages/Torino_Process_2016–17

EU Policy. (2020). What is vocational education and training (VET)? *EU policy in the field of vocational education and training*. https://ec.europa.eu/education/policy/vocational-policy/index_en.html.

European Qualifications Framework for Higher Education. (n.d.). http://www.ehea.info/page-bosnia-herzegovina.

Framework Law on Higher Education. (2007). *Framework law on higher education in BiH*. Ministry of Civil Affairs, Department for Education/Laws. http://cip.gov.ba/images/pdf/Legislativa/Engleski/Okvirni.eng.pdf

Framework Law on Secondary VET. (2003). *Framework law on primary and secondary education*. Ministry of Civil Affairs BiH, Department for Education/Laws. https://aposo.gov.ba/sadrzaj/uploads/Framework-Law.pdf

GIZ & Schweizerische Eidgenossenschaft. (2020). *Technical Vocational Education and Training. No 04*. Ministry of Education, Youth, Science. https://www.giz.de/en/downloads/giz2020-en-berufliche-bildung-bosnien-herzegowina.pdf

GIZ Study. (2018). *TVET graduates in BiH*. Tracer Study Report. Projectpaper.

Mirkovic, B., Brankovic, N., & Zecevic, I. (2016). Monitoring and evaluation support activity (MEASURE-BiH). In *Brief assessment of basic education in Bosnia and Herzegovina*. United States Agency for International Development in Bosnia and Herzegovina (USAID/BiH). IMPAQ International, LLC.

Mrsic, D. (2017). *Qualification framework for lifelong learning—QF LLL*. Ministry of Civil Affairs. https://epale.ec.europa.eu/en/resource-centre/content/qualification-framework-lifelong-learning-qf-lll

National Report. (2015). *National Report regarding the Bologna process implementation 2012–2015*. Agency for Development of Higher Education and Quality Assurance in BiH/Documents/Bologna Process/.

Riga Summit. (2015). *Shape the future of the multilingual digital single market*. http://www.rigasummit2015.eu/summit-resolution.

Sabanac, Z., Janjic, G., Aida, D., et al. (2017). *Overview of the higher education system, Bosnia and Herzogoniva*. European Union.

Turčilo, T., Osmić, A., Kapidžić, D., et al. (2019). *Youth study Bosnia and Herzegovina 2018/2019*. Friedrich-Ebert-Stiftung e. V.

World Bank. (2020). The World Bank in Bosnia and Herzegovina. *Western Balkans Regular Economic Report: Fall 2020*. https://www.worldbank.org/en/region/eca/publication/western-balkans-regular-economic-report.

**Part IV
Case Studies of Industrialized Countries
Where TVET as a System Is Already
Established, and Is Indispensable as Pillar
Within the Educational System, Alongside
General Education Institutions**

Chapter 21
Development of Competencies and Qualifications of the VET Teachers and Trainers in Lithuania

Vidmantas Tūtlys, Lina Vaitkutė, and Daiva Bukantaitė

Abstract This chapter reviews the institutionalisation of the qualifications and training of VET teachers in the context of the key critical junctures of the skill formation which have been taking place in Lithuania since 1990. It gives an outline of the institutionalisation of the qualifications and training of VET teachers and trainers within the context of institutional change and development of skill formation in Lithuania as well as the key critical junctures, such as post-communist transformation, access to the EU and the global economic crisis of 2008–2009.

This chapter provides an outline of the developments that led to the existing model of VET teachers' qualification and training, offers an institutional model of VET teachers' qualification and explores possible scenarios for the future. Institutionalisation of VET teachers' qualifications in Lithuania has been strongly influenced by post-communist transformation, as well as access to the EU. Accession to the EU promoted a more holistic attitude towards VET policymakers and stakeholders regarding skill formation and qualifications. This enabled more systemic attention to the professionalisation and qualifications of VET teachers. Digitalisation of work processes, competence-based reforms of VET curricula and development of work-based learning approaches increasingly require VET teachers in Lithuania to develop their academic knowledge, professional know-how and skills as well as key skills and competencies. These factors foster dynamic institutional changes in the provision of academic and professional

V. Tūtlys (✉)
Vytautas Magnus University Academy of Education, Kaunas, Lithuania
e-mail: vidmantas.tutlys@vdu.lt

L. Vaitkutė
Vytautas Magnus University Academy of Education, Kaunas, Lithuania

University of Verona, Verona, Italy

D. Bukantaitė
Vytautas Magnus University, Kaunas, Lithuania

qualifications as well as the continuing professional development of VET teachers and trainers.

21.1   Introduction

The vocational education and training (VET) system in Lithuania has undergone significant reforms and institutional changes since the restoration of an independent state in 1990. Post-communist transition involved a wide range of institutional transformations and process changes to skill formation, starting with the emergence and development of labour market-related skill formation institutions, changes and reforms in curriculum design, qualifications and training practices, development of social dialogue over skill formation and VET and many others. VET teacher training and qualifications have been key factors in these reforms and institutional transformations. This is why they merit a more systemic and holistic analysis, which will be provided by this chapter.

VET teachers, as well as their qualifications and training in Lithuania, started to attract the attention of researchers and emerged as research objects towards the end of the last decade of the twentieth century. Due to a more dynamic institutionalisation of the VET system and discussions about competence-based VET curricula, the need for more systemic training and competence development of teaching staff working in the VET system emerged. The academic papers published in this period focused on the identification of systemic shortages in the training of VET teachers, the need for new professional, pedagogical and key competencies and suggestions for strategic and systemic institutional models for VET teacher training. These issues were discussed in the publications of Laužackas (1996, 1999), Dienys and Sajienė (1996), Daukilas (1996), Dienys and Pusvaškis (1998), Pukelis (1999), Laužackas and Pukelis (1998), Pukelis et al. (1999), Kučinskas and Kučinskienė (2000), Pukelis and Palinauskaitė (2001), and Laužackas et al. (2002). Systemic and strategic approaches for VET teacher training and qualifications were strongly promoted, based on the learning gathered from policies in other European countries and focusing on the importance of the standardisation of qualifications and training of VET teachers (Pukelis, 2003; Laužackas & Pukelis, 2004; Laužackas, 2005; Pukelis & Laužackas, 2006). Shortly after the accession of Lithuania to the EU, the attention of researchers refocused on the role of VET teachers in VET reforms and on the implications of these VET reforms for the training and competence development of VET teachers (Laužackas, Danilevičius & Gurskienė, 2004). After the accession to the EU, and following the implementation of the EU skill formation agendas (Copenhagen and Bologna processes), research interests shifted to the different issues related to the contents of VET teachers' competencies and training, VET teachers' activity, key professional values and VET teachers' professionalisation processes. These topics are comprehensively investigated by Daukilas et al. (2016). Gedvilienė et al. (2019)

analysed the relations between competence development and careers of VET teachers.

Following the findings of the aforementioned papers, this chapter reviews the institutionalisation of the qualifications and training of VET teachers in the context of the key critical junctures of the skill formation taking place in Lithuania since 1990. It starts with the outline of the institutionalisation of the qualifications and training of the VET teachers and trainers by discussing it in the context of institutional change and development of skill formation in Lithuania. Next, we will provide an overview of the state of the art of the requirements for VET teachers' qualifications and related institutional model in Lithuania. On the basis of the findings of analysis from the previous sections, an institutional model for VET teachers' qualifications is suggested, and possible scenarios of institutional development in this field are discussed.

21.2 Institutionalisation of the Qualifications and Training of the VET Teachers and Trainers

Institutionalisation of qualifications and training for VET teachers after 1990 took place in the context of the complex post-communist transition of the socio-economic model of society and related institutional reforms, which defined the key critical junctures of institutional change.

One of the key specificities of post-communist institutional change in Lithuania (as in other Baltic countries and, partially, other former Soviet republics) was the reconstruction of statehood and state institutions from scratch, by establishing new institutions of governance, legislation, political regulation and civic participation in various fields, including VET (Norkus, 2014; Tūtlys et al., 2019). This meant significant changes in the roles and responsibilities for the VET teachers and trainers. Privatisation and transition to a market economy implied significant restructuring of the economy with survival and domination of mainly low-skilled industries and services based on subcontracting. It significantly changed the structure of demands for skills, as well as institutional conditions of their provision in the VET system.

Coping with the Soviet legacy in the field of VET enhanced the direction of the VET policy towards neoliberal reforms. The abrupt and dynamic character of reforms in the field of education and VET did not permit for systemic development of the institutional framework of VET teacher training and qualifications, because these issues were considered to be of secondary importance compared to the key priorities of reform, such as the reorganisation of the network of VET providers, establishment of a social partnership between VET providers and enterprises or curriculum reform aimed at solving the increasing mismatch between the supply and demand of skills (Dienys & Pusvaškis 1998; Tūtlys et al., 2019).

The training of VET teachers and trainers in the Soviet dual VET model was strongly influenced by the close partnership between state enterprises and VET

schools, when work-based training in state enterprises was an integral and important part of VET, where large industrial factories often had their own training centres. It enabled a strong institutional provision of VET teachers' initial training via specialised higher education study programmes, as well as the ongoing training of professional and technical skills in state enterprises and training centres. The collapse of big Soviet enterprises that constituted the core platform of VET and the emergence of small- and medium-sized businesses with totally different skills needs and capacities completely changed the institutional conditions for the training of VET teachers and trainers. The negative image of VET, especially during the first decade of transition, reduced the demand for VET teachers and trainers, while the VET schools could continue to function with the human resources shaped during the Soviet period. Besides, after the collapse of the Soviet system, VET became a secondary route for skill formation which was predominantly oriented towards social policy needs, especially coping with unemployment, which also reduced the pressure for institutionalisation of the training and qualifications of the VET teachers (Laužackas, 2005).

Ideological approaches to VET reform also contributed to a rather loose and delayed institutionalisation of the training and qualifications of the VET teachers and trainers. Market neoliberalism promoted the decentralisation of VET provision as well as the delegation of the responsibilities to VET providers and their agreements with the social partners. Since in the transition period the training of VET teachers and their qualifications were largely subjected to the sphere of human resource management of VET providers rather than to the national VET policy area, VET providers were largely left to deal with the problems and challenges of their human resource management and development (Laužackas & Pukelis, 2004, Pukelis & Laužackas 2006) on their own. In these conditions VET providers strived to make use of available teaching staff, while the preparation of new teachers and trainers was challenging without access to proper material, financial, technological and human resources. Emerging new kinds of bureaucratic and "statist welfarism" based on a technocratic orientation towards skill formation implied a strong formal regulatory role of the state in VET policy (including the field of VET teacher training) accompanied by an increasing influence of employers in this field (Table 21.1).

The government's decentralisation of governance and enactment of autonomy for VET providers through the abolition of the centralised enrolment of students as well as the delegation of curriculum design, development of training materials and organisation of assessment to VET schools played a significant role in the continuing training of VET teachers, which was necessary for their adjustment to their new responsibilities (Dienys & Pusvaškis, 1998; Laužackas & Pukelis, 2004; Pukelis & Laužackas 2006; Norkus, 2014). Decentralisation and greater autonomy for VET providers, combined with intensive policy borrowing, policy learning and provision of know-how from abroad, were the key factors here. A reform of VET curricula and qualifications was launched in 1994 under the EU's support programme PHARE which enabled policy borrowing for local policymakers and VET providers (Dienys & Pusvaškis, 1998; Laužackas, 2005). Delegating autonomy in curriculum design to VET schools and teachers facilitated the development of VET teachers' expertise,

Table 21.1 Institutional change and development of VET teachers training during early post-communist transition 1990–2004: critical junctures

The fields of change	Main critical junctures				
Initial VET	1990: implementation of the training programmes of 4 levels, transformation of technikums into higher vocational schools	1993: decentralisation of VET curriculum design, updating of curricula by VET schools	1994: initiation of the EU support programme PHARE for restructuring and updating initial VET provision	1997: directed policy of VET, acceptance of the VET law initiation of the competence-based VET standards, establishment of tripartite bodies	2002: delegation of assessment of competencies and awarding of qualifications to chambers of commerce industry and crafts
Training of the VET teachers and trainers	Reduced demand of VET teachers and trainers in the early post-communist transition period		Local capacity building of VET teachers and trainers through participation in the EU support projects, such as PHARE and Leonardo da Vinci	Attempts of institutionalisation of the qualifications and training of the VET teachers and trainers in the period of pre-accession to the EU in 1998–2003	
Socioeconomic development	1990–1999 institutionalisation of state and society: establishment of state institutions, transition to market economy, privatisation, economic crisis and instability, decentralisation of governance			2000–2004: economic stabilisation, institutionalisation of social partners and social dialogue, institutional restructuring for the integration with the EU	

Source: Compiled by the authors

which was nurtured by participation in EU projects (Dienys & Pusvaškis, 1998). The involvement of institutions and social partners in EU projects was considered a major source of capacity building. Strategic documents from this period prioritised curriculum reform with the adoption of competence-based vocational education and training standards (Lietuvos Respublikos Švietimo ir mokslo ministerija, 1999). This process, started in 1997, was coordinated by the recently established Methodological Centre for VET under the Ministry of Education and Science.

The development of societal discussions about VET was mostly driven by government even though national and sectoral tripartite bodies were established in 1997–1998 (Council of Vocational Education and Training, regional councils of VET, expert groups in the economic sectors which were involved in the design of VET standards). Despite this, in 2003, the assessment of competences was delegated to the Chambers of Commerce, Industry and Crafts, but an overall social partnership

and social dialogue in the field of VET was significantly hampered by low capacity as well as by the lack of involvement of companies and trade unions at local and sectoral levels (Laužackas, 2005; Tūtlys et al., 2019).

Meanwhile, continuing training of initial VET teachers has been rather fragmented and has been delivered by different providers on a project-by-project basis. The Centre for Vocational Education and Research at Vytautas Magnus University organised extensive continuing training courses for VET teachers under the support of the different EU projects (PHARE, ESF, etc.) during the period of 1998–2006. These training courses also included development of skills and competences for the application of innovative and learner-centred training methods. In 2002 the experts from Centre for Vocational Education and Research at Vytautas Magnus University prepared the project describing the qualifications for vocational teachers, comprised of competencies in the five fields of activities: (1) education of personality; (2) planning, management and development of training process; (3) vocational education curriculum design; (4) development of the school and education system; and (5) development of the contents of training programmes (Martišauskienė & Gaigalienė, 2007).

In this period national projects for the training of VET teachers provided them with an important opportunity to meet and to share their experiences and innovative approaches to training. It is worthwhile to mention that in the Soviet period, so-called methodical commissions existed for VET at the regional level. They permitted VET teachers to share their experiences and developed innovations on a regular basis. These commissions survived the post-communist institutional transformations up until the present, but they became merely formal bodies which were no longer involved in the significant activities of VET teachers' competence development or the sharing of know-how and experience between them (Tūtlys et al., 2008). It is important to mention here that, even now, the commissions working under the initiative of the Centre for Development of Qualifications and Vocational Education and Training are not active. While working in concrete VET establishments and providing networking opportunities for VET teachers, the activeness and effectiveness of these bodies greatly depends on the initiative of their chairpeople. Overall, the work of VET teachers became very individualised as well as strongly influenced by the competition. Teachers tried to develop something individually, to execute different individual projects in the field of training methods and to use them for their career and for the upgrading of qualification.

The influence of the Soviet legacy on the field of VET teachers and trainers was felt for several decades after the collapse of the Soviet Union. VET teachers who had been educated under the Soviet system for many years made up a significant share of the teaching staff in VET schools. This can partially explain the conservative attitude of teachers and schools towards reforms and their low motivation to change things (Laužackas, 2005, Laužackas et al., 2004). Another important challenge during the first decade of reform was a lack of pedagogical competencies and qualifications amongst the teaching staff in VET. The results of the survey of Training Vocational Teachers executed in 2000 by the Vytautas Magnus University (The Change and Reforms of VET, Leonardo da Vinci programme project "Systemic Model for

Training Trainers of Professions") disclosed that over 76% of vocational teachers in Lithuania had no formal pedagogical background (Laužackas et al., 2004). Poor skills and qualifications of VET teachers were seen as one of the key reasons for problems with quality in VET, along with the low quality of the training infrastructure and training resources during that period.

VET teachers played strategically important and multifaceted roles in the development of the competence-based curricula launched at the end of the 1990s. They were key actors in the design and development of competence-based VET curricula since the introduction of these curricula in 1998. Decentralisation of curriculum design permitted an accumulation of significant know-how in the field of methodology for competence-based curriculum design, such as functional analysis and design of descriptors (Laužackas, 2005; Spöttl & Tūtlys, 2017; Tūtlys & Aarna, 2017). Therefore, VET teachers became the key executive power in the introduction of competence-based VET standards and, later, in the implementation of occupational standards and modular VET curricula which have been carried out since 2013. However, one of the key problems here is that the expertise and know-how of VET teachers in the field of competence-based education was concentrated in the field of design of formal curricula, whereas the competencies needed for the implementation of competence-based didactic approaches and organisation of training process (e.g. approaches of learner-centred teaching and training, work-based learning and apprenticeship) were largely missing. This explains the slow implementation of competence-based VET curricula into educational practice and the persistence of the different elements of subject-based education and training in teaching practice (Spöttl & Tūtlys, 2017; Tūtlys & Aarna, 2017; Laužackas et al., 2009; Tūtlys & Spūdytė, 2011; Tūtlys et al., 2016).

One of the key shifts of the post-Soviet reform in VET teacher training was changing the structure of teacher training from a parallel system, where the vocational and pedagogical qualifications are acquired simultaneously, to a consecutive model, where a vocational qualification is first studied at a specialised university or college, followed by a pedagogical qualification through a post-graduate course of study (Laužackas, 2005; Pukelis & Laužackas 2006; Daukilas et al., 2016).

One of the major initiatives of VET teacher training reform started at the beginning of the 2000s and was strongly influenced and supported by the EU accession and EU funding. The group of experts under the initiative of the Centre for Vocational Education and Research at the Vytautas Magnus University developed a new concept for VET teacher education and training in Lithuania (Lietuvos profesijos mokytojų rengimo koncepcija) in 2001, which aimed to change the training system for VET teachers with regard to planning, implementation and evaluation (for both pre-service and in-service training). The suggested model was a consecutive one, where a trainee teacher must obtain a vocational qualification at an institution of higher education or at a vocational college and then obtain 3 years of work experience relevant to the teaching/learning programme field, which then permits them to begin working in a VET school and to acquire a pedagogical qualification during the first 2 years of work. This group of experts also suggested a professional standard for VET teachers (Profesijos mokytojų profesijos standartas),

which was agreed upon by the Collegium of the Ministry of Education and Science and outlined the competency-based requirements for VET teachers (Professional standard for vocational education, 2002; Regulation for initial pedagogical education and training, 2002).

However, the proposed changes were only partially implemented via projects supported by the EU, such as "Reshaping the focus and structure of teacher/trainer training (TTT) in Lithuania and Latvia" (ETF), "Initial and continuing training of VET teachers" (PHARE) and "Systematic Organisation of Continuing Development of VET Personnel" (Leonardo da Vinci Programme). On the one hand, EU assistance played a highly significant role for VET teacher training in the years before EU accession and afterwards. On the other hand, making VET teacher training dependent on EU-funded projects has brought the fragmentation of this process and posed a challenge for its sustainability. Development of continuing training for VET teachers was greatly supported by the PHARE VET Reform Programme, in particular by a part of the programme entitled "Training of Trainers and Managers". In 1998 the national project "Dissemination of PHARE VET Reform Programme in 1999" was designed primarily for those vocational schools and colleges that had no possibility of taking part in the PHARE programme (European Training Foundation, 2002; Baškys, Beleckienė, Dienys & Vaitkutė, 2002). In 1999, after conducting research on qualification upgrading needs for trainers and teachers, the integrated modular programme of 2 years' duration for the initial pedagogical training of vocational teachers was drafted. Starting in 1997, the Centre of VET Studies at Vytautas Magnus University started training VET managers (master's programme) and researchers (doctoral programme). Seeking to improve the pedagogical qualifications of vocational teachers, the Centre carried out several projects – "Systematic Organisation of Continuing Development of VET Personnel" (Leonardo da Vinci, 1999–2001) and "Reshaping the focus and structure of teacher/trainer training (TTT) in Lithuania" and Latvia (ETF, 1999–2001)—which were helpful in collecting and preparing conceptual backgrounds for the development of descriptors for VET teachers' qualifications and concepts for institutional settings for VET teacher training (European Training Foundation, 2002; Baškys, Beleckienė, Dienys & Vaitkutė, 2002).

After the accession of the EU in 2004 and the strengthening of the dimension of lifelong learning in initial VET and adult education, a systemisation of and integration of skill formation through the systemic reforms of qualifications and curricula which were launched can be observed (Table. 21.2).

The access to the EU was accompanied by a wide range of factors which influenced the work and competence development of VET teachers. It increased attention for the issues of VET in education policy as a result of the importance of this educational sphere in the EU agenda (Lisbon Strategy and Copenhagen Process) and in the national skill formation strategies of leading EU economies. It also facilitated openness of the VET system both in institutional terms (openness to the other educational sectors) and in geographical terms (openness to cooperation and influence from the other countries). External support provided by the EU to the young and fragile institutional settings of the VET system in terms of materials,

Table 21.2 Institutional change and development of training of VET teachers and trainers after the accession to EU 2004–2019: critical junctures

The fields of change	Main critical junctures				
Initial VET	2007: new law on VET—apprenticeship, national system of qualifications, opening the VET providers for external stakeholders	2007–2008: revision and updating of the VET standards	2012: launching of the competence-based curriculum reform with national modular VET curricula	2013–2015: implementation of the sectoral practical training centres	2017: new VET Law implementation of dual VET, VET schools as public legal entities, centralised planning of enrolments
Training of the VET teachers and trainers	Legal regulation and standardisation of qualifications of the VET teachers and trainers: defining minimal requirements	Competence development of the VET teachers and trainers in the framework of the ESF-funded projects	Involvement of the VET teachers and trainers in the development of occupational standards and modular VET curricula	Introduction and implementation of the qualifications of the VET teachers (LTQF/EQF 5 and 6) and trainers (LTQF 5) in the occupational standard of education sector in 2019	
Lifelong learning and national system of qualifications	2006–2008: the projects for design of the national system of qualifications and NQF	2010: approval of the Lithuanian Qualifications Framework by the Government	2013: launching of the design and implementation of the occupational standards	2018: introduction of the law on informal and continuing adult education	
Socioeconomic development	2004–2008: accession of EU and post-accession reforms, structural funds and policy learning	2009–2013: impact of the global economic crisis—rising unemployment and emigration	2013–2016: economic recovery, strengthening integration with EU (introduction of Euro in 2015)	2016–2016: neoliberal-developmental socio-economic reforms—introduction of new Labour Code	

Source: Compiled by authors

financial resources and know-how also significantly enhanced different projects and activities in the field of VET teacher training.

Implementation of strategic instruments and measures created by the post EU accession reforms, such as NQFs, competence-based qualifications and their systems, the European credit system for vocational education and training (ECVET) and the European Quality Assurance Reference Framework (EQAVET)-based quality assurance instruments required strong and sustainable institutional capacities that were largely missing in the VET system, and it was hoped that this problem would be solved with the financial support and know-how of the EU (Lietuvos Republikos Švietimo ir mokslo ministerija, 1999). VET teachers' qualifications and skills were one of these essential capacities, but their provision was still very much "ad hoc" oriented and was based on the implementation of short-term training projects without reference to the long-term institutionalisation of VET teachers' qualifications and training.

Accession to the EU also strengthened the role of government and its agencies in VET policymaking through EU initiatives, such as the development of the National System of Qualifications, the implementation of ECVET and EQAVET and institutional integration of initial VET and continuing VET (so called "labour market training") (Tūtlys et al., 2008; Spöttl & Tūtlys, 2017; Tūtlys et al., 2017; Tūtlys et al., 2011; Winterton et al., 2008). Access to the EU also facilitated more active involvement of social partners in VET policies through the implementation of the skill formation projects supported by the ESF and the establishment of the new sector-based institutional structures of social dialogue at the level of economic sectors such as tripartite sectoral professional committees (Tūtlys & Kaminskienė, 2008, Tūtlys et al., 2011, Winterton et al., 2008). These bodies were delegated the responsibility for quality assurance as well as referencing qualifications to the Lithuanian Qualifications Framework. VET teachers, with their individual expertise, have been actively involved in these activities.

One of the distinguishing features of skill formation and VET after the EU accession has been an increasing attention to the promotion and development of work-based learning and apprenticeship in the initial VET system. Implementation of apprenticeship was slow and iterative, starting from the introduction of apprenticeship as an alternative pathway for VET in the VET Law of 2007, followed by fragmented and project-based experimentation of different apprenticeship schemes and the introduction of institutional changes which favoured the implementation of apprenticeship from 2017 to 2019 (changing the status of the all public VET providers to public entities by permitting enterprises to become stakeholders, introduction of the apprenticeship contracts in the new labour code, adopting legal acts for organisation of apprenticeship). One of the key challenges for this change is the shortage of competent trainers and lack of specific organisational competencies for VET teachers that are needed to work in the "dual" apprenticeship schemes (Cadefop, 2016). Often VET schools and teachers are very reserved about the development of apprenticeship due to fears of its destructive effect on the workload and employment of VET teachers in the face of challenging demographic perspectives and reduced cohorts of students.

During the period of the EU accession, the structure of qualifications of VET teaching staff in Lithuania was settled consisting of the three main types of qualifications. VET schools employ VET teachers (profesijos mokytojas) teaching both in initial and continuing VET and with qualification categories such as junior vocational teacher (jaunesnysis profesijos mokytojas), vocational teacher (profesijos mokytojas), senior vocational teacher (vyresnysis profesijos mokytojas), vocational teacher methodologist (profesijos mokytojas metodininkas) and vocational teacher expert (profesijos mokytojas ekspertas), trainers (gamybinio mokymo meistras) whose qualification requirements and the pathways of training are not formalised and general education subject teachers (bendrųjų dalykų mokytojas) who are employed in VET schools. Qualification requirements for VET teachers have been defined by law, together with the qualification requirements of the teaching staff of general education. The entry requirements for those aiming to become VET teachers were outlined in the decree of the Minister of Education and Science (2005; new edition of 2015) governing the qualification requirements for teachers in pre-school, primary, general, secondary, special and vocational education programmes. This document required the VET teacher to have (1) a higher education and pedagogical qualification, or (2) to have a higher education degree and have attended the training programme for the acquisition of minimal pedagogical qualification (Pedagoginio minimumo programa) at the teacher professional development centre (Pedagogų profesinės raidos centras), or (3) to have a vocational education and 3 years of work experience in the subject field and to have attended the above-mentioned minimal training programme. This document stipulated that concrete requirements for the vocational qualification of VET teachers should be defined through a concrete VET programme, thus avoiding any national standardisation in this field.

21.3   State of the Art of the Requirements for VET Teachers' Qualifications and Related Institutional Model

The challenges for and obstacles to the institutionalisation of the provision of training and qualifications of the VET teachers during the last three decades, as discussed above, resulted in rather fragmented, vague and liberal stipulations for the qualification requirements for VET teachers. According to the existing legislation, the right to work as a vocational teacher is given to a person who has acquired a teaching qualification as defined by the law, and to a person who has acquired higher education or special secondary education, but who does not have a teaching qualification, as well as to graduates of VET schools who have at least 3 years' practical work experience and who have completed the short course (120 hours) of pedagogical and psychological competencies (Tūtlys et al., 2019). Such a loose stipulation of qualification requirements is mainly defined through the recruitment challenges and difficulties of the VET schools in finding competent candidates for the position of VET teachers which is neither attractive nor competitive in terms of remuneration and career prospects.

There are several higher education institutions that have registered study programmes in the field of vocational pedagogy. These study programmes foresee the provision of know-how and skills through the application of innovative and learner-centred training methods. One of these study programmes which provides master's degrees in educational science is offered by the Vytautas Magnus University Academy of Education Science and is oriented towards future researchers and managers of initial VET institutions. The competence fields of graduates of this programme include vocational education and training didactics, the basics of academic research, professional and didactic innovations, educational technologies, pedagogical psychology, education philosophy, education science for vocational education and training, management psychology, social psychology, subject-based teaching methodology and more.

Continuing training and competence development for VET teachers and trainers has been largely based on different EU-financed projects. One such project was run by the Centre for the Development of Education and was called "Development and introduction of the system enhancing the technological competencies of vocational teachers and lecturers" (SFMIS NR.VP1–2.2-ŠMM-02-V-02-001) and was implemented from 2010 to 2015. This project aimed to "provide vocational teachers and college lecturers with technological competencies enabling them to work at the newly established sectoral practical training centres, which also provide the teachers with conditions to enable them to constantly enhance their competencies with respect to the continuous development of technologies". The planned results of this project included the development of the model for enhancing technological competencies (including the established professional development system and its elements, funding opportunities, measures guaranteeing its operation, etc.); preparation of approx. 100 programmes for enhancing technological competencies in 12 economic sectors; and involving 650 participants in developing new technological competencies. However, this project did not result in creating a sustainable model for continuing VET teacher training and in 2017–2019 was followed by several fragmented sector-based VET teacher training projects.

The current model for initial training of VET teachers can be defined as consecutive (Daukilas et al., 2016). One of the key requirements for the awarding of a VET teachers' qualification is possessing the vocational qualification referenced to level 4 of the Lithuanian Qualifications Framework (LTQF) and European Qualifications Framework for Lifelong Learning (EQF) and work experience in the field related to the vocational qualification obtained. These prerequisites open the possibility for the acquisition of the qualification of VET teacher through the acquisition of pedagogical competencies through different formal and informal pedagogical studies and courses. In 2019 the national sectoral qualification standard in the sector of education and library activities was approved, which includes the qualifications of the VET teacher referenced to the levels 5 and 6 of the LTQF (EQF). On this basis Vytautas Magnus University initiated the design and introduction of the bachelor's study programme providing a bachelor's degree in educational science and a qualification as a VET teacher in 2020. Launching of this study program will help in the implementation of the comprehensive framework of qualifications for VET teachers

11		PHD studies in the field of educational science, ISCED 8, EQF 8		
10				
9		University undergraduate study programme providing bachelor degree in educational science and professional qualification of VET teacher (in the process of implementation) ISCED 6, EQF 6		
8				
7	Short course of pedagogical and psychological knowledge of 120 hours (academic certificate)		Master degree studies in educational science (master of educational science) ISCED 7, EQF 7	
6	Work experience (3 years)			
5			Additional studies in the field of pedagogy (academic certificate); professional studies (non-degree) and certificate of qualification; short-term course of pedagogical and psychological knowledge of 120 hours (academic certificate).	
4			Work experience (1 year)	Undergraduate studies at the universities providing bachelor degree in the different fields ISCED 6, EQF 6.
3	Vocational education (diploma and matura certificate) ISCED 3, EQF 4		Undergraduate studies at the universities of applied science – professional bachelor degree in the different fields ISCED 6, EQF 6	
2				
1				

Fig. 21.1 Institutional pathways for the acquisition of VET teachers' qualifications. *ISCED* International Standard Classification of Education, *EQF* European Qualifications Framework for Lifelong. (Source: Daukilas et al., 2016)

and trainers with the wide range of pathways for the acquisition of qualifications (Fig. 21.1).

21.4   Learning, Factors Affecting the Realisation of Model of VET Teacher Training

In defining the relevant model for VET teachers' training in Lithuania, several key factors should be considered.

Constant and objective institutional factors include specificities for the institutional development of VET, in particular the existing tensions between rather centralised governance and legal regulation of the public VET provision, slow and so far not very consistent social dialogue in the field of VET and slowly increasing participation of employers in skill formation and provision of VET. These circumstances necessitate an important role for the state in the organisation of VET teachers' training and competence development according to nationally established standards. It also requires from the state to ensure the open access and participation of employers and business organisations in this process, especially in the development of study and training curricula and organisation of the practical training of VET teachers and trainers. So far, there is a lack of a clear division of functions of different institutions working in the field of continuing training of VET teachers. Sectoral practical training centres should play a more important role in VET teacher training along with their increasing responsibility for the identification and satisfaction of skill formation needs in various sectors of the economy. These centres could also open their premises to the activities of the methodical commissions for VET teachers. The Ministry of Education, Science and Sports together with the Centre for Development of Qualifications and Vocational Education and Training could also be more active players in the field of strategic planning, management and coordination of VET teacher training and competence development, as foreseen in the national legislation.

Changing contextual factors include improving the image of VET and its increasing role in national skill formation as evidenced by the increasing enrolments of students and slowly growing numbers of graduates. These factors increase the motivation and interest of public VET providers for improving the quality of provided training and fostering understanding of the importance of VET teachers' qualifications and competencies in order to increase the quality of the VET provision. At the same time, improved technological infrastructure for VET provision (sectoral practical training centres) and promotion of work-based training and apprenticeship requires high-level pedagogical, technological and organisational know-how from VET teachers, thus implying the requirement of higher education degrees on the one hand and technological expertise on the other. It creates preconditions for the implementation and development of the dual higher education studies which provide higher education degrees and VET teachers' qualifications. The aforementioned introduction of VET teachers' qualification referenced to the LTQF/EQF level 6 also provides favourable legal preconditions for such changes.

Other important factor is the socio-economic status of VET teachers and trainers, which is currently still very low. Low salaries significantly limit the attractiveness of this occupation for young people and for experienced workers from different economic sectors. This is one of the reasons why VET provision has suffered from the highly negative implications of the low skill equilibrium in VET teaching, when VET providers became dependent on low-skilled VET teaching staff. This problem requires systemic solutions both through increasing public funding for VET teaching and the redesigning of VET teachers' work through opening and fostering different additional opportunities for investing the human capital of VET teachers in project

work, continuing training activities and other fields. Fostering the participation of VET teachers and trainers in the societal dialogue about their employment, work and career would also significantly contribute to an improvement of this situation.

21.5 Further Development of VET Teacher Training: Possible Scenarios

Future development of VET teachers' training in Lithuania depends on the overall trends of institutional development of the VET provision as well as the socio-economic context of skill formation in the country. With regard to this, several possible scenarios can be distinguished:

1. The status quo scenario, where the responsibility for vocational teachers' training remains with VET providers and the state defines the minimum qualification requirements for VET teachers' qualification. The provision of initial and continuing teacher training is liberalised, and the training courses are initiated by VET providers, continuing professional development organisations and social partners on the basis of observed teachers' skill needs or addressing provisions for training in national strategic documents as well as EU policies. National authorities promote VET teachers' training through EU-supported VET teacher training measures.

2. Development of holistic patterns of training and competence development of VET teachers and trainers characterised by the presence of both academic and nonacademic pathways of initial and continuing VET teacher training (study programmes, continuing VET teacher training programmes, flexible possibilities for recognition of experiential learning and competence development). This pattern involves the active participation of universities, employers, professional organisations and other stakeholders in the process of VET teachers' training and competence development. Employers and professional organisations should play key roles in creating conditions for the development of the practical skills and pedagogical competencies needed for the implementation of work-based learning and apprenticeships. The main existing institutional preconditions for this scenario are as follows: (1) current legal regulation for the qualifications of VET teachers and trainers providing a set of qualifications for VET teachers and trainers which is referenced to levels 4, 5 and 6 of the LTQF/EQF; (2) currently introduced academic study programme (by Vytautas Magnus University) for VET teachers' training; (3) improving the image of VET with increasing attention to youth and employers and other social partners, towards the improvement of the quality of VET provision; and (4) more systemic attempts to develop work-based learning and apprenticeships by focusing more on the capacities of VET providers and competence development of VET teachers and trainers (sectoral practical training centres, increasing attention of VET providers to the competence development of VET teachers). Some obstacles or risks for the

implementation of this scenario can also be distinguished, such as the lack of public funding for VET teachers' training and competence development in the face of the current economic crisis, still insufficiently constructive and systemic social partnerships in the field of VET, low wages and salaries of VET teachers and trainers, etc.

3. Development of fragmented and strongly market-oriented training and competence development of VET teachers and trainers could occur in the conditions of the erosion of the public provision of VET, if school-based VET provision declines to loosen its positions on flexible work-based learning which is oriented to the current or short-term skills needs of enterprises. The main economic "advantage" of this pattern is the absence of the necessity of high public and private investment in VET teacher training by making this process "lean" and strictly oriented towards the current and short-term skills needs at the local level. This would lead to a fragmented and unsustainable training and competence development of VET teachers and trainers by derailing training from the academic pathway and focusing on the continuing training and competence development measures, especially in the provision of quickly changing and newly emerging technical and occupational skills. Development of the private provision of VET and the active role of enterprises (in the private sector) in VET provision are the key institutional preconditions for the realisation of this scenario.

21.6   Conclusion

Institutionalisation of VET teachers' qualifications and training in Lithuania has been strongly influenced by the critical junctures of the institutional transformations of society, especially the post-communist transition reforms oriented to the development of a market economy and democratic society as well as EU accession. Although the architects of the post-Soviet reforms of VET regarded VET teacher training and competence development as one of the key factors of successful and effective VET reform, development of VET teachers' training and qualifications was quite iterative which led to a rather fragmented structure of qualifications, training oriented towards short-term goals and an often insufficient volume and level of pedagogical, professional and key competencies and skills. A shift to market-oriented approaches to curriculum design and a more holistic attitude of VET policymakers and stakeholders towards the skill formation and qualifications after the EU accession enabled more systemic attention to the professionalisation and qualifications of VET teachers. Although EU accession increased significant investments and support to VET and enabled a more holistic approach to VET reforms by introducing dimensions of lifelong learning and a system of qualifications, the development of human resources and, in particular, VET teachers' training did not become one of clear priorities in EU-supported programmes and projects, while the project initiatives in this field did not develop into sustainable and institutionalised practices of VET teacher training and competence development. These

circumstances can also partially explain the persisting lack of esteem of the VET teachers' profession and a precariousness of the socio-professional status of VET teachers. The digitalisation of work processes, competence-based reforms of VET curricula and the development of work-based learning approaches increasingly require from VET teachers in Lithuania that they develop their academic knowledge, professional know-how and skills as well as key skills and competencies. These factors foster dynamic institutional changes in the provision of academic and professional qualifications and competencies of VET teachers and trainers, such as the introduction of the LTQF/EQF level 6 qualification of VET teachers in the national qualifications standard of education and libraries' sector in 2019, initiatives in developing study programmes providing higher educational degrees in vocational pedagogy as well as qualifications for VET teachers.

Future development of VET teachers' training and qualifications in Lithuania strongly depends on the socio-economic status and societal image of VET. Improving the image of VET in society and increasing the attention of social partners and government on the long-term development of VET as a valuable source of human capital development could become important factors for the essential improvement of VET teachers' training and for the achievement of comprehensive, well-balanced and sustainable institutional model of VET teachers' training and competence development. Increasing awareness of social partners for the long-term benefits of their engagement or investment in VET teachers' training and competence development is another important factor which will lead to the success of VET teacher training and competence development.

References

Baškys, D., Beleckienė, G., Dienys, V., & Vaitkutė, L. (2002). *Information on the situation of VET teachers in Lithuania*. National Observatory in Lithuania Methodological Centre for Vocational Education and Training.

Cedefop. (2016). Apprenticeship review: Lithuania. In *Signposting the apprenticeship path in Lithuania*. Publications Office of the European Union.

Daukilas, S. (1996). Profesijos mokytojų rengimo sistemos raidos bruožai. *Mokytojas (dėstytojas) modernaus profesinio rengimo procese: straipsnių rinkinys, 1*, 143–146.

Daukilas, S., Mičiulienė, R., Kovalčikienė, K., & Kasperiūnienė, J. (2016). *Profesijos pedagogų veiklos turinys. Profesinis tobulėjimas, identitetas, ugdymo turinio metodologija, kokybė*. Aleksandro Stulginskio universitetas.

Dienys, V., & Pusvaškis, R. (1998). Change of vocational training in Lithuania during first step of the educational reform. *Profesinis rengimas: tyrimai ir realijos, 1*, 118–125.

Dienys, V., & Sajienė, L. (1996). Lietuvos profesijos mokytojų kvalifikacija ir jos tobulinimo kryptys. *Mokytojas (dėstytojas) modernaus profesinio rengimo procese: straipsnių rinkinys, 1*, 146–150.

European Training Foundation. (2002). *Vocational education and training and employment services in Lithuania*. Office for Official Publications of the European Communities.

Gedvilienė, G., Didžiulienė, R., Tūtlys, V., & Triponienė, L. (2019). Profesijos mokytojų pedagoginės ir profesinės kompetencijų ugdymo įtaka karjerai. *Holistinis mokymasis, 4*, 11–19.

Kučinskas, V., & Kučinskienė, R. (2000). Strategic planning of teacher training with regard to social competence development. *Vocational Education: Research and Reality, 3*, 46–55.

Laužackas, R. (1996). Mokytojo (dėstytojo) kvalifikacija vystant profesinį rengimą Lietuvoje. *Mokytojas (dėstytojas) modernaus profesinio rengimo procese: straipsnių rinkinys, 1*, 41–48.

Laužackas, R. (1999). *Systemo-theoretical dimensions of vocational education change*. Vytautas Magnus University.

Laužackas, R. (2005). *Profesinio rengimo metodologija*. Vytauto Didžiojo Universiteto Leidykla.

Laužackas, R., & Pukelis, K. (1998). Change of Lithuanian vocational education and training system. *Control of Educational Processes, 17*, 93–96.

Laužackas, R., & Pukelis, K. (2004). Reshaping the focus and structure of vocational teacher education and training strategy in Lithuania—A systematic approach. *European Journal of Vocational Training, 33*, 58–69.

Laužackas, R., Pukelis, K., & Pundzienė, A. (2002). Conception for vocational teacher/lecturer education and training in Lithuania. *Vocational Education: Research and Reality, 4*, 104–109.

Laužackas, R., Danilevičius, E., & Gurskienė, O. (2004). *Profesinio rengimo reforma: parametrai ir rezultatai*. VDU leidykla.

Laužackas, R., Tūtlys, V., & Spūdytė, I. (2009). Evolution of competence concept in Lithuania: From VET reform to development of National Qualifications System. *Journal of European Industrial Training, 33*(8/9), 800–816.

Lietuvos Respublikos Švietimo ir mokslo ministerija. (1999). *Baltoji knyga–profesinis rengimas (iki aukštojo universitetinio lygmens)*. Profesinio Mokymo Reformos Programos Koordinavimo Centras.

Martišauskienė, E., & Gaigalienė, M. (2007). Profesijos mokytojų kompetencijų atitiktis profesijos mokytojo standartui. *Acta Paedagogica Vilnensia, 18*, 122–131.

Norkus, Z. (2014). *Du nepriklausomybės dvidešimtmečiai*. Aukso žuvys.

Professional Standard for Vocational Education. (2002). Professional standard for vocational teacher/lecturer. *Vocational Education: Research and Reality, 4*, 110–128.

Pukelis, K. (1999). Professionalization of initial teacher training of secondary and upper-secondary schools as an important factor of vet reform in Lithuania. *Control of Educational Process, 20*, 141–161.

Pukelis, K. (Ed.). (2003). *Mentoriaus knyga: profesijos mokytojų rengimas*. Vytauto Didžiojo universiteto leidykla.

Pukelis, K., & Lauzackas, R. (2006). Development of a vocational teacher education strategy in Lithuania: Challenges, reality and solutions. In F. Bünning (Ed.), *The transformation of vocational education and training (VET) in the Baltic States—Survey of reforms and developments. Technical and vocational education and training: Issues, concerns and prospects* (Vol. 4). Springer.

Pukelis, K., & Palinauskaitė, A. (2001). Research on Lithuania vocational teachers' formal pedagogical qualification and real pedagogical competences. *Pedagogika, 51*, 51–58.

Pukelis, K., Laužackas, R., & Rogojinaru, A. (1999). The teacher as networker across school boundaries. *Teacher and Trainer Training, 1*, 65–72.

Regulation for Initial Pedagogical Education. (2002). Regulation for initial pedagogical education and training of vocational teacher/lecturer 2002. *Vocational Education: Research and Reality, 4*, 130–134.

Spöttl, G., & Tūtlys, V. (2017). From the analysis of work-processes to designing competence-based occupational standards and vocational curricula. *European Journal of Training and Development, 41*(1), 50–66.

Tūtlys, V., & Aarna, O. (2017). Competence-based approach in the education reforms of Lithuania and Estonia. In M. Mulder (Ed.), *Competence-based vocational and professional education. Bridging the Worlds of Work and Education*. Springer International.

Tūtlys, V., & Kaminskienė, L. (2008). Social partnership in the accreditation of qualifications in the Lithuanian VET system. *European Journal of Vocational Training, 45*(3), 32–49.

Tūtlys, V., & Spūdytė, I. (2011). Implementing a national qualifications framework in Lithuania. *Journal of Education and Work, 24*(3/4), 429–448.

Tūtlys, V., Kaminskienė, L., & Winterton, J. (2016). Policy borrowing and policy learning in initial VET reforms of Lithuania after 1990. In S. Bohlinger, T. K. A. Dang, & M. Klatt (Eds.), *Education policy: Mapping the landscape and scope*. Peter Lang.

Tūtlys, V., Gedvilienė, G., Saniter, A., Klein, I., Tacconi, G., & Perrini, M. (2019). Development of teaching competences of VET teachers and trainers in Germany, Italy and Lithuania. In B. E. Stalder & C. Nägele (Eds.), *Trends in vocational education and training research, Vol. II. Proceedings of the European Conference on Educational Research (ECER)*. Vocational Education and Training Network (VETNET). https://doi.org/10.5281/zenodo.3371603

Winterton, J., Bukantaitė, D., & Tūtlys, V. (2008). Historical development of vocational education and training in Lithuania and its implications for designing and implementation of regional VET partnerships. *Vocational Education: Research and Reality, 16*, 180–190.

Chapter 22
Past, Present, and Future of Vocational Training Teacher System

Lee Jae-Cheol

Abstract The purpose of this study is to respond to the changes in labor demand that have been occurring for about 50 years, beginning in 1967 when Korea's vocational training teacher system was established, as well as to analyze the changing processes and propose future tasks. Based on the legal basis of the vocational training teacher system, the changes in the vocational training and vocational training teacher system, as a response to changes in the labor market for each period have been analyzed, and, based on this, tasks for the future will be discussed.

22.1   Introduction

Korea's vocational training system is considered to have been established in 1967 with the enactment of the "Vocational Training Act" (Labor Administration of the Republic of Korea, 1967), and, since then, the system has reached the present stage through frequent institutional improvements in response to rapidly changing workforce demand as a result of economic development. Table 22.1 outlines the stages of economic growth and the transformations in vocational training over time. Human resources which supplied the policies that met these demands represented the backbone of this rapid economic development, and at the heart of it was vocational training. Beginning with the establishment stage of the vocational training system and continuing to the present, this paper discusses in detail the institutional changes needed to nurture and best utilize vocational training teachers, who represent the core human capital for vocational training, in order to understand the efforts needed to adapt to future industrial changes.

L. Jae-Cheol (✉)
Vocational Training Teacher Training Plan Team, Human Resources Development Institute, Koreatech University, Cheonan, South Korea
e-mail: pagepub@koreatech.ac.kr

Table 22.1 Economic development and transformation of vocational training

Classification	1960s	1970s	1980s	1990s	2000s
Stage of Korea's Economic Development Plans	First, second five-year economic development plan	Third, fourth five-year economic development plan(heavy and chemical industrialization high growth period)	Fifth, sixth five-year economic development plan(autonomy and open economy stabilization period)	Medium growth, low unemployment, and the 1997 economic crisis	Enters global economy, domestic growth rate decline
Economic indicator (per capita income, USD)	80	254 → 1676	1645 → 5418	6417 → 9438	10,841 → 20,000
Introduction of employment insurance	×	×	×	○	○
Law establishment and amendment	Vocational training act (established in 1967)	Act on Special Measures for Vocational Training (1974) Framework Act on Vocational Training (1976) Vocational Training Promotion Fund Act (1976)	Framework Act on Vocational Training – fourth Amendment (1987)	Employment Insurance Act (1995) Vocational Training Promotion Act (1999)	Act on the Development of Vocational Skills of Workers (2004)

Workforce demand changes and response strategy	Shift from agriculturally based to light industry-based nation, demand for simple skilled workers increased → focus on building skilled workforce through school education, establishment of vocational training system, introduction of vocational training subsidies	Shift to heavy chemical industrial economy, demand increased for skilled workers, severe shortage of skilled workforce → unlimited supply of non-skilled workforce as a result of mass movement of workforce, vocational high schools established, expansion of public vocational training, compulsory training system enforced, introduced system of allotted charges for training	Decrease in demand for vocational training within workplace → strengthened public vocational training (Korea vocational training management corporation established 1982) Advanced vocational training courses introduced (master craftsmen course)	Decreased demand for new workers, increased demand for improvement of skills for existing workers, incentivized employer's autonomous vocational training, training as a social safety net for the unemployed	Labor market flexibility, lifelong vocational skills development system established, improve training for vulnerable groups

22.2   Status of TVET Teacher Training

In order to respond to rapid changes in industrial society, the importance of basic training, continuing upgrade training, and retraining the skilled workforce is emerging (Yoo Kil Sang, 2010). A certain level of qualification requirements for vocational skills development teachers guarantees the expertise of teachers and serves as an institutional device for enhancing their social credibility. It also induces and promotes further development of expertise for teachers as it provides corresponding treatments for the particular expertise level. In addition, the qualification system for vocational skills development teachers works as a mechanism to protect the rights of the trainees, ensures the identity of teachers, and works as a social and economic status improvement vehicle for teachers (Young-Hoon, 1996).

Nurturing and skills development for vocational skills development teachers are defined as follows in the "Act on the Development of Vocational Skills of Workers" (Ministry of Employment and Labor of the Republic of Korea, 2019) (Table 22.2).

Training courses for vocational skills development teachers are classified as basic training, upgrade training, and teacher training (Ministry of Employment and Labor of the Republic of Korea, 2019). Basic training course refers here to the "training for nurturing teachers provided by the State, local government, public organizations, or corporations, organizations announced by the Minister of Employment and Labor, teacher training course refers to "training for nurturing teachers in the short-term, upgrading training course refers to training course for incumbent teachers to improve occupational skills and to obtain higher-level position (Ministry of Employment and Labor of the Republic of Korea, 2020).

Article 8 of Vocational Skills Development Teacher Qualification Standards (Ministry of Employment and Labor of the Republic of Korea, 2020) specifies training curriculum organization for vocational skills development teachers. The teacher training course should be conducted for longer than 4 weeks, for 140 hours or more, and should be divided into liberal arts and teaching. Liberal arts course contents include the work philosophy of vocational skills development teachers and related laws. This takes up less than 20% of the total teacher training course hours.

The teacher training course shall be designed to make up 80% or more of the total course hours and will include training demand survey and curriculum development, training teacher class operation, employee's lifelong career path design and career guidance, and NCS-based training course preparation.

Grade 2 of the upgrade training course is for those who had 3 or more years of education and training experience after passing the Grade 3 vocational skills development teacher training. This training period is for 2–3 weeks and comprises 70–105 h. It is divided into liberal arts, teaching, and majors. Liberal arts can be organized to include vocational training trends and labor-management relations and can make up 20% of the total education hours. Teaching can include general skills, teaching methods, professional competency, administration, and management of vocational skills development training within 40% of total education hours. Major

Table 22.2 Act on the Development of Vocational Skills of Workers

Act on the development of vocational skills of workers, article 36 (nurturing vocational skills development teachers)
1.   The state, local governments, public organizations, or corporations, or organizations announced by the minister of employment and labor may establish and operate courses to train vocational skills development teachers. In such cases, if anyone, other than the state and local governments, intends to establish and operate such training courses, he/she shall obtain approval therefore from the minister of employment and labor.
2.   Anyone who intends to obtain approval under paragraph (1) shall meet each of the following requirements:
1.   He/she shall have adequate human resources, facilities, and equipment to properly operate courses for training vocational skills development teachers;
2.   Any person who intends to obtain the relevant approval shall possess educational training experience sufficient to properly operate training courses;
3.   He/she shall not fall under grounds for disqualification pursuant to each subparagraph of article 29;
4.   He/she shall meet other requirements prescribed by presidential decree as necessary to nurture vocational skills development teachers.
3.   Where anyone who has obtained approval under paragraph (1) falls under any of the following subparagraphs, the minister of employment and labor may issue a corrective order or revoke approval therefore:
1.   Where he/she has obtained approval by fraud or other improper means;
2.   Where he/she falls under any subparagraph of article 29.
1.   ④ necessary matters concerning kinds of training courses and procedures for approval provided for in paragraph (1); detailed standards for approval requirements under paragraph (2) 1 and 2; detailed standards for corrective orders and the revocation of approval, issued under paragraph (3); and other relevant matters shall be determined by ordinance of the Ministry of Employment and Labor.
"Act on the development of vocational skills of workers, article 36" (nurturing vocational skills development teachers)
1.   The state, local governments, public organizations, or corporations, or organizations announced by the minister of employment and labor may establish and operate courses to train vocational skills development teachers. In such cases, if anyone, other than the state and local governments, intends to establish and operate such training courses, he/she shall obtain approval therefore from the minister of employment and labor.
2.   Anyone who intends to obtain approval under paragraph (1) shall meet each of the following requirements:
1.   He/she shall have adequate human resources, facilities, and equipment to properly operate courses for training vocational skills development teachers;
2.   Any person who intends to obtain the relevant approval shall possess educational training experience sufficient to properly operate training courses;
3.   He/she shall not fall under grounds for disqualification pursuant to each subparagraph of article 29;
4.   He/she shall meet other requirements prescribed by presidential decree as necessary to nurture vocational skills development teachers.
3.   Where anyone who has obtained approval under paragraph (1) falls under any of the following subparagraphs, the minister of employment and labor may issue a corrective order or revoke approval therefore:
1.   Where he/she has obtained approval by fraud or other improper means;

Table 22.2 (continued)

2. Where he/she falls under any subparagraph of article 29.
4. Necessary matters concerning the kinds of training courses and procedures for approval provided for in paragraph (1); detailed standards for approval requirements under paragraph (2) 1 and 2; detailed standards for corrective orders and the revocation of approval, issued under paragraph (3); and other relevant matters shall be determined by ordinance of the Ministry of Employment and Labor.
"Act on the development of vocational skills of workers, article 37" (capability development for vocational skills development teachers)
1. The minister of employment and labor may implement vocational skills development projects for developing capabilities of vocational skills development teachers.
2. The minister of employment and labor may subsidize or loan expenses incurred by anyone implementing vocational skills development projects for developing capabilities of vocational skills development teachers.
3. Details of projects, methods of implementation, requirements, details, procedures and levels of subsidies under paragraphs (1) and (2) shall be prescribed by presidential decree.

subjects can contain 40% or more of occupational skills (Ministry of Employment and Labor of the Republic of Korea, 2020).

Grade 1 of the upgrade training course is for those with 3 or more years of education and training experience after the successful completion of Grade 2 of vocational skills development teacher, and the training period lasts 2 to 3 weeks and consists of 70–105 teaching hours. It is divided into liberal arts, teaching, and majors. Liberal arts can be organized so that it includes vocational training trends and labor-management relations and can make up 20% of the total education hours. Teaching can include general skills, teaching methods, professional competency, administration, and management of vocational skills development training and can make up 40% of total education hours and for those majoring in the subject occupational competency can consist of 40% or more of total teaching hours (Ministry of Employment and Labor of the Republic of Korea, 2020).

Based on this, as of November 2019, KOREATECH's Skills Development Education Center, which is in charge of training vocational skills development teachers, plans to divide the vocational skills development teacher qualifications training into teacher training courses and further education training courses (Grade 2, Grade 1). Refresher training for retraining purposes will be classified into teaching competency and major competency training and will be operated according to the needs of the vocational training teachers.

22.3 Historical Overview: Vocational Training Policy and Teacher Guidance Policy

In order develop a skilled workforce that will support economic development, the Vocational Training Act was established in 1967, consolidating the vocational training which had been previously implemented under various laws including the Labor Standards Act and the Industrial Education Promotion Act. From 1971 to 1980, the Korean government established 25 public vocational training institutions in order to expand the training facilities needed for economic development.

Alongside this securing of training facilities, in order for effective vocational training to be possible, securing competent vocational training teachers was also considered important; therefore the Central Vocational Training Institute was established in June 1968, to nurture vocational training teachers (Chung, 2008). In March of 1970, the Central Vocational Training Institute launched a 2-year vocational training teacher guidance program, and from early 1972 it started to generate around 180 training teachers annually.

The early vocational training teacher programs were provided through three course types: regular training, short-term training, and license training. The regular training course was intended for technical high school, or higher-level, graduates or to complete 2 years of training to obtain a Grade 3 vocational training teacher license as well as Grade 2 technician certificate of qualification. Short-term training for vocational training teachers consisted of an 8-week training course for those who graduated from technical high schools with more than 4 years of practical experience. License training consisted of a 152-hour training course toward a Grade 2 teacher license and a Grade 2 technician qualification, intended for those with specialized knowledge and skills in the relevant field and who have already passed the vocational training teacher examination given by the Labor Administration. In 1973, the Vocational Training Act (Labor Administration of the Republic of Korea, 1973) was amended to classify vocational training teachers into Type 1 and Type 2 and also limited the training courses that can be taught according to the classification types.

On December 26, 1974, the Act on Special Measures for Vocational Training was enacted, and the compulsory vocational training system within the workplace was introduced starting in 1975 (Chung, 2008). However, although the compulsory vocational training system in the workplace enforced the establishment of a minimum certain size institution needed to implement vocational training, its effectiveness was not guaranteed due to a lack of regulation and penalties for noncompliance. Accordingly, in order to more strongly enforce vocational training in the workplace and to realign the legal system to this enforcement, on December 31, 1976, the government integrated the "Vocational Training Act" and the Act on Special Measures for Vocational Training (Labor Administration of the Republic of Korea, 1974) into the "Framework Act on Vocational Training" (Labor Administration of the Republic of Korea, 1976) so that employers above a certain number of

workers were obliged to either select from training a certain number of people for the workforce or paying penalty fees for vocational training.

On March 18, 1982, the Korea Technical Testing Corporation, the Central Vocational Training Institute, 24 public training corporations, the Changwon Polytechnic College, and the Vocational Training Research Center were consolidated into the Korea Vocational Training Management Corporation (currently HRD Korea). This was an attempt to maximize the synergy of related functions by having a single organization manage vocational training implementation, national technical qualifications exams, vocational training teacher development, and the research functions of vocational training.

From 1967 to the mid-1980s within the labor-intensive industrial structures with a majority of workforce being less educated, vocational training mostly targeted middle school graduates who were not planning to advance to higher schooling, with a focus on developing single-skill talents within programs which ran from 3 to 12 months. Accordingly, vocational training was mostly focused on providing basic training for making non-skilled workers into skilled technicians. During this period, as many public and private vocational training institutes were established, the demand for vocational training teachers also increased sharply. As a result, vocational training teachers who were trained through the Central Vocational Training Institute were easily able to find employment in vocational training institutions.

Up until the mid-1980s, among the 25 training centers under Korea Vocational Training Management Corporation, the Central Vocational Training Institute, mostly targeting high school graduates, trained vocational training teachers as well as a high-skilled workforce. The Korea-Germany Busan Vocational Training Institute, targeting middle school graduates, trained Grade 1 level technicians through 3-year training programs. Other 23 training centers, targeting middle school graduates, guided Grade 2 level technicians through 1-year training programs.

However, as industrial structure advanced along with economic development, the types of skilled workforce in demand for industries shifted from simple skilled to highly skilled multifunctional technicians. Additionally, with the advancements in educational attainment, the targets for vocational trainee had to shift from middle school graduates to high school graduates. As a result, starting in the mid-1980s, public training institutes, which had been targeting middle school graduates with 1-year training courses, were restructured. They were gradually reorganized to train high school graduates in 2-year programs and middle school graduates in 3-year programs transforming the vocational educational system into a high-skilled technical workforce training system.

Additionally, in order to train master craftsmen, the most advanced of skilled workers, the Polytechnic College Act (Labor Administration of the Republic of Korea, 1977) was established in 1977, and the Changwon Vocational Training Institute was reorganized as the Changwon Polytechnic College. In November 1991, the Central Vocational Training Institute was converted into the Incheon Polytechnic College, and Polytechnic Colleges were established in metropolitan cities and provinces. From 1994, training institutes which already had excellent facilities and equipment were reorganized into Polytechnic Colleges under the HRD

Korea, in order to expand the training and support of multifunctional technicians and master craftsmen, and other training institutes of the HRD Korea were also reorganized into specialized vocational training institutes which then operated 1-year production-base technology (such as casting, welding, and plating) technician (Grade 2 level) training courses (Suh Sang Sun, 2002).

In December 1993, the enactment of the Employment Insurance Act (Ministry of Labor of the Republic of Korea, 1993a, 1993b) was announced and entered into effect beginning July 1, 1995. Korea's employment insurance system not only functioned as a traditional unemployment insurance program providing unemployment benefits for the unemployed, but it also functioned as an employment security program promoting reemployment through active job placement support and employment structural improvements. In addition, it also served as a vocational skills development program that systematically developed and improved the job performance skills of workers throughout their working life. Thus, the employment insurance system was designed to be a social insurance system that interconnects active labor market policies under a single system and, at the same time, as a key policy measure for the labor market. In particular, the inclusion of vocational skills development programs in the employment insurance system has led to a fundamental change in Korea's vocational training system.

After the employment insurance system was introduced in July 1995, under the Employment Insurance Act, the vocational skills development program was implemented in establishments with under 1000 workers, while establishments with 1000 or more workers continued to be responsible for vocational training as they were before. However, from January 1, 1999, when the Framework Act on Vocational Training (Ministry of Labor of the Republic of Korea, 1997), which previously served as a legal basis for compulsory vocational training, was repealed and transformed into the Vocational Training Promotion Act (Ministry of Labor of the Republic of Korea, 1999), the compulsory vocational training system within businesses was completely abolished. Training targets, which were mostly focused on teenagers as part of their basic education, had also expanded to include all workers, including those currently employed as well as the unemployed, into lifelong vocational skills development courses.

On December 24, 1997, the Polytechnic College Act (Ministry of Labor of the Republic of Korea, 1997) was amended, which converted the Polytechnic College into an educational institution and subject to the education-related acts. The Polytechnic College was defined as a junior college under the Education Act that operates multifunctional technician course degree programs along with vocational training programs under the Framework Act on Vocational Training addendum and to provide associate degrees for multifunctional technician program graduates. By 2005, a total of 24 Polytechnic Colleges were established or existing vocational schools were reorganized as Polytechnic Colleges. In March 2006, the Polytechnic College and vocational schools that were under the HRD Korea were merged and reorganized into Korea Polytechnics.

In late 1997, after Korea's foreign exchange crisis and as a result of the compressed restructuring suggested by the IMF, the number of unemployed people

increased sharply, and training of the unemployed was significantly expanded. The number of unemployed vocational trainees, around 40,000 in 1997, increased to 330,000 in 1998 (Chung, 2008). As a result, the number of private vocational training institutes as principal training providers for the unemployed increased exponentially. The role of private training institutions, excluding employers or in-service training facilities, shifted from providing previous basic training, or guidance, to focusing on the training of unemployed workers. These expansions of unemployed training have dramatically increased the demand for vocational training teachers in the private vocational training market. Since then, however, private training institutions have settled for free national training, where the government pays training costs to the training institutions, creating a vulnerability and a loss of autonomous course development capacities for the private training market when survival depends on government policies.

On December 31, 2004, the Vocational Training Promotion Act changed its name to the Act on the Development of Occupational Abilities of Workers (currently the Act on the Development of Vocational Skills of Workers, Ministry of Employment and Labor of the Republic of Korea, 2004a, 2004b) and was enforced from July 1, 2005 (Young-Hoon, 1996). As the social demand and needs for the systematic development of workers' vocational skills increased, social and policy interests in workers' vocational skills have also increased. The enactment of the Act on the Development of Vocational Skills of Workers (Ministry of Employment and Labor of the Republic of Korea, 2004a, 2004b) was based on the recognition that because of globalization and informatization, supporting knowledge workers is important to corporate competitiveness.

As mentioned previously, the drive for the skills development of workers has changed from government-led to being driven by private market expansions. In other words, it is the process of how vocational training market has formed. The Act on the Development of Vocational Skills of Workers (Ministry of Employment and Labor of the Republic of Korea, 2004a, 2004bdefines the participation and cooperation of labor and management as the basic principle of vocational training, and in order to enhance support for training vulnerable groups including SMEs and non-regular workers (daily, short-term, dispatched, workers with less than 1-year contracts), it allowed preferential support for the autonomous training of SMEs and non-regular workers, as well as employer-provided SME vocational skills development training.

Since the introduction of the pilot program for vocational skills development credit system in September 2008, the account system has been continuously expanding. The vocational skills development credit system has shifted from the previous method of training institution support to a system that directly supports trainees by issuing credits. This expands self-directed training options for trainees and relaxes entry barriers to and regulations in the training market as it increases training quality through diversity and increased competitiveness of training courses. Also, as a result of a stronger linkage to employment services, it enhances training performance and efficiency in resource allocation and will also improve global competitiveness through the revitalization of the training market. While unemployed training was previously directly paid by the government to the training institutions,

the new vocational skills development account (credit system) provided unemployed people up to KRW two million per person (Ministry of Employment and Labor of the Republic of Korea, 2008) as a credit card system. What is new is that the unemployed will be given an option to choose a training institution and a course within the subsidy limit themselves. The vocational skills development account system strengthens the counseling function at the employment center prior to this training. Training costs are determined not by government standards but by the market price, and training expenses are to be partially paid by the individuals.

In 2012, the Second Qualifications Management and Operations Basic Plan (Ministry of Education, Science and Technology of the Republic of Korea, 2004) was established based on the Framework Act on Qualifications, which laid the foundation for connecting education and training, qualifications, and occupations through National Competency Standards (NCS) (Ministry of Employment and Labor, 2016). Accordingly, vocational training teachers were asked to play the role of organizing, operating, and evaluating vocational skills development training using NCS, and, beginning in 2014, with the establishment of NCS, a rapid spread in education was carried out through the Korea University of Technology and Education's (KOREATECH's) Skills Development Education Center, the retraining institution for vocational training teachers. In April 2015, Korea Skills Quality Authority was established to comprehensively perform training institution authorization, collective training evaluation, distance learning evaluation, training performance evaluation, and fraudulent training management functions for quality control of vocational skills development training.

22.4 Requirements for TVET Teachers: Changes in the Teacher Qualification System

In the field of vocational education and training, qualifications are clearly distinguished from educational attainment. Qualification represents having the minimum legal standards required to perform a particular task related to a profession. Therefore, the qualification of vocational training teachers represents a legal basic standard that a teacher should have as a professional performing the task of vocational training.

Qualification requirements for vocational training teachers are laid out in Article 33 of the Act on the Development of Vocational Skills of Workers (National Law Information Center, 2019) (Table 22.3). The key qualifications for vocational training teachers presented in the Act on the Development of Vocational Skills of Workers are defined as those with expertise in the related field who hold a certificate of qualification as a vocational training teacher after completing the basic training course. Detailed legal provisions are as follows.

Vocational training that had been dispersively implemented by law, including the Labor Standards Act (Labor Administration of the Republic of Korea, 1961) and the

Table 22.3 Development of vocational skills of workers

Act governing the development of vocational skills of workers, article 33 (vocational skills development teachers)
1. Vocational skills development teachers and other persons defined by presidential decree as having expert knowledge in the relevant field may provide vocational skills development training for workers.
2. Anyone who intends to become a vocational skills development teacher shall comply with the standards prescribed by presidential decree, such as completion of training courses for educating vocational skills development teachers under article 36, and will obtain a certificate of qualification as a vocational skills development teacher from the minister of employment and labor.
3. Anyone who intends to obtain a certificate of qualifications as a vocational skills development teacher under paragraph (2) shall pay a fee as prescribed by ordinance of the Ministry of Employment and Labor.
4. The types, grades, and standards for qualifications of vocational skills development teachers, and other necessary matters concerning vocational skills development teachers shall be prescribed by presidential decree.

Industrial Education Promotion Act (Ministry of Education of the Republic of Korea, 1963), was consolidated under the Vocational Training Act (Labor Administration of the Republic of Korea, 1967). Since then, after nine amendments of the vocational training teacher-related laws, in 1999, the Vocational Training Promotion Act was enacted and has streamlined the qualifications of vocational training teachers up until today. Table 22.4 shows the transition of vocational training teacher qualification standards since the enactment of Vocational Training Act (Labor Administration of the Republic of Korea, 1967) up until today.

In July 1995, following the introduction of the employment insurance system, the vocational skills development program under the Employment Insurance Act began in earnest. The qualification criteria for vocational training teachers went through a complicated transformation process until they were consolidated into the Vocational Training Promotion Act in 1999 (Ministry of Labor of the Republic of Korea, 1999) and got to where they are today. The reason why the vocational training teacher qualification standards have undergone a complicated process of transformation was due to the classification problems in setting up the qualification standards in theory vs. practice, collective vs. on-site training, and new entries into the job market vs. unemployed workers vs. ongoing training of existing employees. The more fundamental problem was whether the vocational training teachers generated through the training courses actually have the practical capacity to carry out practical, on-site training, or training of current employees.

If a person who has completed a general training course or a vocational training teacher qualification holder was considered competent enough to be in charge of on-site training or the training of employees immediately after training completion, there would have been no need to classify vocational training teacher qualification standards by theory vs. practice and collective vs. on-site. However, in reality, vocational training teachers who are educated through typical training courses, in general, were not able to directly administer on-site or employee training as they

Table 22.4 Transition of vocational training teacher qualification standards

Enforcement date	Classification of teachers		Grade	Features
05-10-1967	Vocational training teacher		Single grade	– Vocational training act enacted (ordinance of Ministry of Health and Social Affairs) – Grade 1 vocational technician qualification holder – Those who passed vocational training teacher exam
12-14-1973	Type 1 vocational training teacher		Grade 4	– Grade 2 or higher-level technician training in charge – Educational attainment and experience-oriented
	Type 2 vocational training teacher		Grade 3	– Grade 3 or under technician training in charge – Grade 2 technician acquirement oriented (no experience required)
04-21-1977	Teacher training teacher		Grade 4	– Framework act on vocational training enforced – Qualification standards for teachers who train vocational training teachers
	Technician training teacher		Grade 3	– Centered around grade 1 technicians or grade 2 engineers oriented
05-04-1982	Technician training course	Comprehensive teacher	Grade 3	– In charge of both theory and practice with grade 1 engineer and grade 1 technician qualification
		Theoretical teacher	Grade 3	– In charge of theory with grade 1 engineer qualification
		Practical teacher	Grade 3	– Experienced practitioner with grade 1 technician qualification
		General teacher	Grade 3	– University graduate with education and training experience
	Office services training course		Grade 3	– Polytechnic college graduate, experienced practitioner
	Supervisor/manager training course		Single grade	– University graduate with education/training and practical experience
	Teacher trainer course		Single grade	– Follows the university teacher qualification standards by the education act
01-01-1987	Technician training course	Type 1 specialist teacher	Grade 3	– Grade 1 technician and grade 1 engineer qualification holder
		Type 2 specialist teacher	Grade 3	– Experienced practitioner with grade 1 technician qualification
		General teacher	Grade 3	– University graduate with education and training experience

Table 22.4 (continued)

Enforcement date	Classification of teachers		Grade	Features
	Office services training course		Grade 3	– Polytechnic college graduate, experienced practitioner
	Supervisor/manager training course		Single grade	– University graduate with education/training and practical experience
	Teacher trainer course		Single grade	– Follows the university teacher qualification standards of the education act
06-27-1991	Collective training teacher	Specialist teacher	Grade 3	– Classified into collective training teachers and on-site training teachers – Grade 1 technician and grade 1 engineer qualification with education/training or practical experience – University graduate, experienced in education and training or experienced practitioner
		General teacher	Grade 3	
	On-site training teacher		Single grade	– Grade 2 technician or higher qualification holder with practical experience
06-04-1994	Collective training teacher	Specialist teacher	Grade 3	– Grade 1 technician and grade 1 engineer qualification with education/training or practical experience – University graduate, education and training experienced or experienced practitioner
		General teacher	Grade 3	
	On-site training teacher		Single grade	– Grade 2 technician or higher qualification holder with practical experience
	Specialist lecturer		None	– Introduced specialist instructor system for vocational training that is difficult to conduct by existing vocational training teachers such as from the field of new technology and new occupations – Teaching or researching at junior college or higher, or from research institute – Grade 1 professional engineer/ master craftsmen/engineer qualification holder – Experienced practitioner from a relevant field at a business with over a certain period of work experience
01-01-1999	Vocational skills development teacher		Grade 3	– Specialist teacher (grade 1, 2, 3), general teacher (grade 1, 2, 3) consolidated into a vocational skills development teacher – Training teacher license system

(continued)

Table 22.4 (continued)

Enforcement date	Classification of teachers	Grade	Features
			reorganized into qualification system – Integrated collective training teacher and on-site training teacher – Changed on-site training teachers to grade 3 vocational skills development teachers – Defined in vocational training promotion act
12-01-2004	Vocational skills development teacher	Grade 3	– Classified into standard training and other vocational skills development training, enhanced qualification requirements of training teachers only for standard training
07-01-2005	Vocational skills development teacher	Grade 3	– Repealed classification of standard training and nonstandard training – Support training teacher development programs for employers or startups – Vocational skills development teacher qualifications cancellation and suspension criteria
03-27-2017	Vocational skills development teacher	Grade 3	– Reduced the required experience for qualifications (up to 7 years or more to 5 years)

Source: Reorganized Vocational Training Teacher Fact-finding Survey and Improvement Plan (Korea University of Technology and Education, 2010) and Act on the Development of Vocational Skills of Workers. These sources have to be mentioned in the literature!

were not equipped with the adequate on-site practical skills necessary for these tasks. Therefore, up until this point, experienced practitioners had been teaching as on-site training teachers after going through minimum teacher training.

Therefore, in accordance with the Vocational Training Promotion Act, the title of vocational training teachers changed to vocational training instructors (currently vocational skills development teacher), and collective training teachers and on-site training teachers were combined into the category of vocational training instructors. In particular, vocational training was classified into standard training and other vocational training, and among these, only the standard training was strictly applied to qualifications for training, while other training was allowed to be taught by a person with expertise in a concerned field. Since then, as the classification between standard training and other vocational training disappeared, both vocational skills development teacher qualification holder and a person with expertise in a concerned field were all allowed to teach in vocational skills development training.

Under the current law, vocational skills development teachers are classified into vocational skills development teachers and "those who have expert knowledge in the relevant field" (Oh Young-Hoon, In-Jung, & Dong-Yeol, 2000). Training teacher qualification types consist of 154 occupational types in 24 fields and, as outlined previously, are classified into 3 grades per type.

The qualification requirements for vocational skills development teachers include either an engineering or technician qualification along with teaching skills and experience in education and training or experience in the field. In terms of teaching skills, teachers must complete the teacher training course designated by the Ministry of Employment and Labor, and for their field of services, whether administrative or liberal arts, they should be accredited with a middle school teacher qualification or higher, which must be issued by the Ministry of Education.

Those who have expert knowledge in the relevant field are defined to basically allow anyone with at least 1 year of experience to become a vocational training teacher. Qualification includes those who, according to the Higher Education Act, graduated from junior college or university with experience in education and training in a relevant field, those who have research experience in related fields at national or private research institutions, as well as related qualifications holders, according to the National Technical Qualifications Act and other acts, or in addition those with 1 or more year of related field experience.

22.5   Relevant Model of TVET Teacher Training in the Country

With the advancement of an industrially structured economy and with more people who are more highly educated, the Central Vocational Training Institute, which had been providing 2-year vocational training teacher development program targeting technical high school graduates, was decided to be no longer adequate for the training of quality teachers at the level of training they were providing. As a result, the Central Vocational Training Institute discontinued their training teacher development program in 1982 and, beginning in 1983, reorganized it into a Grade 1 technician training institute, while the Ministry of Labor planned to establish a 4-year university which sought to train vocational training teachers from 1983 onward, and it finally launched KOREATECH in March 1992 (Suh Sang Sun, 2002). In September 1998, the Skills Development Education Center was established in KOREATECH to provide short-term vocational training teacher license programs and to further train and retrain incumbent teachers in a dedicated fashion.

In June 1991, the foundations for the implementation of an on-site training system were prepared, and the vocational training teacher qualification system classified collective training teachers and on-site training teachers. The qualifications for collective training teachers were reduced to Grade 1 technician or Grade 1 engineer

with vocational education and training or experience in the field, or a university graduate with education and training or field experience. On-site training teacher qualifications were allowed to Grade 2 or higher technicians with experience in the field.

In December 1993, Enforcement Decree of the Framework Act on Vocational Training (Ministry of Labor of the Republic of Korea, 1993b) was amended to include professional engineers, Grade 2 engineers, and undergraduate or graduate degree holders in related fields in the qualification of collective training teachers. On June 4, 1994, a specialist lecturer system for training in new technology/occupational fields and other training that was difficult for vocational training teacher to teach, specialist lecturer so that teachers from junior colleges or higher or external experts with a certain level of practical experience in the relevant job field can teach as lecturers.

In January 1999, after the enactment of the Vocational Training Promotion Act, collective training teachers, when on-site training teachers were consolidated into vocational training teachers, and the previous vocational training teacher license system was reorganized into the qualification system. In December 2004, vocational training was classified into standard training and nonstandard training, and the qualification requirements for vocational training teachers were strengthened only for standard training. Beginning in July 2005, with the amendment of the Vocational Training Promotion Act into the Act on the Development of Vocational Skills of Workers (Ministry of Employment and Labor of the Republic of Korea, 2004a, 2004b), standard training and nonstandard training classification were abolished, enabling support for the skills development of vocational skills development teachers.

In September 2008, after the Vocational Competency Development Credit System (Ministry of Employment and Labor of the Republic of Korea, 2008) was introduced, programs were no longer required to keep at least one vocational training teacher license holder per program which had only served for quota allocation purposes for the training of unemployed workers. Since then, license holders, along with experts in the related field, were allowed to teach in vocational skills development training programs on an equal basis. However, in order to establish and operate a vocational training facility, a minimum requirement to hire one or more vocational skills development teacher qualification holders in the related fields is maintained in order to ensure quality.

In September 2017, in order to manage information about vocational training teachers who teach at private vocational training institutes for vocational skills development training, the NCS confirmed teacher system was introduced, and only those teachers approved as NCS confirmed teachers were allowed to participate in vocational skills development training program. The goal here is to manage the quality of vocational skills development training by integrating the scattered information on vocational training teachers and experts in the related fields with less stringent qualifications for vocational training teachers.

22.6 Further Developments

In vocational training, vocational training teachers play a significant role. At vocational training institutes, vocational training teachers generally perform the role of curriculum designers, administrators, student managers and counselor, graduate managers and counselors, employment managers, publicist, and facilities (equipment) manager (Gwan-Sik, Woo-Cheol, & Gwang-Min, 2017). When trainees select a training course, the expertise level and employment rate after training completion are considered to be important factors, but when selecting a training institution, the quality of the vocational training teachers was considered most important (Hong-Geun & In, 2005). In this regard, retaining good vocational training teachers is important for vocational training institutions.

As such, the quality of vocational training teachers who represent the core human resource for vocational training is the most important factor that determines the quality and performance of vocational training. Thus, in order to improve the quality of vocational training teachers, it is necessary to create an environment in which they can develop and exercise their capacities as much as possible.

The recent emergence of robotization, AI, and platform economies, along with the Fourth Industrial Revolution, is radically changing the skills required in the labor market. Globalization, technological progress, and demographic change have a significant impact on skills and the future of work, and the rapidly aging population is creating the lack of skilled workforce. The labor market is undergoing major changes due to off-shoring, service outsourcing, emergence of new jobs, and automation, and the importance of continuous vocational skills development policies such as in adult education is increasingly being emphasized in order to adapt to such changes in the labor market. Also, the Fourth Industrial Revolution is expected to guarantee new and more productive jobs while also bringing risks such as more extreme labor market polarization, poor quality of jobs, unemployment, and enhanced inequality.

As a result of this trend, vocational training should not only be more accessible to workers but should also generate relevant skills that are useful to workers and contribute to increased competitiveness and productivity for businesses. Therefore, vocational training teachers should take on the role of developing productive tasks and individual qualities necessary for people's lifelong education. Employment and reemployment education, as well as vocational skills development education for current employees, should contribute to strengthening peoples' independence and should provide opportunities for continuous societal participation.

Recently, with the increasing emphasis on industry-led vocational skills development training, such as the dual system of working and learning, the boundaries between different kinds of vocational training teachers have become fuzzy. One of the differences between vocational training teachers and general teachers is that they need to help trainees develop skills that are readily useful. In order to fulfill this function, vocational training teachers must continue to study their field and

constantly consider and learn how to maintain and improve their proficiency in the field as well as learn how to transfer new technologies that have been converged.

22.7 Conclusion

The vocational training teacher system in Korea began with the enactment of the Vocational Training Act in 1967 (Labor Administration of the Republic of Korea, 1967). Since then, there have been a number of institutional changes to cope with as well as changes in labor demands in the industry. In particular, the enactment of the Employment Training Promotion Act (Ministry of Labor of the Republic of Korea, 1999) in 1999 has brought many changes to the system of vocational training teachers. For instance, the "licensing system," which allows only authorized personnel to act as vocational trainers, was reduced to the "qualification system" that allows professionals in certain fields to act as vocational trainers. This means that Korea's vocational training has shifted from being nationally led to industry-driven.

The role of vocational training teachers is expected to be strengthened as vocational training is considered to be a solution to risk factors such as deepening labor market polarization, job quality deterioration, unemployment, and inequality, which are expected due to the Fourth Industrial Revolution. The quality of vocational training teachers, the core human resource of vocational training, is the most important factor in determining the quality and performance of vocational training. The government should continue its efforts to establish their identity and establish institutional mechanisms for continuing capacity development.

References

Chung, T.-S. (2008). *Transformation of vocational competency development system*. Se-Jong.

Gwan-Sik, Y., Woo-Cheol, K., & Gwang-Min, B. (2017). *Vocational training teacher training performance analysis and management plan research*. Cheon-An.

Hong-Geun, C., & In, Y. Y. (2005). *Structure and characteristics of vocational training market*. Se-Jong.

Labor administration of the Republic of Korea. (1961). *Labor Standards Act.*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=4964&lsId=001769&chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=19611204&vSct=%EA%B7%BC%EB%A1%9C%EA%B8%B0%EC%A4%80%EB%B2%95&ancYnChk=#0000.

Labor Administration of the Republic of Korea. (1967). *Vocational Training Act*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=2108&lsId=000119&chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=19670116&vSct=%EC%A7%81%EC%97%85%ED%9B%88%EB%A0%A8%EB%B2%95&ancYnChk=#0000.

Labor Administration of the Republic of Korea. (1973). *Vocational Training Act of amendment.*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=55804&lsId=000119&chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=19730313&vSct=%EC%A7%81%EC%97%85%ED%9B%88%EB%A0%A8%EB%B2%95&ancYnChk=#0000.

Labor Administration of the Republic of Korea. (1974). *Act on Special Measures for Vocational Training.*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=2106&lsId=000118&chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=19750101&vSct=%EC%A7%81%EC%97%85%ED%9B%88%EB%A0%A8%EC%97%90%EA%B4%80%ED%95%9C%ED%8A%B9%EB%B3%84%EC%A1%B0%EC%B9%98%EB%B2%95&ancYnChk=#0000.

Labor administration of the Republic of Korea. (1976). *Framework Act on Vocational Training*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=4801&lsId=001762&chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=19770101&vSct=%EC%A7%81%EC%97%85%ED%9B%88%EB%A0%A8%EA%B8%B0%EB%B3%B8%EB%B2%95&ancYnChk=#0000.

Labor administration of the Republic of Korea. (1977). *Polytechnic College Act*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=55657&lsId=000147&chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=19770723&vSct=%EA%B8%B0%EB%8A%A5%EB%8C%80%ED%95%99%EB%B2%95&ancYnChk=#0000.

Ministry of Education of the Republic of Korea. (1963). *Industrial Education Promotion Act.*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=3044&lsId=000865&chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=19630919&vSct=%EC%82%B0%EC%97%85%EA%B5%90%EC%9C%A1%EC%A7%84%ED%9D%A5%EB%B2%95&ancYnChk=#0000.

Ministry of Education, Science and Technology of the Republic of Korea. (2004). *Second qualifications management and operations basic plan*. Science and Technology of the Republic of Korea.

Ministry of Employment and Labor of the Republic of Korea. (2004a). *Act on the Development of Vocational Skills of Workers*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=66128&lsId=000117&chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=20050701&vSct=%EA%B7%BC%EB%A1%9C%EC%9E%90%EC%A7%81%EC%97%85%EB%8A%A5%EB%A0%A5%20%EA%B0%9C%EB%B0%9C%EB%B2%95&ancYnChk=#0000.

Ministry of Employment and Labor. (2016). *Notification of National Competency Standards*. Retrieved from https://www.law.go.kr/admRulLsInfoP.do?admRulSeq=2100000054552&vSct=%EA%B5%AD%EA%B0%80%EC%A7%81%EB%AC%B4%EB%8A%A5%EB%A0%A5%ED%91%9C%EC%A4%80.

Ministry of Employment and Labor of the Republic of Korea. (2004b). *Notification of National Competency Standards.*. Retrieved from https://www.law.go.kr/admRulLsInfoP.do?admRulSeq=2100000054552&vSct=%EA%B5%AD%EA%B0%80%EC%A7%81%EB%AC%B4%EB%8A%A5%EB%A0%A5%ED%91%9C%EC%A4%80.

Ministry of Employment and Labor of the Republic of Korea. (2008). *Regulations for pilot program for vocational skills development credit system*. Retrieved from https://www.law.go.kr/admRulLsInfoP.do?chrClsCd=010202&cqadmRulSeq=2409

Ministry of Employment and Labor of the Republic of Korea. (2019). *Act on the Development of Vocational Skills of Workers*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=208551&lsId=000117&chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=20190430&vSct=%EA%B7%BC%EB%A1%9C%EC%9E%90%EC%A7%81%EC%97%85%EB%8A%A5%EB%A0%A5&ancYnChk=#0000.

Ministry of Employment and Labor of the Republic of Korea. (2020). *Vocational Skills Development Teacher Qualification Standards.*. Retrieved from https://www.law.go.kr/admRulSc.do?menuId=5&subMenuId=43&tabMenuId=193&query=%EC%A7%81%EC%97%85%EB%8A%A5%EB%A0%A5%EA%B0%9C%EB%B0%9C%ED%9B%88%EB%A0%A8%EA%B5%90%EC%82%AC%20%EC%9E%90%EA%B2%A9%EA%B8%B0%EC%A4%80#liBgcolor0.

Ministry of Labor of the Republic of Korea. (1993a). *Employment Insurance Act*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=60878&lsId=001761&chrClsCd=010202&

urlMode=lsInfoP&viewCls=lsInfoP&efYd=19950701&vSct=%EA%B3%A0%EC%9A%
A9%EB%B3%B4%ED%97%98%EB%B2%95&ancYnChk=#0000.

Ministry of Labor of the Republic of Korea. (1993b). *Enforcement Decree of the Framework Act on Vocational Training*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=29724& lsId=005149&chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=19931231& vSct=%EC%A7%81%EC%97%85%ED%9B%88%EB%A0%A8%EA%B8%B0%EB%B3% B8%EB%B2%95%EC%8B%9C%ED%96%89%EB%A0%B9&ancYnChk=#0000.

Ministry of Labor of the Republic of Korea. (1997). *Polytechnic College Act*. Retrieved from fromhttps://www.law.go.kr/lsInfoP.do?lsiSeq=303&lsId=000147&chrClsCd=010202& urlMode=lsInfoP&viewCls=lsInfoP&efYd=19980101&vSct=%EA%B8%B0%EB%8A% A5%EB%8C%80%ED%95%99%EB%B2%95&ancYnChk=#0000.

Ministry of Labor of the Republic of Korea. (1999). *Vocational Training Promotion Act*., Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=50953&ancYd=19971224&ancNo=05474& efYd=19990101&nwJoYnInfo=N&efGubun=Y&chrClsCd=010202&ancYnChk=0#0000.

National Law Information Center. (2019). *Act on the Development of Vocational Skills of Workers*. Retrieved from https://www.law.go.kr/lsInfoP.do?lsiSeq=208551&lsId=000117& chrClsCd=010202&urlMode=lsInfoP&viewCls=lsInfoP&efYd=20190430&vSct=%EA%B7% BC%EB%A1%9C%EC%9E%90%EC%A7%81%EC%97%85%EB%8A%

Sun, S. S. (2002). *Footmark of Korea's vocational training system – Focused on the behind story of the institutionalization process*. Seoul.

Young-Hoon, O. (1996). *Current status and policy directions of vocational teachers In-service*. Cheong-Ju.

Young-Hoon, O., In-Jung, J., & Dong-Yeol, P. (2000). *A study on the establishment and improvement of the qualification occupations of vocational competency development training teachers*. Se-Jong.

Chapter 23
TVET Teacher Training in Transformation in China

Zhiqun Zhao and Pengfei Xue

Abstract This paper covers the development of TVET (technical and vocational education and training) teacher training in China. It starts with a classification of TVET teachers and their required qualifications and reviews the genesis of TVET teacher training. Next, it introduces the current situation of TVET teacher training in two parts, i.e., pre-service and in-service training. The first part includes the models of institutions for TVET teacher pre-service training, whereas the second part focuses on TVET teacher training fundamentals, on-the-job master's degree programs, and the latest developments in training of double-qualified teachers, a current priority in this sector. Finally, it gives a summary of obstacles to further development as well as work priorities for the process of professionalization of TVET teachers.

23.1 Introduction

China had a long history of handicraft, but a mature apprenticeship system had not been developed officially. The beginning of technical and vocational education and training (TVET) system came into being with the set-up of vocational schools. TVET teachers were also the product of the establishment and development of vocational schools. The Constitution of the Imperial Industrial Education Teacher Institutions (Zhang, 2009), issued by the Qing government, made fairly definite regulations for TVET teacher training at different levels. In the development processes of the TVET teachers' profession, Huang Yanpei (1878–1961), an outstanding social activist and educator, played an important role. He advocated "vast vocational educationism" in order to reform the traditional education style, which was separated from production, practice, and social activities, and to demand that TVET teachers pay more concern to the laboring people's actual needs (Cao, 2010).

Z. Zhao (✉) · P. Xue
Institute of Vocational and Adult Education, Beijing Normal University, Beijing, China
e-mail: zhiqunzhao@263.net

Therefore a higher demand was set for TVET teachers to engage them more in the shaping of the technological and social systems.

Since the establishment of the PR China in 1949, the development of TVET teachers has been a complicated process. In 1958 a reform was issued, stating that their education should be combined with labor and production. The reform put forward the quality principle of simultaneous development of state-run schools with those run by companies, which broke down the unitary pattern of TVET. As a result, TVET teachers were required to combine their knowledge with practice in their technical and economic sector. Since the reform and opening policies of the 1980s, the Chinese government has posed quite a few regulations with respect to the building of a TVET teaching body. The "Teacher Law" and "Vocational Education Law," issued in the 1990s, provide the legal guidance for the development of TVET teachers.

Despite remarkable achievements in the past, TVET teacher training in China still has a number of problems. These include the limiting factor of current economic development, a low degree of societal recognition of TVET, and a lack of rational and consistent education policies, among other key factors. At present, the development of TVET teaching body faces many challenges. The most important of them is the structural contradictions of teachers' professional qualification, which is mainly manifested in two aspects: Firstly, there are structural defects in the education and training system of TVET teachers. The training of TVET teachers is mainly undertaken by universities, whose learning content is mainly theoretical knowledge. The developing of practical ability (both in professional and teaching practice) still lacks appropriate requirements and systematic design. The result is that young teachers have low practical skills which don't meet the requirements of TVET practice. Although the government requires new university graduates to work in enterprises before they engage in teaching activities, there is still a lack of experience in the implementation process.

Secondly, teachers' professional competence does not meet the requirements of technological and social development. China is in an era of industrial structural adjustment, rapid development of technology, and dramatic social changes. Many vocational colleges lack in-depth cooperation with enterprises and industries, many teachers can't understand the changing world of work, and their knowledge and skills are aging. These factors all greatly affect the quality of TVET.

On the basis of literature review and government documents, this paper summarizes the status quo of TVET teachers, the basic mode of TVET teacher training, achievements in the field, as well as current problems in China.

23.2 Overview of TVET Teachers

23.2.1 Types of TVET Teachers

Although the faculty structure of different vocational colleges and schools differs, there are generally the following types of TVET teachers:

- Teachers for specialized courses are responsible for teaching specialized knowledge and skills to improve students' comprehensive professional competence. Specialized courses include specialized basic courses, regular specialized courses, and specialized practice course. With the promotion of work-integrated learning curriculum and integrated courses (theory + practice), many teachers of specialized courses are working to become double-qualified teachers (shuang shi xing jiao shi).
- Instructor for practical training courses. During on-the-job training at a company, instructors shall guide and help students acquire skills in accordance with the teaching plan. Their tasks include skills development, formulation of practical training plans, and the subsequent implementation of these. They also undertake the education of professional ethics and workplace safety.
- Teachers for general knowledge courses are responsible for teaching general knowledge. In a narrow definition, these general knowledge courses teach Chinese language, mathematics, foreign languages, and computer basics, similar to a regular school. In the broader sense, these also cover all natural science and humanities courses except specialized courses, including elective courses or special lectures (events). In the context of broader societal developments, the scope of general knowledge course expands to cover industrial culture, safety education, and environmental protection, to name just a few.
- Double-qualified teachers are an important new development in the vocational education sector in China. In a narrower sense, double-qualified teachers are capable of teaching both theoretical courses and practice sessions. They are called different names in different schools. For example, skilled worker schools managed by the Ministry of Human Resources and Social Security (MOHRSS) refer to double-qualified teachers as "teacher of integrated teaching" (yi ti hua jiao shi). In a broad sense, double-qualified teachers include individuals with "double qualifications" and the "double-qualified teacher structure," that is, a team of teachers which consists of part-time teachers from companies and full-time teachers from the school.
- Part-time teachers are specialized persons engaged by vocational colleges and schools on a part-time basis for specialized courses or practical training sessions. Generally speaking, part-time teachers are employed both by enterprises and vocational colleges and schools. In exceptional cases, they return from retirement due to teacher shortage in specific areas.
- Trainers are specialists that develop training programs with diverse methods and approaches within specific institutions and fields in order to meet corporate and societal demand. They are responsible for formulating training plans, training

organization, and coaching. Training content often includes product marketing, team building, management, and communication skills.

23.2.2 Qualifications

China has successively formulated several laws and regulations regarding teacher qualification for secondary vocational schools. Chap. III of the Teachers Law promulgated in 1993 states: "To be qualified as teachers for senior high schools, specialized secondary schools, skilled worker schools, and vocational high schools (general knowledge courses and specialized courses), the candidate shall have a bachelor's degree from a university or higher education institution. Educational background for instructors of secondary specialized schools, skilled worker schools, and vocational high schools shall be prescribed by the administrative department of education of the State Council."[1]. The State Council issued the Regulations on the Qualifications of Teachers in 1995, which collectively defines those teachers as having "qualifications for instructor in practical training of secondary vocational schools." They shall have an "educational degree as required as well as a specialized professional title of assistant engineer or above or a technician status higher than the intermediate level". This provides a legal basis for education institutions for shaping TVET teacher training. On this basis, the Ministry of Education (MoE) has formulated the Professional Standards for Teachers of Secondary Vocational Schools (Trial) and the Professional Standards for Principals of Secondary Vocational Schools, though such standards lack a certain operability in real practice.

Higher vocational college is a type of TVET institution that has developed rapidly over the last 20 years. There is currently no national standard for relevant teacher qualifications. In general, however, colleges in all regions across China require higher qualifications than teachers in vocational schools, and these also vary greatly, depending on local economic and social development.

In reality, the lack of practical competence of teachers has hindered the development of TVET. In order to enhance their competence development, governments at all levels as well as vocational colleges and schools have issued a variety of evaluation criteria for double-qualified teachers. For example, the MoE published the Talent Development Evaluation Program for Higher Vocational Institutions in 2008, which proposed that "double-qualified teachers" shall have the teaching certificate and meet the following requirements: (1) intermediate technical title and occupational certificate of specialization and experience in presiding over the design

---

[1]The State Council is the highest state administrative organ of the PR China, composed of various departments and committees, such as the Ministry of Education (MoE) and the Ministry of Human Resources and Social Security (MOHRSS), which are closely related to TVET. The head of the State Council is the premier. The regulations directly issued by the State Council and the activities organized by the State Council generally have characteristics of cross sectoral and cross departments.

and installation of technical facilities in the college/school in the past 5 years with good outcomes; (2) practical work in the field of specialization in companies for at least 2 years in the past 5 years and capable of instructing students in conducting practical training activities; and (3) experience in leading and managing applied technology research and development projects in the past 5 years. There are no empirical research results examining the implementation of these policies.

In 2019, the State Council issued the Implementation Plan on National Vocational Education Reform, which stipulates that TVET specialized teachers "in principle shall have more than 3 years of corporate work experience and an occupational certificate or higher" and that those who demonstrate talent in specialized skills (including those with occupational qualifications above the senior level) may be exempt from relevant educational background requirement (The State Council, 2019). This increases the requirements of teachers' practical competence, and it also brings great challenges to the pre-service training and recruitment of TVET teachers. This means that vocational schools can no longer recruit fresh graduates with a bachelor's degree from universities. Restructuring the TVET teacher training system will thus be a challenging task.

23.3   Historical Overview on TVET Teacher Training

TVET teacher training in China started with the "Institute for Teachers of Industry Education" established in the early twentieth century, which, at the time, was integrated into the "Guimao Educational System." After the founding of the People's Republic of *China in 1949*, *the Chinese government tried to develop institutions for technical* teachers in order to meet the demands of new national industries being constructed and developed. However, such development was met with difficulties. The reform of secondary education structure in the late 1970s emphasized vocational education, a tendency which has led to the development of TVET teacher training. It takes the following three forms:

- TVET teacher training classes: During the rapid development of secondary vocational education, the MoE has adopted measures to solve the problem of teacher shortage, one of which is to set up teacher training classes in regular or normal colleges and universities. Since 1986, for example, pilot teacher training classes have been set up by key universities such as Zhejiang University and the Nanjing Institute of Technology. Due to a lack of systematic planning, this method encounters several problems in management and training organization. Teacher classes of this nature are not widely accepted or valued by top universities; hence they can give no long-term assurance of being able to provide new teachers.
- TVET teachers' colleges: In 1978, the then State Administration of Labor reinstalled four teachers' colleges in Tianjin and Jilin to train teachers for general technology (e.g., machinery, electrical engineering, etc.). Later, the MoE

established 15 independent TVET teachers' colleges with the aim of training secondary vocational teachers on a large scale. This helps ease the situation of severe teacher shortage in secondary vocational schools while providing consulting and development services for the promotion of TVET (Meng, Cao, & Yang, 2016). But as the situation has changed, there are currently only eight such colleges.

- Departments (faculties) of TVET teacher training in comprehensive universities: Compared with TVET teachers' colleges, comprehensive undergraduate universities have a solid foundation in education and a wide range of specialization and study programs. According to the deployment of the MoE, some comprehensive universities and normal universities have set up departments (faculties) of TVET teacher training. For example, Zhejiang University of Technology established the Department of Technical Teacher Training in 1985, and in 1986, Hunan Agricultural University set up a training base for teachers of specialized courses in rural secondary vocational schools.

Thus, China has put in place a structure of TVET teacher training that consists of TVET teachers' colleges and departments (faculties) of TVET teacher training in comprehensive universities, and normal colleges and universities (hereafter referred to as "higher education institutions for TVET teachers"). At present, China has 40 institutions for the training of TVET teachers. Among them are 32 departments of TVET teacher training in comprehensive universities and 8 TVET teachers' colleges, which account for 5.6% of the total number of normal colleges/universities (Ke & Shi, 2018).

23.4 TVET Teacher Training Models

At present, there is no institution dedicated to training teachers for higher vocational colleges. Discussions on teacher training systems can only focus on teachers for secondary vocational schools, but don't exclude teachers for higher vocational colleges. Nowadays, institutions for training TVET teachers provide a variety of programs, including undergraduate, master's program, and continuing education courses.

23.4.1 Training Models for Pre-Service Teacher Training

Pre-service training of TVET teachers includes specialization training, knowledge about pedagogy and psychology, and specialized teaching practice. This comprehensive and complex process necessitates interdisciplinary coordination. Different training models for TVET teachers are thus taking shape. The details of these are as follows:

23.4.1.1 Phased Educational Model

According to the content of learning and duration of each process, training of TVET teachers generally follows the "3 + 4," "3 + 2," "4 + 0.5," "4 + 1," or "4 + 2" model:

- The "3 + 4" model. This is currently the most common model, which enrolls graduates of 3-year ordinary high schools or secondary vocational schools in undergraduate studies. However, the programs on offer are not identical and depend on the students" background.
- The "3 + 2" model, which is a form of continuing education. For example, Guangdong Polytechnic Normal University has been accepting outstanding graduates from 3-year higher vocational colleges for a 2-year continuing education program since 2009. Graduates of this program will receive a bachelor's degree.
- The "4 + 0.5" model. This model is designed for graduates with a bachelor's degree who lack practical skills. They are required to acquire practical experience in companies for 6 months before taking up a teaching position in vocational schools. Provinces and cities including Tianjin and Henan have formulated relevant policies in this regard.
- The "4 + 1" model. This model is mainly for graduates from colleges and universities who wish to become TVET teachers. They should complete a 1-year teacher training course and teaching skills training as pre-service training. Guangxi started implementing this model on a trial basis in four universities, including Guangxi University.
- The "4 + 2" model. This is an interdisciplinary education of TVET teachers at the postgraduate level, which accepts undergraduates with a good specialized background to learn about education theory and teaching skills either in-service or on a full-time basis. As it covers both specialized learning and teaching skills, this model has a high degree of social recognition with good development prospects.

23.4.1.2 Extended Length of Study Time with More Credit Requirements

Under the current educational system in China, an undergraduate program shall generally be completed in 4 years with 160 ∼ 180 credits. Given the high requirements for TVET teachers regarding specialization, teaching ability, and professional work experience, a regular 4-year undergraduate education is insufficient for fulfilling all requirements (cf. Figure 23.1). Therefore, many colleges and universities extend the length of study time or increase the number of required credits. For example, undergraduate students of the TVET teacher training program in Jilin Engineering Normal University are required to complete training courses for an extra 25–27 credits as an addition to the regular program. Tianjin University of Technology and Education is attempting to increase the length of study time for graduates of vocational schools to 5 years to improve their general knowledge.
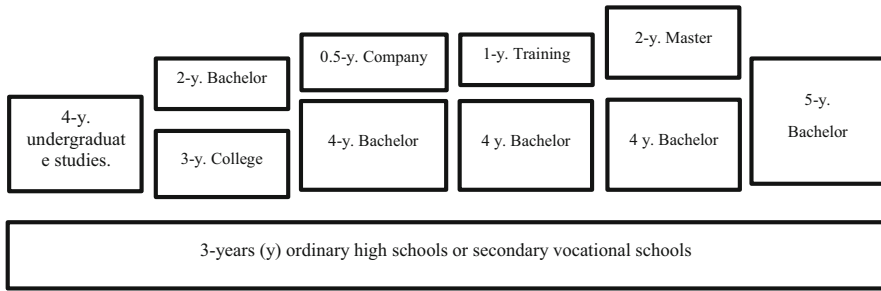
Fig. 23.1 Training models for pre-service teacher training. Source: Authors

23.4.1.3 Selection of Students with Desirable Competence

In order to train TVET teachers, it is preferable to accept students with a background in vocational education. Those students have basic specialized knowledge and skills and a strong sense of identification with vocational education, both of which are good foundations for their future teaching career. Therefore, some colleges and universities select vocational school graduates for their specially designed study programs. For example, Tianjin University of Technology and Education has introduced the "Excellent Vocational Teacher Training Program" for graduates from secondary vocational schools who have the potential to become a TVET teacher and a willingness to take up the profession. The program aims to train "qualified and dedicated TVET teachers."

23.4.2 Modes of Collaboration between Different Institutions

The training of TVET teachers focuses on development of specialization, teaching skills, and practical competence. Higher educational institutions for TVET teachers, vocational colleges and schools, industry enterprises, and government authorities share responsibility in the process, which requires coordination and cooperation, since no one institution alone cannot complete the task. There are currently different modes of collaboration (cf. Figure 23.2):

- School-school cooperation. For example, the dual-degree training program in Kunming, Yunnan, enrolls first-year students of non-teacher training majors from colleges and universities. The School of Education of Yunnan Normal University works with the source institution of the student to carry out teaching activities. Specialized courses of study are carried out by the source institution and pedagogical courses by Yunnan Normal University. Students shall complete both major programs within 4 years and obtain a diploma and degree certificate from their source institution and a degree certificate in education from Yunnan Normal University (teacher education).
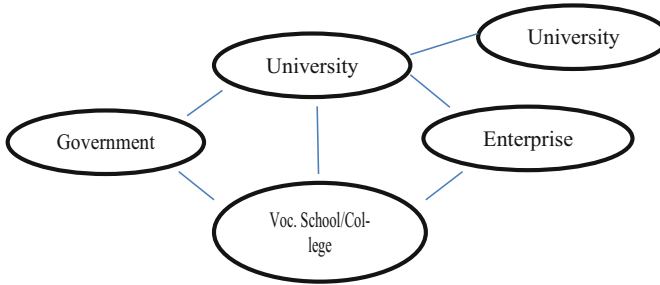
Fig. 23.2 Collaboration between different institutions. Source: Authors

- School-government cooperation. For example, Tianjin University of Technology and Education and the Hainan Provincial Government have signed an agreement to train TVET teachers for vocational schools in Hainan. According to this agreement, vocational schools in Hainan will provide internship positions for students in training as well as graduates.
- University-enterprise-school cooperation. For example, Jilin Engineering Normal University established a TVET teacher education alliance with a total of 48 members, including 14 large- and medium-sized enterprises, 3 industry associations, 4 higher vocational colleges, and 26 secondary vocational schools. The alliance is dedicated to developing a TVET teacher training system with "government coordination, negotiated decision-making, responsibility and interest-driven development, resource sharing and collaborative education."
- University-government-school cooperation: The Outstanding Teacher Training Program launched by the MoE in 2014 addresses weak points and deep-rooted issues in the field of teacher training. It helps deepen the reform of teacher training models and establishes a new "three-in-one" collaborative training mechanism between higher education institutions, local governments, and secondary vocational schools (cf. Zhang, 2018).

23.5 In-Service Training for TVET Teachers

The development of TVET has increased the requirements on the abilities of TVET teachers and management personnel in vocational colleges and schools. In the late 1980s, the MoE started to set up training institutions for in-service training of TVET teachers.

23.5.1 Development of Training Bases for TVET Teachers

Since 1989, the MoE has established TVET teacher training bases in six key universities under its direct administration as well as two additional local

universities, including the Institute of Vocational Education of Tongji University, with the aim to improve professional competence of management personnel and principals in secondary vocational schools.

Along with the training of school management personnel, carrying out large-scale teacher training programs was made a priority. In 1999, within the framework of the Action Plan for Promoting Education for the twenty-first Century, the MoE relied on colleges and universities as well as TVET teachers' colleges to develop training bases for TVET teachers through specialized courses and for instructors in practical training. The central government allocated special funds for establishing 56 National Key Training Bases for TVET Teachers in universities such as Tianjin University. The target training groups include management personnel (deans and principals) of vocational schools and colleges as well as TVET teachers of specialized courses and instructors in practical training (Cao & Liu, 2010).

During this period, the role of enterprises for in-service teacher training is becoming prominent. In order to improve teachers' practical skills, beginning in 2001, the MoE selected Baosteel, Haier Group, and FAW Group Corporation, among other large enterprises, to establish training bases for TVET teachers.

23.5.2   Teachers of Secondary Vocational Schools Join Master's Degree Program

In the twenty-first century, the rapid development of technology and society has brought forward higher requirements for TVET teachers, resulting in a growing demand for master's degree programs for in-service teachers (Chen, Wu, & Li, 2006). Since 2000, the MoE has chosen 13 universities with the authority to grant master's degrees from the "National Key Training Bases for TVET Teachers" for the task of engaging key teachers and management personnel in master's degree programs. Candidates for such programs shall have a minimum of 3 years' teaching experience in secondary vocational schools, high teaching quality, and basic competence in research. Under these regulations, the master's thesis should be combined with teaching practice in the specialization, and a minimum of 1-year full-time study is required during the 3-year master's program. The in-service master's degree programs for secondary vocational teachers have improved the TVET teachers' educational background while playing a positive role in enhancing the teaching quality in vocational colleges and schools.

23.5.3   Training of Double-Qualified Teachers

Double qualification is a desirable requirement of TVET teachers. The development of double-qualified teachers has gone from focusing on individuals to the entire

teacher group as a whole. According to statistics, the total number of double-qualified teachers at different levels in China is 455,600, of which 31.48% are full-time teachers in secondary vocational schools and 39.70% are full-time teachers in higher vocational colleges (China Institute of Education and Social Development, 2019).

Past experience shows that university education alone cannot meet the requirements for the correct training of double-qualified teachers. In 2019, the MoE and other departments formulated the Implementation Plan for Deepening the Reform of the "Double-Qualified Teachers" in Vocational Education in the New Era, which stipulates tasks for the establishment of a professional standard for teacher education covering general education courses, specialized courses, and practical courses for vocational colleges and schools. The admittance system for new teachers will be reformed toward accepting more double-qualified teachers, and the teacher assessment and evaluation processes will also go through transformation. The Implementation Plan also identifies several objectives: (1) establishing a training structure for double-qualified teachers with institutions for TVET teacher training as the main body and fostering enterprise-university collaboration, (2) introducing a new mechanism for "fixed + mobile posts" for the allocation of teacher resources, (3) setting up a two-way communication and cooperation community for school-enterprise cooperation, and (4) developing professional standards for teachers in higher vocational colleges and applied undergraduate universities, with the aim of improving the TVET teacher evaluation standards as well as their level of professionalization.

23.6 Conclusion

To sum up, for more than 40 years since the reform and opening up, China has made significant progress in TVET teacher training. These are:

- Clear training strategy. Both the pre-service and in-service training of TVET teachers have started school (university)-enterprise cooperation for training TVET teachers instead of the former model which relied solely on education institutions.
- Improved training system. The TVET teacher training has expanded to include undergraduate and postgraduate programs, in addition to secondary specialized teacher schools. A complete training system thus takes form in this process.
- Diverse training institutions. Training institutions for TVET teachers have developed from recruiting graduates from skilled worker schools in the early years of the new PR China to specialized institutions in undergraduate colleges and universities, and, in recent years, to enterprise engagement to a great extent.

Various TVET teacher training institutions have explored and established a variety of models based on actual conditions. However, as a result of historical development and weak points in the education system, there are still many issues in the training of TVET teachers. Here are the two most prominent issues.

Firstly, the employment rate of graduates as TVET teachers in teaching position remain relatively low. Surveys found that less than 20% of undergraduate work at secondary vocational schools, because of high educational requirements (master's degree) for new teachers in economically developed cities, and competitive salaries offered by companies (Zhang, 2009). As a result, the number of training institutions for TVET teachers has decreased, or the focus of such institutions has shifted away from teacher training, as can be seen in some colleges cancelling the word "normal" (such as Jiangsu University of Technology) from their names. Some institutes of vocational education in key universities have reduced the training of TVET teachers and no longer train undergraduate students for TVET education (as in the case of Tongji University and Southeast University).

The second problem concerns the establishment and development of TVET teachers' training programs by higher educational institutions for TVET teacher training. The employment situation for graduates highlights the weak points in teaching and research in these institutions. For example, due to weak theoretical research on vocational education and unclear study plans, the training models of such institutions are merely a combination of general specialization education and pedagogical education. This has led to a low degree of recognition in the academic community and even skepticism about the implementation of these study programs. Despite the increasing public investment in vocational education and reform measures such as school-enterprise cooperation, the reform process of institutions for TVET teacher training still lags behind other reform processes a problem which has also affected graduates' adaptive capacity to the teacher's profession.

For a long time to come, the focus of TVET teacher training will still be on training double-qualified teachers, a problem which requires the support of comprehensive and diverse training approaches and measures. For example, higher education institutions for TVET teachers shall expand their capacity and improve the quality of study programs. A mechanism shall be put in place for TVET teachers to have regular practice in companies and businesses. Measures shall be implemented to secure wages, career promotion, and health insurance for TVET teachers in order to ensure healthy and sustainable professional development of double-qualified teachers.

References

Cao, Y. (2010). The history and realistic choice of vocational and technical education teacher training in China. *Education and Vocation, 6*, 5–8.

Cao, Y., & Liu, H. (2010). H. a review of policy development for training of secondary vocational teachers in the past 60 years in China. *Vocational and Technical Education, 31*(25), 18–24.

Chen, G., Wu, F., & Li, M. (2006). Analysis of the demand and impact factors of in-service Master's degree program for secondary vocational teachers. *Vocational and Technical Education, 27*(28), 22–24.

China Institute of Education and Social Development. (2019). Beijing Normal University. Public opinion on education. no. 24, pp.1–2.

Ke, J., & Shi, W. (2018). History and future prospects of TVET teacher education in China in the 40 years of reform and opening up. *Vocational and Technical Education in China, no., 21*, 22–27.

Meng, Q., Cao, Y., & Yang, D. (2016). *History of Technical and Vocational Teacher Education in China* (p. 86). Educational Science Publishing House.

The State Council. (2019). *Circular of the state council on printing and distributing the implementation plan on National Vocational Education Reform*. 2019-01-24.

Zhang, C. (2009). Survey and analysis of employment situation of graduates from higher education institutions for TVET teachers. *Vocational and Technical Education, 8*, 88–89.

Zhang, H. (2018). Exploration and innovation of vocational education teacher training in China (1978-2018). *Vocational and Technical Education, 39*(28), 42–47.

Chapter 24
A Situation-Based Model for Swiss VPET Teacher and Trainers' Education: Main Orientations and Structure

Elena Boldrini and Emanuel Andreas Wüthrich

Abstract In Switzerland, a nationwide legislation regulates the duration, the requirements, the professional standards, and the general structure of teacher education in the vocational sector. Consequently, the current state of vocational teacher education has to be understood in the light of the structure of vocational education and training system per se. Against this background, this contribution will give an account of the federal guidelines, the requirements, and the approaches to teacher education in the vocational sector in Switzerland. In addition, it offers an overview of the pedagogical approaches and of the instructional model that the Swiss Federal Institute for Vocational Education and Training has developed for the training of teachers and trainers in the vocational and professional education and training sector. The main points are the analysis of professional situations of vocational education and training teachers that are used for the development of an appropriate curriculum including a competence profile that allows for building professional competences in a situation-based instructional approach. An example of a training curriculum for professional subject teachers in vocational education and training is presented and discussed.

E. Boldrini (✉)
Training Department, Swiss Federal University for Vocational Education and Training, Zollikofen, Switzerland
e-mail: Elena.Boldrini@suffp.swiss

E. A. Wüthrich
Swiss International VET Academy, Swiss Federal University for Vocational Education and Training, Zollikofen, Switzerland

24.1   Introduction

In Switzerland, national legislation regulates the duration, the requirements, the professional standards, and the general structure of teacher education in the vocational sector. The latter is structured on the basis of the different types of subjects being taught, of the various roles played in the vocational programmes, and of the types of training curriculum. Consequently, the current state of vocational teacher education has to be understood as a consequence of the structure of vocational education and training system per se.

Three main actors, namely, the Confederation, the cantons, and the professional associations, manage vocational and professional education and training (VPET) in Switzerland in a shared way (Swiss Confederation, 2002). The Confederation leads strategy for the VPET sector and enacts around 230 VET ordinances for each of the professional curricula being provided, while the cantons are responsible for implementation at the local level and verification of the vocational training offers. The professional associations play a crucial role, among others, in the definition of the training curricula in the various professional sectors and in providing apprenticeship positions in companies (Wettstein, Schmind, & Gonon, 2014). The collective management of the VPET is basically constructed as a partnership – historically built up in Switzerland following the end of the medieval guilds – between the public (the Confederation, the cantons, and their representatives) and the private sector, represented by the professional associations and companies (Ghisla, 2013).

The Swiss educational system is comprised of VET tracks at the upper secondary level (ISCED 3-4 and 3-5) and, at the tertiary level, the professional education and training (PET) programmes for higher degrees in the profession (federal diploma of higher education on ISCED 6 and advanced federal diploma of higher education on ISCED 7) as well as the so-called colleges for higher education (ISCED 6).[1]

Concerning TVET offers at the upper secondary level, apprenticeship is the most common and respected form of post-compulsory education and training, and roughly two-thirds of adolescents in Switzerland decide on an apprenticeship (dual-track system). The apprenticeship model is structured on an alternation between practicing at the workplace, attending so-called branch courses as a part of the practical training, and attending the vocational schools.[2] In the vocational schools, apprentices learn general subjects of culture and professional-related subjects (cf. SERI, 2019). After (or during) an apprenticeship, it is possible to get a Federal Vocational Baccalaureate (FVB) which allows access to the Swiss universities of applied

---

[1]The UNESCO International Standard Classification of Education (named ISCED) classifies and characterizes school types and school systems. It distinguishes between several levels and is also suitable for indicating the level of education in an international comparison (UNESCO, 2012). Swiss educational system and related classifications are indicated here: https://edudoc.educa.ch/static/web/bildungssystem/grafik_bildung_d.pdf (04.01.2021).

[2]Branch courses are mandatory training courses organized by the branch association with the aim to train specific competences that not all companies can offer to train in a setting that is not business driven.

sciences (and even to universities and federal institutes of technology), thus characterizing a very permeable system where students can easily switch between VET pathways and general educational and academic programmes (Keller, Zirkle, & Barabasch, 2019).

Against this backdrop, in the following chapters, we will describe the main pedagogical orientations, the contents, the requirements, and the providers of training in the VPET teacher education in Switzerland (Sect. 24.2), as well as the training approaches and models developed by the Swiss Federal University for Vocational Education and Training (SFUVET) (Sect. 24.3) and the related challenges and developments in this area (Sect. 24.4).

24.2 Status of VPET Teacher Education in Switzerland

24.2.1 Main Orientations of VPET Teacher Education

The leading role played by the Confederation, at the strategical and political level, is also relevant for understanding the functioning of teacher education in the VPET sector. The Vocational and Professional Education and Training Act enacted by the Federal Assembly of the Confederation defines the requirements for teachers in the VPET (Arts. 45–47) (Swiss Confederation, 2002). The related Ordinance on Vocational and Professional Education and Training (VPETO) (Swiss Confederation, 2003, Arts. 45–47) specifies the requirements, both in terms of academic and professional requirements and in terms of the kind of training students have to attend.

Based on this nationwide legislation, the State Secretariat for Education, Research and Innovation (SERI), the agency of the Federal Department of Economic Affairs, Education and Research (EAER) which deals with the strategic management of national and international matters related to research, innovation, and VPET, defines the main orientations and core syllabi for the training of VPET professionals (i.e. teachers at the vocational schools and trainers working in the companies or in the branch courses).

The main orientations and the general structure of VPET professional education can be summarized in five main points:

First, differentiated training programmes are established for the different typologies of context of training and of subjects taught. This differentiation allows for a high degree of adaptation of training to the specific and various needs of trainers and teachers who are active in the professional sector. From this point of view, therefore, not only does the Confederation promote, through its legislation, a pedagogy that is specific to the professional sector but also further differentiation within it. Section 24.2.2 illustrates the various existing programmes in this respect.

Second, teacher training programmes should develop competences in order to enable teachers to best articulate the relationship between theory and practice, work and learning, and combining subject matter expertise with vocational pedagogy

skills (SBFI, 2021) in their classes. In doing so, structural articulation among the different learning locations which characterize the VPET sector is taken into account as a precise pedagogical objective which will be developed within teacher and trainer education.

Third, the training model is additive and takes place parallel to professional practice (in-service), unlike the case of teachers at other educational levels who typically attend training following a pre-service model (Keller et al., 2019). This principle needs to be aimed at developing in teacher students the capacity to integrate the practice and theory they teach to their students. In essence, the teacher students themselves experience a model of alternating between academic/theoretical training and workplace experience, just as their students will. Moreover, learning in an additive training model allows professionals to become teachers after experiences in various professional fields, thus transferring their competences to schools (Sappa, Boldrini, & Aprea, 2015) and facilitating the recruitment process. Beyond the possibility of becoming a teacher, combining a part-time teaching job with a job in an industry is promoted by the Confederation (see Table 24.1). Consequently, this orientation has concrete benefits for the training of teachers because it requires them to be employed in a vocational school and to have a minimum of 6 months of practical work experience outside the educational sector. In-service and additive models like the one presented here represent a professional development model which is not inspired by linear models of teacher expertise, but by multidimensional models that conceptualize teaching expertise as dynamic and resulting from continuous interrelationships between previous experiences, training, applications in practice, and the related reflection on these experiences, as well as reconsideration of prior habits and knowledge (Darling-Hammond, 2017; Raduan & Na, 2020).

Fourth, the core syllabus for each type of teacher/trainer is developed in the form of lists of objectives, related main contents, and standards. Professional standards translate objectives and contents of the training into concrete requirements which will then become "professional routine". This definition is in line with the understanding of professional standards as knowledge (grounded assumptions) whose acquisition meets an action-oriented quality criterion and implies a certain level of performance (Oser, 1998). This pedagogical assumption illustrates that the contents included in the syllabi should be translated into competence for action.

Fifth, the training of VPET professionals is provided by tertiary institutions in Switzerland, such as universities of teacher education, universities of applied sciences, and other universities. In any case, training courses for VPET professionals are recognized and supervised by SERI. A relevant position among training providers is filled by the Swiss Federal University for Vocational Education and Training (SFUVET). Established by the Confederation (Swiss Confederation, 2002, Art. 48) as national expert institution for VPET and as a means to promote vocational pedagogy, it is present in each cultural and linguistic area of the country and offers basic and continuing training to VPET professionals, conducts research, contributes to the development of professions, and works in the field of international cooperation in VPET.

Table 24.1 List of the different typologies of teachers/trainers and related training programmes in the VPET sector

Typology of teachers/trainers	Requirements	Duration/ ECTS
Teachers of vocational subjects in VET curricula Full-time	– Professional education and training (PET) degree, diploma or university degree (bachelor's/master's) in the corresponding field – 6 months of professional experience – Employment in a vocational school >50% occupation	1800 h of training 60 ECTS
Teachers of vocational subjects in VET curricula Part-time	– Professional education and training (PET) degree, diploma or university degree (bachelor's/master's) in the corresponding field – 6 months of professional experience – Employment in a vocational school <50% occupation	300 h of training 10 ECTS
Teachers of vocational subjects at colleges of higher education Full-time	– Diploma from a college of higher education or diploma or university degree (bachelor's/master's) in the corresponding field – 6 months of professional experience – Employment in a vocational school >50% occupation	1800 h of training 60 ECTS
Teachers of vocational subjects at colleges of higher education Part-time	– Diploma from a college of higher education or diploma or university degree (bachelor's/master's) in the corresponding field – 6 months of professional experience – Employment in a vocational school <50% occupation	300 h of training 10 ECTS
Teachers of general education subjects in the VET	– Teaching diploma from compulsory school or university degree (bachelor's/master's) in a field related to general culture subjects – 6 months of professional experience – Employment in a vocational school – No distinction between full-time and part-time occupation	1800 h of training 60 ECTS
Teachers of subjects within the Federal Vocational Baccalaureate	– University degree following SERI recommendations – 6 months of professional experience – Employment in a vocational school in FVB – No distinction between full-time and part-time occupation – If previous diploma as high school teachers, then 300 h	1800 h of training 60 ECTS 300 h of training 10 ECTS
Teachers of sports in VET curricula	University degree in the corresponding field 6 months' work experience Employment in a vocational school If previous diploma in teaching sports in compulsory schools or high schools, then 300 h	1800 h of training 60 ECTS 300 h of training 10 ECTS

(continued)

Table 24.1 (continued)

Typology of teachers/trainers	Requirements	Duration/ECTS
Trainers in the branch courses, full-time	– PET diploma or university degree (bachelor's/master's) in the corresponding field – 2 years' work experience in the corresponding field – Employment in a training Centre >50% occupation	600 h of training 20 ECTS
Trainers in the branch courses, part-time	– PET diploma or university degree (bachelor's/master's) in the corresponding field – 2 years' work experience in the corresponding field – Employment in a training Centre <50% occupation	300 h of training 10 ECTS
Trainers at the workplace in VET curricula.	VET diploma 2 years' work experience in the corresponding field	40 or 100 h of training

The tertiary and university positioning of VPET teacher education is in line with the positioning of the training of other categories of teachers in Switzerland (kindergarten, primary level, lower secondary level, upper secondary level in the non-professional curricula) and is provided by the universities (PL.) of teacher education (EDK, 2020; Hofstetter, Schneuwly, Lussi, & Cicchini, 2004). Furthermore, the placing of VPET teacher education at the tertiary level is, in turn, in line with the international trends which have "universitized" teacher education over the past 30 years within the process of harmonization of educational systems following the Bologna Declaration, as analysed by different scholars (Livingston & Flores, 2017; Zgaga, 2013).

In Switzerland, the process that streamlined teacher training at the tertiary level at the universities of teacher education took place at the end of the 1990s (OECD, 1998). Previously, the panorama of teacher education was very varied, primarily as a result of cantonal sovereignty in education and teacher education policy. It is important to remember that the history of teacher education in Switzerland goes back to the nineteenth century, to the teacher training schools (Lehrerseminar/écoles normales/scuole magistrali) which were governed at the cantonal level (Historisches Lexikon der Schweiz, 2012). In addition, teacher education for the vocational schools has the particularity of having always been under the direct responsibility of the Confederation since the late 1800s, as well as after 1972 when the Confederation created the Swiss Institute of Pedagogy of Professional Education (Schweizerischen Institut für Berufspädagogy – SIBP) and became SFUVET in 2007 (Wettstein, 1987).

24.2.2 Core Syllabus and Main Contents

In terms of the core syllabus for the training of different VPET professionals, SERI determines the course contents, the amount of time devoted to the training, as well as the standards to be developed. In terms of contents, as per the regulation of the VPETO (Art. 48), vocational pedagogy training programmes include the following aspects:

(a) VPET system and context: VPET system, legal basis, career guidance counselling services.
(b) Learners: job-related socialization of young people and adults within the company, school, and society.
(c) Teaching and learning: planning, carrying out and assessing learning activities, providing support and assistance to learners, assessing and selecting learners.
(d) Integration and transfer of theory into practice, and vice versa.
(e) Understanding the role of the teacher/trainer, maintaining professional and academic contacts, establishing one's own continuing education programme.
 (f) Interacting with learners, working with their legal representatives, government officials, host companies, VET schools, and other learning locations.
(g) General education topics related to ethics, gender issues, health, multiculturalism, sustainability, occupational safety.

This list makes it clear that the contents foreseen for the training of different VPET professionals concern not only generally pedagogical aspects (e.g. planning and carrying out learning activities) but also contents specifically related to the vocational training system and its specificities (e.g. VET learning locations, apprentices' job-related socialization, etc.), thus promoting the development of specific competences in the vocational pedagogy domain.

As far as the core syllabuses, the SERI (2019) defines ten different programs (SBFI, 2021). Each of them applies to a different type of teacher/trainer in the VPET training landscape. The following table summarizes the different types of teacher/trainer work in the VPET, the requirements, and the duration and number of ECTS of the programme. The SERI also defines the main contents and objectives to be reached (cf. Table 24.1).

As one can see, the requirements for teaching and therefore for entering the education programme necessitate professional experience, employment in a school, and a distinction between full-time and part-time occupation for all the teachers in the field of professional subjects. On the contrary, there is no distinction between full-time and part-time occupation for the teachers in the general cultural and vocational baccalaureate as it is generally assumed that they usually do not have a professional occupation in addition to the teaching job related to the subjects taught.

24.3 The Swiss Federal University for Vocational Education and Training: Approaches of Teacher Education

Within this framework, this chapter will give an account of the approaches and of the model that the Swiss Federal University for Vocational Education and Training (SFUVET) has developed for the training of teachers and trainers in the VPET sector. The following considerations have been the result of a process of an ongoing revision of its curricula, which has been taking place at the national level since 2017. The project had the objective of revising and updating teacher and trainer training programmes which had been elaborated in 2007. It must be pointed out that the curricula developed at SFUVET are based on the core syllabus (i.e. objectives, contents, and standards) provided by SERI as illustrated above, so that they represent their operational declination. The curricula are therefore differentiated according to the programmes described in Table 24.1 and are structured according to the duration of training for each of the categories indicated.

The revision of training curricula is founded on a comprehensive perspective called the situation-based approach and is based on two main related elements: first, the SFUVET competence profiles of the different categories of teachers and trainers and, second, the SFUVET main pedagogical orientations and approaches related to teacher education, including the larger trends which will continue to affect the VPET highlighted by the SERI in the framework of "Berufsbildung 2030" (SERI, 2021) in the future.

In the following paragraphs, these fundamentals are illustrated.

24.3.1 The Situation-Based Approach of SFUVET

The training of VPET teachers at SFUVET follows the logic of the situation-based approach which is a comprehensive methodological, pedagogical, and didactical approach in VET. This approach is the result of extensive experience of accomplishing SFUVET's mandate: SFUVET works with the professions and their associations on the definition of curricula and their implementation; conducts training for VPET teachers, instructors, and examiners; and conducts research on VET. This unique mandate allowed it to create a coherent and overarching approach through all the steps of conceptualization, implementation, and evaluation of VET training. In the middle of it is the work situation, which is identified as being the meaningful unit for analysing, training, assessing, and evaluating VET. This approach is also shared in international cooperation projects where its stringency and coherence help to bring real work situations into practical and theoretical training. The very first step in this approach is the definition of competence profiles based on work situations, described in the following section (Fig. 24.1).

Fig. 24.1 The situation-based approach of SFUVET

24.3.2 Situation-Based Competence Profiles

The relevance of competence profiles as a basis for the development of training curricula is a widely shared fact among scholars (e.g. Ghisla, Bausch, & Boldrini, 2008; Norton, 1997; SERI, 2017; Zbinden-Bühler & Volz, 2007). Knowing the typical work situations of a profession and the respective resources required (in terms of knowledge, skills, and attitudes) to manage a particular work situation successfully not only allows for a detailed knowledge of the professional field but also, as a consequence, the design of a training curriculum which is adapted to the needs of the profession. This is also true in the case of the teaching professions with regard to building training curricula. In addition, as mentioned above, the contents, the related standards, and objectives indicated by the SERI are decided upon at a general level and, so to speak, decontextualized with respect to the effective practice of teachers and trainers.

Therefore, at SFUVET the definition of competence profiles for the various categories of teachers and trainers is intended to discover their daily professional work situations and to define their competence profile based on this. In this way, the professional standards given by SERI can be contextualized within concrete professional situations.

At SFUVET, the definition of teacher and trainer competence profiles began in 2014 (with an exploratory phase) and ended in 2018 with the formalization of the competence profiles of teachers of vocational subjects in VET curricula, teachers in the vocational subjects in colleges of higher education, teachers of general culture subjects, teachers of subjects in the vocational baccalaureate, and trainers in the branch courses.

For each type of teacher/trainer mentioned, workshops were organized (with ten teachers participating on average), which were dedicated to (a) the collection and

description of typical and recurrent professional work situations and to (b) the identification of areas of competences (Handlungskompetenzbereiche) resulting from the grouping of the collected professional work situations. In addition, a workshop aimed at understanding future trends in teaching was conducted (Zukunftsworkshop) in order to give the competence profiles an orientation which will be closer to the challenges for teaching in the future. The overall methodological approach used for defining the competence profile is essentially attributable to the CoRe model (Ghisla et al., 2008).

This process made it possible to obtain:

– A list of 50 typical professional situations shared among all the teacher and trainer types.
– The description of the 50 professional situations. They have been analysed both on the basis of the activity (what does the teacher/trainer do in the situation?) and also on the basis of the resources (knowledge, skills, attitudes – KSA (Baartman & de Bruijn, 2011)) which need to be mobilized in the situation in order to act competently.
– A list of 11 competence areas shared among the different teaching profiles and a summary of the peculiar characteristics and situations specific to each teaching profiles (e.g. differences among general education teachers and VET baccalaureate teachers).

The list of the resulting 11 competences is the following, showing the relevance of main core instructional competences (1-4; 6-7) including that one related to the integration of information and communication technologies; relational, communicative, and collaborative competences (5, 9); and identity and self-related competences (8, 11) (cf. Boldrini, 2019). The competence profiles thus defined represented the basis for the development of the curricula, as they are a means to develop those competences.

1. Planning and designing teaching/learning activities.
2. Preparing teaching/learning activities.
3. Carrying out teaching/learning activities during class.
4. Integrating technology into teaching/learning.
5. Managing relationships with students.
6. Supporting and guiding students.
7. Assessing students learning.
8. Evaluating teaching activities.
9. Collaborating in the vocational training system.
10. Organizing and carrying out administrative tasks.
11. Taking on the role of the teacher and other professional identity.

24.3.3   *Main Pedagogical Orientations for Teacher Education at SFUVET*

Having outlined situation-based competence profiles for teachers and trainers in VPET, a second pillar for the base for the definition of teacher training curricula is related to the SFUVET's main orientations in VPET teacher education which can be summarized in the following eight topics. Each of them is detailed in the next paragraph.

1. Practice and competence-oriented training.
2. Integration of pedagogical content knowledge and situation-based knowledge.
3. Strengthening the potentialities of the in-service training model.
4. Situation-based instructional approach.
5. Reflective orientation of training.
6. Personalization of training.
7. Strengthening the identity components of teacher training.
8. Orientation towards developments and changes in vocational training.

24.3.3.1   Practice and Competence-Oriented Training (Handlungs- Und Kompetenzorientierung)

Qualifying training for teachers in the professional sector should respond to needs arising from teaching practice and provide resources and tools to implement a conscious practice which is supported by the necessary knowledge. In this sense, the curricula clearly consider professional work situations and competences in order to implement an action-oriented approach for real-life situations.

24.3.3.2   Integration of Pedagogical Content Knowledge and Situation-Based Knowledge

A practice-oriented approach does not imply the structuring of a curriculum which is simply functional to the requirements of work practice: it requires considering the necessary contribution of scientific knowledge at the base of teaching practices. It is therefore necessary to consider that the elaboration of training curricula requires thinking around a suitable, functional and flexible convergence between two organizational logic of knowledge: the disciplinary-scientific one, which represents the established and systematized knowledge in the pedagogical domain, and the situational one, which refers to concrete and lived experiences (Ghisla et al., 2008). These two forms of organization of knowledge usually correspond to two modes of apprehension – one, simplifying deductive orientation, the other inductive – which are equally important and which, depending on the specificities of the particular training course, can be suitably integrated (Clement, 2003; Roegiers, 2000).

This integration is, among other things, in line with an approach to competence development that is devoted not only to the development of practical skills (know-how) but also to the ability to mobilize and combine resources of different types (theoretical knowledge, know-how skills and attitudes – knowing how to be) in a work situation (Boldrini & Cattaneo, 2011; Boldrini & Ghisla, 2006; Cattaneo & Boldrini, 2007; Le Boterf, 2000a, 2000b). All in all, teacher education should, in this sense, develop resources that are useful for the implementation and development of the competence needed to be mobilized in specific work situations.

24.3.3.3 Strengthening the Potentialities of the in-Service Training Model

Teacher education in VPET takes place, according to the paragraphs above (§2), in conjunction with the professional activity itself (in-service model). This represents a considerable training opportunity for at least two reasons: firstly because the alternation allows teachers to directly experience the apprenticeship model their students live and secondly because it allows for a reflection on local teacher practices, overcoming the separation between teaching practice and pedagogical training. In this sense, where training is played out within multiple temporalities and spaces (professional, school, family, personal, etc.) (Maubant, 2013), training should make it possible to give meaning to moments and experiences which would otherwise be separate (Pineau, 2000).

24.3.3.4 Situation-Based Instructional Approach

From an instructional point of view, and in order to realize the previous points in a concrete fashion, the instructional approach to teacher training moves in continuity with the definition of the professional profile of teachers. The curricular model based on work situations or competences includes the question of "how", i.e. how to teach the instructional modalities that favour their development.

In this regard, the situation-based approach is also applied at the instructional level. An instruction based on real professional work situations is therefore taken as the main guideline: situation-based instructional approach (situation-based didactics/ Didactique par Situations/Situationsdidaktik (Boldrini, Ghisla, & Bausch, 2014, Ghisla, Boldrini, & Bausch, 2014)) plays a decisive role in implementing the continuity between professional activity and training. According to this approach, in order to develop professional competence, it is necessary to implement a "virtuous circle" that, starting from real professional work situations, activates learning and teaching mechanisms such as to develop resources and skills useful to be able to act in the same or similar situations (Pastrè, 2011).

This approach aims to mitigate the fracture between the knowledge(s) and the contexts in which they find implementation or meaning, between theory and practice (Tynjälä, 2008), between disciplines and professionalism, and between the different

places of training (the training provider and the school) and thus articulates the need for an integrated process of learning.

24.3.3.5   Reflective Orientation of Training

The training of teachers – in line with a didactic approach based on professional work situations – should allow for an explicit and structured reflection on professional practice in teaching, in order to consolidate it. Reflective training, in fact, presents itself as a promising way to integrate epistemological knowledge (know that/know why) and practical knowledge (know how) and to develop reflective competence, which is itself considered part of professional competence (Leung & Kember, 2003). We refer here to those models of reflective learning developed, inter alia, by John Dewey (1938/1963), David Boud, Keogh, & Walker (1985), David Kolb (1984), Donald Schön (1983), and Neuweg (2000, 2004). These authors clarify how the reflective practitioner makes use of reflection both in action, on action, and prospectively for the action. In order to act in a situation, one must be able to reflect on the situation itself (framing) and on the resources that one is able to deploy (Mann, Gordon, & MacLeod, 2009). The competent teacher is the one who activates reflective processes in, on, and for action. Consequently, the training programme should sustain and accompany the development of the teacher's reflective competence.

24.3.3.6   Personalization of Training

Teacher training is part of adult training in which the elaboration of meaning is fundamental and in which the teacher should be the author of his/her own training. As a result, teacher training programmes should focus on questions and issues that teachers themselves are familiar with on the basis of their own experience, expectations, and interests. Therefore, in the SFUVET's guidelines for teacher training curricula, much attention is paid to the importance of a training project for each teacher with which she or he can identify, starting with the issues that most interest him or her when entering the training. This aspect is crucial for seeking the necessary continuity and coherence between training and teaching practice. Furthermore, in light of a personalized approach to training, individualized supervision of teaching practice is expected.

24.3.3.7   Enhancement of Identity Components of Teacher Training

Teacher training in VPET does not only respond to the needs of those directly involved in it, first and foremost the teachers themselves, but more broadly to the different requirements of society as a whole (economy, culture, institutions, etc.). First, the training of teachers in the professional sector responds to the social and

political mandate to not only train not professionals who will be integrated into the job market but also to educate citizens who are integrated into society and capable of being professionally flexible (Swiss Confederation, 2002, Art.3, a). Second, teacher education in the professional sector indirectly meets the needs of the economic sector as teachers are called upon to train competent and competitive professionals in the various economic sectors. With this in mind, teacher education should provide opportunities for reinforcing and sustaining the definition of a professional identity which is – by its very nature – at the crossroads of multiple social, economic, and cultural functions. Finally yet importantly, the identity building of teachers should properly provide for opportunities for discussions about values, ethics, and deontology, given their essential importance in everyday practice (Desaulniers & Jutras, 2012; Jeffrey, 2013; Moreau, 2012; Prairat, 2009).

24.3.3.8   Orientation to Developments and Changes in the Vocational Training System

Finally, the training of teachers in the vocational training sector must be properly confronted with the evolutionary macro-trends facing society and the economy in the near future. In this sense, the definition of the megatrends of vocational training for 2030, which has been launched by SERI, represents a relevant reference point. Teacher training has the task of integrating opportunities for reflection on these trends and their impact on teaching requirements. These developments are primarily digitalization and the related use of information and communication technologies (ICT), globalization and migration, internationalization of the labour market, and professional mobility. Particularly, with regard to ICTs, it is desirable that training develops not only operational skills related to the integration of educational technologies in training but also culturally reflective skills which are aimed at an understanding of the psychosocial, ethical, and identity impacts of ICT use.

24.3.4   The SFUVET Model of VPET Teacher/Trainer Education

The competence profiles of teachers and trainers in the professional sector, together with the basic orientations that have been made explicit in the two previous chapters, represent the foundation on which SFUVET training curricula of the different VPET teachers and trainers have been developed. Curricula aim at the development of competences and are based on a didactic-pedagogical approach inspired by the situation-based approach and on the integration of teaching practice and training.

On a structural level, the programmes have been built on the following four principles related to the training programme and the training modules design:

- Each training programme is composed of modules.
- Each training programme is attended in tandem with the teaching profession.
- Each training programme is articulated on classes, individual study, and qualifications (exams).
- The definition of training module contents is derived from an overall consideration of:

  - i) Professional standards,
  - ii) Competence profiles,
  - iii) Professional situations,
  - iv) Pedagogical content knowledge based on the resources useful in the professional situations,
  - v) Megatrends in VPET.

On the basis of these organizational and design principles of the curriculum, ten differentiated programmes have been set up. In order to illustrate these pedagogical engineering choices in detail, we use the example of training programmes for the full-time teachers of professional subjects in VET (upper secondary level). It consists of a curriculum of 60 ECTS equivalent to 1800 training hours, which lasts 3 years and will be attended in tandem with teaching activity. Figure 24.2 presents the overall structure of the curriculum. Below are the main components and characteristics of the programme.

The main characteristics of the programme are the following:

At the core of the training, there are three transversal components. First, two modules (module I and module II) are transversal to the whole programme, representing a constant opportunity for reflection on and training in professional identity and professional practice (module I) and on a Personal Training Project (PTP, module II). In addition, there is a third transversal component: personalized supervision and coaching (the green line in Fig. 24.2).

The PTP (module II) is at the heart of the training, as it aims at guiding teacher training, focusing it on those aspects and questions that – deriving from professional practice – each participant considers to be particularly relevant and with respect to which he aspires to improve competences or to acquire new ones. Each participant is required to identify his/her own Personal Training Project at the beginning of the training, which will be carried out during the whole programme and which will profit from the resources presented in the modules A to G. This corresponds to the customization and personalization principle of the training and, moreover, to the opportunity of valuing the teaching practice of the participants according to the in-service training model. The Personal Training Project, in addition to being the guiding principle that characterizes the whole training, will also lead to the final Diploma Project (module II).

A second element at the heart of the training is dedicated to the development of teacher professional identity and practice (competence 11) and will occur transversally throughout the training in module I. It aims at the expansion of the teacher's professional identity, both from a practical and reflective point of view. This includes (a) seminars on the analysis of participants' teaching practices
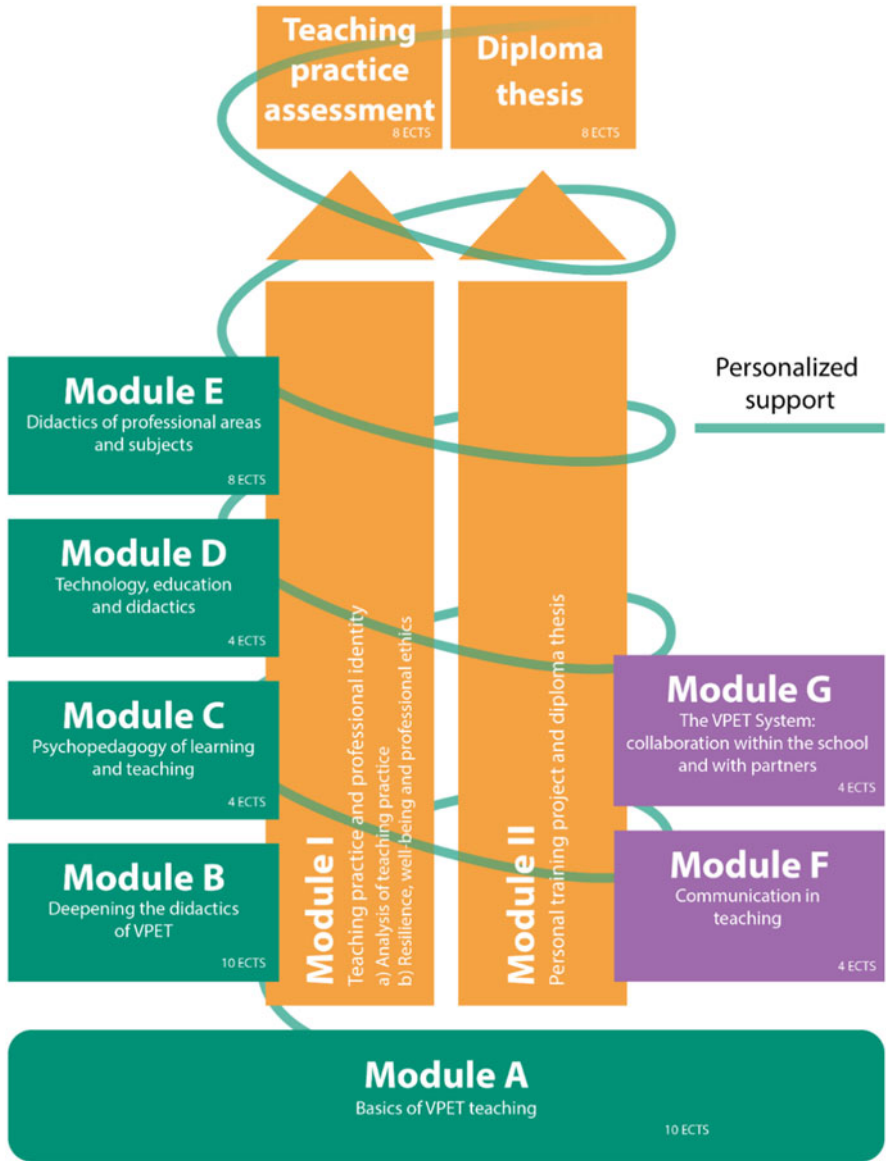
Fig. 24.2 SFUVET structure of the training curriculum for full-time vocational subject teachers in VET

exploiting the potential of video and video annotations (Boldrini, Cattaneo, and Evi-Colombo 2019, Boldrini, Sappa, and Aprea 2019) and (b) seminars on ethics and deontology, as well as the strengthening of the resources necessary to maintain teachers' well-being and resilience, with particular reference to protective and

threatening factors in VET (Boldrini, Sappa, & Aprea, 2019; Sappa, Boldrini, & Barabasch, 2019). Formally, the module ends with a teaching practice assessment. This component of the training responds to the principles of a reflection-oriented training, to a valorization of identity components of teacher training, and to an instructional situation-based approach.

Customized and personalized supervision is also present throughout the entire training period and is transversal in character. It includes the supervision of the design, implementation, and development of the Personal Training Project and a pedagogical supervision on teaching practices during classes.

In accordance with the competence profile outlined here, and with the necessary disciplinary resources, the remaining training modules can be traced back to the following categories: first, modules related to the development of pedagogical and instructional competences with specific reference to the VET pedagogy (modules A to E, referring to competences 1–4 and 6–7). Among these, a module (module D) is dedicated to competence 4 and is concerned with the integration of technologies in teaching and to the digitalization process as it affects the professional sectors, a megatrend described above. Furthermore, in module E, a bilingual-teaching option is offered to those teachers wanting to implement it in their classes. This offer is related to the necessity of improving second language competences in apprentices in VPET, in light of growing internationalization of the labour market and related needs for professional mobility.

The development of the ability to collaborate within the system of vocational training (competence 9) is developed in module G, dedicated to VPET system deepening and to collaboration within the system), as well as the development of competence 5 communicate and interact with the class and students is developed in module F on communication in teaching. Lastly, a particular attention is devoted to those communicative processes in training contexts which are marked by cultural heterogeneity.

Each of these modules deals with a specific set of situation-based competences and professional situations which are trying to respond to a principle of integration between pedagogical knowledge and situational knowledge.

24.4   Conclusion

In this paper the authors outlined the general state of teacher education in the professional sector in Switzerland. This was done by highlighting the relevance of the national definition of requirements, guidelines, and main orientations in this field. Since the training of teachers in the professional sector in Switzerland differs widely depending on the competence subject being taught and the learning location, the contribution highlighted both the general structure of professional education in Switzerland (Sect. 24.1), the main pedagogical orientations (Sect. 24.2.1), and the different core syllabi envisaged (Sect. 24.2.2) by the Confederation for teacher education.

Against this backdrop, the contribution illustrated the main directions for the definition of teacher training courses at the Swiss Federal Institute for Vocational Education and Training which are derived from the federal guidelines (Sect. 24.3) and illustrated the fundamental conceptualization of VET and, specifically, of the curricula for teacher training, such as the situation-based approach (Sect. 24.3.1), the elaboration of specific competence profiles (Sect. 24.3.2), and main instructional orientations (Sect. 24.3.3) and, in the end, proposed an example of a training curriculum for vocational teachers (Sect. 24.3.4).

The curriculum example proposed here shows the operational translation of competence profiles, the centrality of professional work situations in the conceptualization and implementation of the SFUVET teacher training, and a valorization of in-service teacher training. It goes without saying that the proposed example shows a specific programme which has specifically been designed on the basis of the relevant competence profile, which in turn is based on the real work situations identified in the workshops with teachers. Each programme not only is developed around the competences shared by the various types of teachers and trainers but also seeks to ensure the necessary focus with respect to the specificity of each professional profile.

The training curricula thus revised and outlined are currently under examination for a potential first implementation (academic year 2019–2020) and will be subject to monitoring and evaluation.

The teacher training presented here integrates the experience SFUIVET has had in the development of curricula at different levels of VPET education over the past 15 years. The situation-based approach is widely used for VPET curricula in Switzerland. So, it appears important to also use this same approach for developing teacher training. This coherence will offer students the opportunity to experience teaching in particular situations in their learning, which will further facilitate the use of the situation-based didactics with their apprentices. Of course, there are other well-functioning methods and approaches in VPET didactics and in VET teacher education, but having the same approach for both the conceptualization and implementation of VET and teacher training is, as far as we can assess this, unique.

References

Baartman, L. K. J., & de Bruijn, E. (2011). Integrating knowledge, skills and attitudes: Conceptualizing learning processes towards vocational competence. *Educational Research Review, 6*(2), 125–134.

Boldrini, E. (2019). Onze compétences sont au cœur de l'enseignement. Profil de compétences de l'enseignant et de l'enseignante de la formation professionnelle. SRFP, Newsletter, 1.

Boldrini, E., & Cattaneo, A. (2011). Developing ICT teachers' training on a situated competence profile. *REM Research on Education and Media, 3*(1), 85–102.

Boldrini, E., Cattaneo, A., & Evi-Colombo, A. (2019). Was it worth the effort? An exploratory study on the usefulness and acceptance of video annotation for in-service teachers training in VET sector. *Research on Education and Media, 11*(1), 100–108.

Boldrini, E., & Ghisla, G. (2006). *Competenze e loro valutazione in ambito formativo* (pp. 17–34). USI.

Boldrini, E., Ghisla, G., & Bausch, L. (2014). Didattica per situazioni. In G. Quaglino (Ed.), *Formazione: metodi* (pp. 337–360). Milano.

Boldrini, E., Sappa, V., & Aprea, C. (2019). Which difficulties and resources do vocational teachers perceive? An exploratory study setting the stage for investigating teachers' resilience in Switzerland. *Teachers and Teaching, 25*(1), 125–141.

Boud, D., Keogh, M., & Walker, D. (1985). *Reflection: Turning experience into learning*. Kogan Page.

Cattaneo, A., & Boldrini, E. (2007). A quali-quantitative research pattern for the surveying of a competence profile of the teacher using ICTs in a blended learning project. In U. Bernath & A. Sangrà (Eds.), *Research on competence development in online distance education and E-learning* (Vol. 13, pp. 35–45). BIS-Verlag der Carl von Ossietzky, University of Oldenburg.

Clement, U. (2003). *Berufliche Bildung zwischen Erkenntnis und Erfahrung. Realisierungschancen des Lernfeld-Konzeptes an beruflichen Schulen*. Schneider.

Darling-Hammond, L. (2017). Teacher education around the world: What can we learn from international practice? *Journal of Teacher Education, 40*(3), 291–309.

Desaulniers, M.-P., & Jutras, F. (2012). *L'éthique professionnelle en enseignement. Fondements et pratiques. 2ème édition*. Presse de l'Université du Québec.

Dewey, J. (1938/1963). *Experience and education*. Simon & Schuster.

EDK. (2020). *EDK – CDIP – CDPE*. Swiss Education System. Retrieved February 27, 2020, from http://www.edk.ch/dyn/11553.php.

Ghisla, G. (2013). *Meglio artigiano che disoccupato?* Casagrande.

Ghisla, G., Bausch, L., & Boldrini, E. (2008). CoRe – Kompetenzen-Ressourcen: Ein Modell der Curriculumentwicklung für die Berufsbildung. *Zeitschrift für Berufs- und Wirtschaftspädagogik, 3*, 431–466.

Ghisla, G., Boldrini, E., & Bausch, L. (2014). *SiD: Situationsdidaktik*. Ein Leitfaden für Lehrkräfte in der Berufsbildung. EHB.

Historisches Lexikon der Schweiz. (2012). Retrieved February 24, 2020, from http://www.edk.ch/dyn/11553.php https://hls-dhs-dss.ch/de/articles/028711/2012-08-09/

Hofstetter, R., Schneuwly, B., Lussi, V., & Cicchini, M. (2004). Formation des enseignants secondaires: logiques disciplinaires ou professionnelles. Le cas de Genève (fin du 19e - première moitié du 20e siècle). *Revue Suisse d'Histoire, 3*, 275–305.

Jeffrey, D. (2013). *L'éthique dans l'évaluation scolaire*. Presses de l'Université Laval.

Keller, A., Zirkle, C., & Barabasch, A. (2019). Focal points of VET teacher training a comparison of VET teacher education in the USA and Switzerland. *Compare: A Journal of Comparative and International Education*.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, Prentice Hall.

Le Boterf, G. (2000a). *Compétence et navigation professionnelle*. Les Éditions d'organisation.

Le Boterf, G. (2000b). *Construire les compétences individuelles et collectives*. Les Éditions d'organisation.

Leung, D. Y. P., & Kember, D. (2003). The relationship between approaches to learning and reflection upon practice. *Educational Psychology, 23*(1), 61–71.

Livingston, K., & Flores, M. A. (2017). Trends in teacher education: A review of papers published in the European journal of teacher education over 40 years. *European Journal of Teacher Education, 40*(5), 551–560.

Mann, K., Gordon, J., & MacLeod, A. (2009). Reflection and reflective practice in health professions education: A systematic review. *Advances in Health Sciences Education, 14*(4), 595–621.

Maubant, P. (2013). *Apprendre en situations: un analyseur de la professionnalisation dans les métiers adressés à autrui*. Presses de l'Université du Québec.

Moreau, D. (Ed.). (2012). *L'éthique professionnelle des enseignants. Enjeux, structures et problèmes*. L'Harmattan.

Neuweg, G. H. (2000). *Wissen Können Reflexion*. STUDIEN Verlag.

Neuweg, G. H. (2004). *Könnerschaft und implizites Wissen*. Waxmann.

Norton, R. (1997). *DACUM handbook* (2nd ed.). The Ohio State University.

OECD. (1998). *Staying ahead: In-service training and teacher professional development*. OECD Publishing.

Oser, F. (1998). Standards in teacher training. *European Education, 30*(2), 25–44.

Pastrè, P. (2011). *La didactique professionnelle. Approche anthropologique du développement chez les adultes*. PUF.

Pineau, G. (2000). *Temporalités en formation*. Anthropos.

Prairat, E. (2009). *De la déontologie enseignante. Valeurs et bonnes pratiques*. PUF.

Raduan, N. A., & Na, S. I. (2020). An integrative review of the models for teacher expertise and career development. *European Journal of Teacher Education., 43*, 428–451.

Roegiers, X. (2000). *Une pédagogie de l'intégration. Compétences et intégration des acquis dans l'enseignement*. De Boeck & Larcier.

Sappa, V., Boldrini, E., & Aprea, C. (2015). Combining teaching with another job: A possible resource to face professional challenges. Preliminary findings from a Swiss study in vocational education and training. *Empirical Research in Vocational Education and Training, 7*(13), 1–23.

Sappa, V., Boldrini, E., & Barabasch, A. (2019). Teachers' resilience in vocational education and training (VET). In S. McGrath, M. Mulder, J. Papier, & R. Suart (Eds.), *Handbook of vocational education and training* (pp. 1667–1684). Springer.

SBFI. (2021) Rahmenlehrpläne Berufsbildungsverantwortliche. SBFI: . Retrieved February 24, 2020, from https://www.sbfi.admin.ch/dam/sbfi/de/dokumente/rahmenlehrplaeneberufsbildungs-verantwortliche.pdf.download.pdf/rahmenlehrplaeneberufsbildungs-verantwortliche.pdf

Schön, D. A. (1983). *The reflective practitioner. How professionals think in action*. Basic Books.

SERI. (2017). *Handbuch Prozess der Berufsentwicklung in der beruflichen Grundbildung*. SERI.

SERI. (2019). *Vocational and professional education and training in Switzerland – Facts and figures 2019*. SERI.

SERI. (2021). *Berufsbildung 2030*. Retrieved February 26, 2020, from https://berufsbildung2030.ch/de/

Swiss Confederation. 2002. *Vocational and professional education and training act (VPETA)*. Retrieved February 24, 2020, from https://www.admin.ch/opc/en/classified-compilation/20001860/index.htm.

Swiss Confederation. 2003. *Ordinance on vocational and professional education and training, VPETO*. Retrieved February 24, 2020, from https://www.admin.ch/opc/en/classified-compilation/20031709/index.html.

Tynjälä, P. (2008). Perspectives into learning at the workplace. *Educational Research Review, 3*, 130–154.

UNESCO. (2012). *International standard classification of education. ISCED 2011*. UNESCO Institute for Statistics.

Wettstein, E. (1987). *Die Entwicklung der Berufsbildung in der Schweiz*. Sauerländer.

Wettstein, E., Schmind, E., & Gonon, P. (2014). *Berufsbildung in der Schweiz*. HEP.

Zbinden-Bühler, A., & Volz, C. (2007). Analyse des beruflichen Handlungsfeldes zu entwicklungkompetenzorientierter Bildungspläne auf der Basis von Situationsbeschreibungen. *Empirische Pädagogik, 21*(3), 322–339.

Zgaga, P. (2013). The future of European teacher education in the heavy seas of higher education. *Teacher Development, 17*(3), 347–361.

Chapter 25
Initial Training of Vocational Education Faculty in Spain: Higher Quality, Better Skills

Miquel Àngel Essomba, Montserrat Milán, and Teresa Guixé

Abstract Vocational education in Spain can be defined as an ecosystem under construction, whose organic and functional structure is growing and integrating in order to optimize its capacity as an instrument of qualification for the population. In order to better deliver teaching in this system, Spain has moved from providing initial teacher training with no pre-qualification requirements or prior pedagogical training to establishing demanding criteria for pre-exercise qualifications and didactic training which are comparable to those of secondary education. Currently, the initial training needed to join a vocational education faculty is organized through a MA teacher training degree, and this is a great milestone which has been achieved. However, the homologation and the equalization of vocational education faculty with secondary education faculty, or the decentralization of the system at the local level, are great challenges which still remain for the improvement of the initial training of vocational education teachers in this country. These must be addressed through dialogue and agreement.

25.1 Introduction to the Initial or Regulated Vocational Education System in Spain

The organization of vocational education in Spain can be defined as an ecosystem under construction, whose organic and functional structure is growing and integrating in order to optimize its capacity as an instrument of qualification for the population.

For various reasons, the evolution of this structure has been much faster with regard to the regulations promulgated than it has been in their implementation: political (changes of government that have repealed, modified, or slowed down

M. À. Essomba (✉) · M. Milán · T. Guixé
Universitat Autònoma de Barcelona, Building G-6, E-08193 Bellaterra (Cerdanyola del Vallès)
e-mail: MiquelAngel.Essomba@uab.cat

this development), administrative (lack of agility and cooperation between national and local administrations that traditionally work independently of one another, as is the case with education and employment), or economic (lack of political will make the necessary investment a priority).

Currently, the vocational education system in Spain consists of two subsystems:

- Initial or regulated vocational education (FPI), which is under the authority of the Ministry of Education and the educational administrations of the autonomous communities.[1]
- Vocational education for employment (FPE), which is connected to the Ministry of Employment and Social Security, through the State Employment Service and the Employment Service of the Autonomous Communities.

Our study focuses on the subsystem of initial or regulated vocational education. This subsystem comprises a set of training and specialization courses with a modular structure, namely:

- Vocational modules specific to basic vocational education programs: These are part of the resources provided during compulsory education.
- Secondary education cycles, which are part of post-compulsory secondary education.
- Higher education cycles which are part of the higher education system (European Higher Education Area).
- Specialization courses: These are intended to complement the skills of those who already have a vocational education certificate.

Initial or regulated vocational education is conducive to qualifications awarded by the national educational administration that generally have a duration of two academic years with a teaching load of 2000 h. The basic vocational education modules aim at attaining the Basic Level Technician certificate (GB, level 1); the middle grade education cycles aim at attaining the Middle Level Technician certificate (GM, level 2), and the upper grade education cycles aim at attaining the Upper Level Technician certificate (GS, level 3).[2]

The educational administrations of the autonomous communities have the competence to design part of each of the study programs, but in order to be accredited throughout the state, the minimum content requirements must be set by the Ministry of Education. In addition, some of these regional administrations design their own study programs, which are accredited only in the area of jurisdiction of each autonomous community.

---

[1]The autonomous communities are the regional administrative structures through which the Spanish state exercises the decentralization of decisions and to a greater extent of public administration.

[2]The acronyms GB, GM, and GS stand for the Spanish terms "Grado Básico" (basic level), "Grado Medio" (intermediate level), and "Grado Superior" (upper level).

To better understand the functioning of initial or regulated vocational education in Spain, some characteristics must be taken into account:

- Basic vocational education (ISCED 2) is available before the end of compulsory schooling[3], usually at the end of the third of its four courses (usually at the age of 15 and only until the age of 17). Students may be admitted only if the faculty advises it and if the students and their families agree. People over 17 years of age without prior qualification may also apply. The configuration of this program not only includes professional modules; it is also complemented by social, linguistic, and scientific training.
- Secondary vocational education (ISCED 3) is accessed directly from the basic vocational education diploma or from the compulsory secondary education diploma. It can also be accessed through a specific admission test regulated by the educational administrations of the autonomous communities.
- Higher level vocational education (ISCED 5) is accessed directly from the middle level vocational education or from a high school diploma and has higher education status. It can also be accessed through a specific admission test regulated by the educational administration of the autonomous communities.

Currently Spain has 172 different programs for initial or regulated vocational education, which are organized into 26 fields of study. There are only a few specialization courses given that the latter modality has only begun to be regulated very recently.

Table 25.1 shows the number of qualifications provided by each field of study (Ministry of Education, Culture and Sport 2020).

The structure of initial or regulated vocational education qualifications is modular. In addition, the educational system complements initial education based on the national catalogue of professional qualifications[4] with a number of modules which deal with intersecting competences, more related to access to the world of employment, competence in a foreign language, or safety and health at work.

In Spain, according to the latest published statistics, there are more than 838,764 students enrolled (cf. Table 25.2) in some vocational education program within the educational system, slightly more than 10% of the total number of students in the system, a percentage that, despite having grown by 77% in the last decade, is not sufficient for the percentage of medium level graduates in Spain to reach the EU23

---

[3]Compulsory basic education in Spain has a duration of 10 years, between the ages of 6 and 16, and comprises two stages: primary education (between the ages of 6 and 12), comparable to an ISCED level 1, and compulsory secondary education (between the ages of 12 and 16), equivalent to an ISCED level 2.

[4]The national catalogue of professional qualifications lists the qualifications identified in the production system according to the required skills for exercising a profession which are eligible for recognition and accreditation. Its design is arranged to promote, as the law itself indicates, the homogenization of educational levels at the European level, so that an equivalence is established between the eight levels of the European Qualifications Framework (EQF) and the five levels of the Spanish Framework (MECES).

Table 25.1 Distribution of specialties in the Spanish educational system by field of study

	Basic VE (Level 1)	Medium VE (Level 2)	Higher VE (Level 3)
Physical and sports activities	–	1	1
Administration and management	1	1	2
Agrarian	3	4	3
Graphic arts	1	3	2
Arts and crafts	–	–	1
Business and marketing	1	1	4
Building and civil works	1	2	3
Electricity and electronics	1	2	5
Energy and water	–	–	3
Mechanical manufacturing	3	3	4
Hostelry and tourism	2	2	5
Staff image	1	2	4
Sound and image	–	1	5
Food industries	2	3	2
Extractive industries	–	2	–
Computing and communications	2	1	3
Installation and maintenance	1	3	3
Wood, furniture, and cork	1	2	1
Maritime fishing	2	4	3
Chemistry	–	2	3
Health	–	3	9
Security and environment	–	1	2
Sociocultural and community services	1	1	5
Textile, clothing, and leather	2	3	4
Vehicle transport and maintenance	1	5	1
Glass and ceramic	1	1	1

average (33% vs. 46% respectively). In the following table, we can see the distribution of these students by educational cycle, field of study, and school ownership (Ministry of Education and Vocational Training, 2020). In-person and distance learning are included.

Of the more than 750,000 teachers in Spain who provide teaching at all stages and levels of non-university education, it is difficult to determine how many are engaged in vocational education. In Spain, data on teachers is classified by teaching, not by stages, let alone by subjects. Therefore, we know how many teachers teach general secondary education in the public system, which in the 2018–2019 academic year were 194,367. However, they are not disaggregated by subjects. We also know how many belong to the vocational education faculty in the public system, which, in the

Table 25.2 Vocational education students in Spain, by school ownership, gender, and academic level. Year 2019–2020

	Basic VE			Medium VE			Higher VE		
	Total	% women	% public high schools	Total	% women	% public high schools	Total	% women	% public high schools
Total	72,180	29.2	75.8	344,266	43.3	72.9	398,908	47.4	71.9
Physical and sports activities	–	–	–	11,012	20.0	58.8	22,996	20.3	57.2
Administration and management	12,950	50.4	67.8	49,413	59.6	69.4	58,555	63.2	78.2
Agrarian	4216	18.7	87.0	7084	14.7	81.7	6896	19.4	79.6
Graphic arts	538	42.2	81.2	3449	35.8	74.1	2228	46.3	76.8
Arts and crafts	–	–	–	–	–	–	110	45.5	100.0
Business and marketing	4309	53.7	72.5	15,626	51.7	67.3	25,626	48.4	71,0
Building and civil works	640	6.9	76.1	718	21.3	91.4	3924	30.7	93.4
Electricity and electronics	9884	3.5	75.2	25,551	3.0	76.5	23,650	4.8	80.8
Energy and water	–	–	–	40	7.5	100.0	2010	8.5	88.3
Mechanical manufacturing	4808	2.2	68.3	11,620	3.3	75.2	9807	9.4	72.2
Hostelry and tourism	6676	38.9	81.4	18,974	37.8	83.4	22,173	56.0	82.6
Staff image	6.123	83.1	76.6	18,212	89.7	72.4	7865	94.1	78.0
Sound and image	–	–	–	3282	22.6	59.9	16,559	32.3	58.4
Food industries	398	39.7	93.7	4515	54.2	88.6	2321	46.1	91.9
Extractive industries	–	–	–	186	4.8	69.4	–	–	–
Computing and communications	11,567	17.7	78.7	32,572	7.8	78.8	47,456	11.4	75.0
Installation and maintenance	465	5.4	62.4	11,155	2.1	84.0	12,601	13.2	85.2
Wood, furniture, and cork	1694	10.4	85.4	2253	9.0	89.5	895	2.,9	100.0
Maritime fishing	33	0.0	100.0	1602	6.6	92.9	1858	9.4	95.0
Chemistry	–	–	–	3093	55.0	93.7	7138	50.4	95.3
Health	–	–	–	72,908	73.2	60.7	51,282	75.0	49.0

(continued)

Table 25.2 (continued)

	Basic VE			Medium VE			Higher VE		
	Total	% women	% public high schools	Total	% women	% public high schools	Total	% women	% public high schools
Security and environment	–	–	–	614	7.0	82.7	1050	34.4	90.3
Sociocultural and community services	260	72.7	26.5	21,820	85.8	85.1	58,810	87.1	72.4
Textile, clothing, and leather	506	60.3	87.9	1418	81.9	84.1	1621	85.0	81.6
Vehicle transport and maintenance	7050	2.1	79.0	27,057	2.8	78.2	11,421	3.2	77.3
Glass and ceramic	63	39.7	100.0	77	79.2	100.0	56	30.4	100.0
Not distributed	–	–	–	15	0.0	100.0	–	–	–

same year, amounted to 28,213. There are no disaggregated data about vocational teachers in private schools.

25.2 Initial Training of Vocational Education Teachers: General Aspects

The regulation of the basic structure of initial teacher training generally depends on the national administration. The various regional administrations of the autonomous communities are responsible for deploying the structures and resources necessary for their local organization. Therefore, even though the Spanish system of initial training for vocational teachers is structured through the same national regulation, there is a certain diversity, from a local perspective, in the ways in which such legislation is implemented.

Consequently, the centers that can provide initial training for vocational education faculty fall under the responsibility of the autonomous communities. The autonomous communities determine which universities and educational institutions may offer such initial teacher training courses and establish appropriate agreements for the organization of such training.

The initial training of vocational teachers is generally the same as for other secondary teachers teaching at ISCED levels 2, 3, and 4. There are two types of centers in which the initial training of vocational education teachers takes place: universities and specific training institutes. Each type of center is empowered to certify a specific degree: universities can organize a 1-year MA degree of 1000 h of training, called the "MA degree in teacher training," and specific training institutes can organize what is called the "certificate of pedagogical training and didactics," although this second program can also be organized by universities.

The difference between the MA degree and the certificate training has an essentially bureaucratic origin and outcome. In other words, while the MA is a requirement for professors and secondary school teachers, the certificate is intended for the technical teachers of vocational education, who cannot access the MA studies because their previous certification does not permit them to do so. The MA degree enables teachers to work in institutions of compulsory secondary education, baccalaureate, and vocational education, while the certificate enables them to perform functions in vocational education and, exceptionally, in compulsory secondary education.

Currently, in Spain there are a total of 65 university centers (46 of which are public) that officially offer the MA in teacher training, while there are a total of 18 universities (14 of which are publicly owned) and 1 training institute which offer courses to get the certificate of pedagogical and didactic training. Only the autonomous community of Catalonia has a training institute, the "Institut Obert de Catalunya," which organizes and accredits the certificate of pedagogical and didactic training.

The autonomous communities cannot modify neither the title nor the structure of the MA degree, called "MA in teacher training in compulsory secondary education and baccalaureate, vocational education and language education," since it is an exclusive mandate by the central government. However, the autonomous communities may modify the title and the structure of the training course addressed to technical teachers of vocational education that can be called "Pedagogical and Didactic Training in Vocational and Sports Education," "Certificate of Equivalent Pedagogical and Didactic Training," "Certificate of Pedagogical and Didactic Training for Technical Vocational Teachers," "University Extension Diploma for Technical Teachers in Vocational Education and Sports Courses," or "Training in pedagogy and Didactics," depending on the Spanish region you stay.

These denominations in fact correspond to the same certificate and clearly illustrate the diversity of the educational system as a result of the decentralization of this training in the autonomous communities.

25.3   Historical Perspective of the Initial Training of Vocational Education Faculty

The faculty who teach initial or regulated vocational education have seen the requirements for exercising their teaching functions increase over time. In the last century, Spain has moved from providing vocational education for teachers with no pre-qualification requirements or prior pedagogical training to establishing demanding criteria for pre-exercise qualifications and didactic training, comparable to those of secondary education.

This follows a certain logic: the initial training of vocational teachers has become richer and more complete, as has the initial or regulated vocational education system itself. We can identify three milestones in this process, which allow us to understand why, from a sociohistorical perspective, the initial training of vocational teachers today is the way it is:

- Standardization stage (Industrial Vocational Education Act of 1955).
- Integration stage (General Education Act of 1970).
- Recognition stage (General Regulation of the Education System Act of 1990).

The standardization stage of the initial training of vocational education teachers took place through the Organic Law on Industrial Vocational Education (LOPPI) of July 21, 1955, which aimed to organize and characterize such training in the economic period of the 1950s and 1960s, known as "desarrollismo."[5]

In this context, different teaching categories were established. These, from highest to lowest rank, are full-time teachers, workshop teachers, special teachers,

---

[5]"Desarrollismo" is a specific term with no translation into other languages. In English it can be defined as "economic development in industrial areas with no previous planning."

assistant teachers, and workshop and internship assistants. Access to the teaching profession required participation in a public competition and a skills exam, but no qualification was prescribed by law, thereby leaving it to a lower regulatory rank.

Regarding their initial teacher training, Article 49 of the LOPPI only required a pedagogical qualification for full-time teachers and interim workshop teachers, which was called "technical and pedagogical improvement" and was organized by the Industrial Teacher Training Institution. The pedagogical qualification was not required for the rest of the staff. This institution, under the Ministry of National Education, had its mission described in Article 25 (c) of the Act, which was defined as "the training, selection and technical and pedagogical improvement of teaching staff in official and non-official establishments."

This technical and pedagogical improvement was prescriptive for teachers who obtained an interim teaching position for 5 years, through courses organized by the Industrial Teacher Training Institution. This training was considered an extra certificate of merit, not a requirement, obtained through a competition for a teaching position at a public school.

Regarding the stage of integrating the initial training of vocational teachers into all secondary teacher training, the general education law of August 4, 1970, is important. This law had the particularity of considering, for the first time in the history of Spain, vocational education as a subsystem of the Spanish educational system from preschool education to university studies.

This degree of integration into the educational system, and differentiation from the previous vocational education model, implied a substantial change in the conception of the faculty, and therefore of their initial training as well. Article 108 of the law provided that the organization of the state faculty should be simplified into two teaching positions: associate professors and professors. The prerequisites for becoming a teacher were also established and were defined according to the level of teaching: first-level teachers were required to have a second-stage vocational qualification, second-level teachers were required to have a minor college degree (a diploma or certification as a technical architect or technical engineer) according to their field of study, and third-level teachers were required to have a major university degree (bachelor, architect, or engineer), although this third level was never implemented.

There were also substantial changes in the initial training of vocational education teachers which sought to increase qualifications and recognition. First, initial training went from simply being an extra certificate of merit obtained while gaining access to the teaching profession and obtaining a tenured position to a mandatory prerequisite for access to the job, regardless of the professional category. Secondly, the training authority was transferred from the educational administration (formerly held by the Industrial Teacher Training Institute, under the then Ministry of National Education) to the universities, through the Institutes of Educational Sciences created by the Decree 1678/1969 of July 24. Its aim was the satisfaction of the pedagogical training needs, both initial and continuing, of university graduates, thereby structurally strengthening the quality of initial training given by qualified trainers. Thirdly, initial training was decentralized, giving the territories room for management to

organize and deliver a curriculum that, for the time being, remains common to all courses.

The initial training of vocational education teachers, compared to that of other teachers requiring a university degree, consisted of a training course which was initially regulated by the Ministerial Order of July 8, 1971, and which governed the teaching activities of the Institutes of Educational Sciences, in connection with the pedagogical training of university students. This course led to the acquisition of a nonadministrative university degree, known as the "certificate of pedagogical aptitude," which was in effect until 2009. This course was composed of two study training modules of 150 hours each: a theoretical one, with emphasis on three thematic areas: the first, training in sociology, psychology and history of education; the second, pedagogical training and didactic specialization; and the third, a practical one, namely, carrying out teaching internships in a middle school.

Finally, with regard to a stage of recognition of the value of vocational education for the qualification of the population and the economic and social development of the country, the 1990 law on the general management of the educational system was important. This was the law that extended compulsory education to the age of sixteen and modernized the design of the curriculum.

There were also substantial changes in the field of vocational education. Article 30 of the Act reflected the most substantive changes: consolidation of the integration of vocational education throughout the whole education system; integration of vocational education in compulsory education and into the lower secondary education, understood as basic vocational education; the organization of two degrees of specific vocational education, namely, intermediate and higher degrees; and increased requirements for the accreditation of the candidate student for access (requiring the same requirement for those who want to carry out academic post-compulsory studies as for those who wish to pursue a non-university certification).

Article 33 provided that vocational education teachers should be homologated to all secondary education teachers, and therefore it was determined that their academic requirements should be the same as those for secondary school teachers. They were thus required to have a bachelor's degree, or a degree in engineering or architecture. However, it was stressed that for some areas of study, a short university degree or certificate would suffice, i.e., a diploma or a certification as a technical engineer or technical architect.

In either case, the faculty was required to take an initial training prior to the exercise of the teaching profession: a pedagogical qualification course leading to didactic specialization qualification. The main novelties in this initial training, compared to the previous training model, were the degree awarded and its design. On the one hand, the exclusive right of the educational sciences departments of universities to offer this initial training was eliminated, and the possibility that this training could be organized by public institutions was created. However, the door was left open for these institutions to sign agreements with universities for the completion of the course, without specifying which unit of the university should be responsible for it.

In any case, the most significant novelty in the design was the duration of the course, a minimum of 1 year. The pedagogical aptitude certificate of the general education law indicated a training load of 300 hours, whereas in the new law, the training load was tripled. The theoretical-practical nature of the training was kept, and particular importance was given to the practical dimension in centers.

However, this proposal was never fully developed, for several reasons: among the most remarkable of these, the collective resistance of high school teachers should be highlighted. Among high school faculty, the idea that knowledge of the discipline was sufficient to know how to teach it still prevailed. Besides, the administration did not allocate and extra budget for its deployment nor allowed the coexistence of the two teaching qualifications (the aptitude certificate and the qualification certificate). Neither the autonomous communities, nor universities, nor the university graduates themselves felt called upon to abandon the former initial training, and therefore the course leading to the qualification certificate was limited to some pilot experiences in some autonomous communities. It was not until 2009 that a 1-year course which could be completed through a MA degree offered by a university, or a certificate of pedagogical and didactic aptitude, was finally established, a model that still exists today.

25.4 Vocational Education Faculty in Spain Today: Areas of Specialization and Requirements for Access to Initial Training

The faculty who teach initial or regulated vocational education in public institutions belong to three different types of domains (LOE 2/2006, of 3 May):

- Secondary school professors who perform their duties in compulsory secondary education, baccalaureate, and vocational education.
- Secondary school teachers, who perform their duties in compulsory secondary education, baccalaureate, and vocational education.
- Technical vocational education teachers, who perform their duties in vocational schools and, as an exception and under certain conditions, in compulsory secondary education.

Within each of the three domains, each teacher is also identified with a particular subject. The subjects of study taught by vocational education faculty are regulated by the Royal Decree 1834/2008, of November 8, which defines the content of training for the exercise of teaching in compulsory secondary education, baccalaureate, vocational education, and special regime education and establishes the areas of specialization of secondary education faculty. It also defines the allocation of subjects and modules to be taught by the respective teachers at these stages of the educational system.

This Decree established that the faculty may teach the same subjects in the domains of compulsory secondary education, baccalaureate, and vocational education. However, certain subjects are reserved for the technical vocational faculty (cf. Table 25.3).

The autonomous communities distribute the subjects among the different universities that offer the MA degree. In this way, each university specializes in one or more subjects. An example is the Catalan case, where, during the school year 2020–2021, the subject of technology can only be studied at one university center, while the subject language and literature can be studied at six different centers. However, the autonomous communities do not necessarily offer all the subjects regulated by Royal Decree 1834/2008. The offer will vary according to the regulations and resources of each autonomous community.

On the other hand, the existence of different faculties is relevant here because it involves the design, management, and evaluation of a training system that includes different training paths for the initial training of vocational education teachers. In other words, although it is true that basic and common pedagogical and didactical training is required for all the three faculties, each faculty has different areas of specialization determined by their teaching obligations in vocational education (Royal Decree 1834/2008).[6] There are also differences in access requirements for teachers who work in public schools and those who work in private schools. It is worth mentioning that there are insufficient requirements for the faculty who teach in privately owned schools.

The basic requirements for access to vocational education faculty, both for teachers and professors in public institutions, establish that applicants must have the title of Doctor, Bachelor, Engineer, and Architect and a corresponding degree or other equivalent degrees for teaching purposes.

In addition to this degree, in order to practice as a teacher or professor, a pedagogical and didactic accreditation is also required through an official MA degree, which is considered initial training for this position. The conditions for this MA degree are regulated by the Agreement of the Council of Ministers of December 14, 2007, which lay down the basic guidelines for the planning of teaching, the organization of the curriculum, the competences that students must acquire, the conditions for the realization and the organization of the internships, and the different responsibilities of different administrations to implement it (national, regional, and local level).

The case of technical vocational teachers deserves a separate comment. These professionals, on the one hand, are unable to attend a master's course of study because their previous degree was not issued by a university. But, on the other hand, they are required to have the same initial pedagogical and didactic training as the other teachers and professors. Therefore, a specific official training is regulated

---

[6]The Royal Decree 1834/2008 of November 8 defines the conditions of training for teaching in compulsory secondary education, baccalaureate, vocational education, and special education and establishes the subjects taught by secondary school faculty.

Table 25.3 Subjects established according to faculty domain. Faculty including professors and secondary school teachers

Faculty: secondary school professors and teachers		
Subjects taught	Business administration	Organization and processes of vehicle maintenance
	German	Organization and mechanical manufacturing projects
	Industrial chemistry and analysis	Organization and projects of energy systems
	Advising and personal image processes	Educational guidance
	Biology and geology	Portuguese
	Civil works and construction	Aquaculture farming processes
	Drawing, economics	Agricultural production processes
	Physical education	Clinical diagnostic processes and ortho prosthetic products
	Philosophy	Food industry processes
	Physics and chemistry	Sanitation processes
	Training and career guidance	Communication processes and media
	French	Textile, clothing, and leather processes and products
	Geography and history	Glass and ceramic processes and products
	Greek	Graphic arts processes and products
	Hospitality and tourism	Wood and furniture processes and products
	Computer science	Electronic systems
	English	Electrotechnical and automatic systems
	Socio-community intervention	Technology
	Italian, Latin	
	Spanish language and literature	
	Math	
	Music	
	Navigation and marine facilities	
	Business management and organization	
Faculty: technical vocational education teachers		
Subjects taught	Cooking and baking	Process operations
	Electronic equipment	Agricultural production operations and equipment
	Esthetics	Textile design and tailoring
	Manufacture and installation of carpentry and furniture	Hairdressing
	Installation and maintenance of thermal and fluid equipment	Clinical and ortho prosthetic diagnostic procedures
	Electrotechnical installations	Health and care procedures
		Trade processes

Table 25.3 (continued)

Breeding and growing facilities and equipment	
Laboratory	Administrative management processes
Vehicle maintenance	Graphic arts production
Machines, services, and production	Textile production and physical-chemical treatments
Mechanization and machine maintenance	Community services
Office of construction projects	Food and beverage services
Office of mechanical manufacturing projects	Computer systems and applications
Food processing operations and equipment	Welding
	Image and sound techniques and procedures

Source: Royal Decree 1834/2008

through Order EDU/2645/2011, dated September 23. This training is different from the official MA degree, issued by a university, that the other faculty must possess. Its aim is to accredit the basic pedagogical knowledge of the technical vocational faculty. Here, the conditions for access to such courses of study, as well as their certification, the skills to be acquired, and the planning of education are established.

Interestingly, Spanish law provides that other professionals who are not necessarily graduates and work in other fields other than the educational field can teach vocational education courses as specialist faculty members, although in this case, this incorporation takes place through employment or administrative arrangements for publicly owned institutions. Privately owned centers have their own selection rules.

25.5 The Initial Training Model for Vocational Education Faculty

As discussed in the previous section, the initial training needed to join a vocational education faculty is organized through a MA teacher training degree. This is the minimum training required for faculty in secondary education institutions which enables them to teach in compulsory secondary education (ESO), baccalaureate, and vocational education and which replaces the previous certification of pedagogical aptitude (CAP). It has an equivalence of 60 ECTS credits (including the internship and the final MA degree project) and determines the skills needed to teach.

In order to be able to study in the MA degree, there are some requirements that students must achieve. These are the accreditation of a foreign language at the B1 level of the Common European Framework of Languages and the accreditation of the proficiency of competences related to the teaching specialization that the

candidate wishes to pursue either through the accreditation of a specific degree or by passing a specific test designed by the universities.

This training is usually provided face-to-face (80%), and universities offering distance learning must ensure presence for specific modules, such as the internship. In addition, this regulation lays down the minimum criteria for degree program curriculum. Therefore, the contents to be included in the curricula of the courses offered are structured into:

- Generic training (12 ECTS). The content blocks are:

    - Learning and development of personality.
    - Educational processes and contexts.
    - Society, family upbringing, and education.

- Specific training (24 ECTS). The content blocks are:

    - Side courses for disciplinary training.
    - Learning and teaching of relevant subjects.
    - Teaching innovation and initiation in educational research.

- Specialization internships, including the MA degree final project (16 ECTS).

It is important to highlight the value of each of the modules, considering that the generic training module is more focused on pedagogical content. The specific training module includes contents linked to the particular subject of specialization and its didactics. The credits for the last module must be split between the internship and the final MA thesis.

On the other hand, a differentiated curriculum is required for the specialization in educational guidance, which is characterized by including a much higher volume of pedagogical content. It is organized as follows:

- Generic training (12 ECTS). The content blocks are:

    - Development, learning, and education.
    - Educational processes and contexts.
    - Society, family upbringing, and education.

- Specific training (24 ECTS). The content blocks are:

    - The fields of educational guidance and psycho-pedagogical counseling.
    - The processes of educational guidance and psycho-pedagogical counseling.
    - Inclusive education and diversity initiatives.
    - Educational research and innovation and change management.

- Specialization internships, including the MA degree thesis (16 ECTS). Internships must be carried out in sector teams or in educational guidance and psycho-pedagogical counseling at schools that provide any of the programs regulated by law.

As a result of this course of study, students must be able to acquire the competencies required for the MA degree, which are:

(a) Knowing the curricular contents of the modules relating to the relevant teaching specialization and the body of knowledge related to teaching and learning processes, as well as being familiar with the professional world.

(b) Being able to plan, develop, and evaluate the teaching and learning process by promoting educational processes that facilitate the acquisition of the competences of the subject, taking into account the level and previous training of students, as well as their orientation, both individually and in collaboration with other teachers and professionals of the center.

(c) Being able to seek, obtain, process, and communicate information, transform it into knowledge, and apply it to the teaching and learning processes in the modules or subjects of the specialization studied.

(d) Knowing and being able to use the various educational resources available, especially those provided by information and communication technologies.

(e) Being able to establish the curriculum for a school by participating in planning processes; developing and applying both group and individualized didactic methodologies adapted to the diversity of students.

(f) Designing and developing learning spaces with special attention to equity, emotional and value education, equal rights and opportunities for men and women, civic education, equal opportunities and nondiscrimination on the basis of disability, as well as universal accessibility and design for all and respect for human rights that facilitate life in society, decision-making, and the construction of a sustainable future.

(g) Acquiring strategies that stimulate the students' effort and promote their ability to learn for themselves as well as with others and develop thinking and decision-making skills that facilitate personal autonomy, trust, and initiative.

(h) Being familiar with the processes of interaction and communication, mastering the necessary social skills to foster learning and coexistence, and being able to address issues of discipline and conflict resolution.

(i) Designing and carrying out formal and nonformal activities that contribute to making the center a place of participation and culture in the community where it is located; developing mentoring and guidance functions for students in a collaborative and coordinated manner; participating in the evaluation, research, and innovation of the teaching and learning.

(j) Knowing the regulations and the institutional organization of the educational system and the models for improving quality in educational institutions.

(k) Knowing and analyzing the historical characteristics of the teaching profession, its current situation, its perspectives, as well as its interrelation with the social reality of each epoch.

(l) Informing and advising students about their teaching and learning processes and giving personal, academic, and professional guidance or, where appropriate, informing and advising families.

(m) Identifying and being able to respond to the needs of students with special needs through the incorporation and implementation of appropriate measures and resources in each case.

Among these competences, c and m are not mandatory. In the case of the specialization in Educational Guidance and Counselling, this list of competences is expanded with five more that must be acquired by the students of this program:

(n) Knowing the psycho-pedagogical characteristics of students in order to be able to evaluate them and issue the necessary reports.
(o) Knowing what measures to address diversity need to be taken to provide the necessary advice in each case.
(p) Analyzing the organization and functioning of the center with the aim of coordinating the personal, academic, and professional orientation of the students in collaboration with the members of the school community.
(q) Developing the necessary skills and techniques to be able to provide adequate advice to families on the development and learning process of their children.
(r) Identifying the public services and community entities with which the center can collaborate and promote and plan, alongside management staff, the actions needed to improve personalized support to the students.

It is evident that such a key module for the initial training of vocational education teachers as the internship module should prepare students to gain experience in the planning, teaching, and evaluation of the subjects of the respective specialization (Ministerial Order ECI/3858/2007 of 27 December).

The internship should, in turn, allow students in initial training to master the competences and social skills necessary for facilitating learning and school coexistence, as well as to develop their participation in the processes of improving the institutions where they practice. Finally, it must also facilitate the knowledge of the Spanish business sector and the organizational systems of the productive sectors of the economy.

The organization of the internships is also linked to a broader normative framework which is more comprehensive than the other elements of its planning.[7] Thus, its implementation must respond to the provisions of the Royal Decree 592/2014, of July 11, which regulates the external academic practices of university students: purposes, modalities, duration, agreements of educational cooperation, the training project, duties and rights of its recipients, tutoring, requirements of selection of mentors and practice centers, accreditation, monitoring, and assessment.

---

[7] Since the internship implies the exercise of activities that involve regular contact with minors, the autonomous communities must consider the provisions of Law 26/2015, of July 28, which amend the system of protection for children and adolescents for its organization. It is mandatory for students to possess a Certificate of Crimes of a Sexual Nature, which proves that they have not been convicted by a final sentence of child sexual abuse.

It is the responsibility of the autonomous communities to organize educational cooperation agreements between organizations collaborating in the internships and universities offering the degree. These agreements establish the regulatory framework for the three stakeholders: students, the collaborating entity, and the university. Besides, these agreements should include, among other aspects, the training project for the internship to be carried out by the student.

The process of student internships must include the participation of a mentor of the collaborating entity, which is usually a vocational education center, as well as an academic tutor from the university. The mentor of the collaborating entity must be linked to it and must be able to demonstrate his or her professional experience, as well as the ability to carry out an effective mentorship. Likewise, she or he must not be the same person performing the functions of academic tutor of the university. On the other hand, the academic tutor from the university must be a faculty member, preferably from the same department where the student is enrolled. The aspects to be evaluated by the tutors are the reflexivity, the technical capacity, the learning capacity, the assignment administration, the oral and written communicative abilities of the student, as well as his or her sense of commitment.

The collaborating entities must be officially recognized as internship centers. The tutors in charge of providing orientation and mentorship to the students must also be recognized. Likewise, the internal quality control system of each university must articulate the procedures that guarantee the quality of external internships, following the established criteria, both at the national and regional levels.

For the regulation of these selection criteria, the different autonomous communities have their own legislation (cf. Table 25.4), created from the regulatory framework of university internships (Royal Decree 592/2014 of July 11). Because each autonomous community has its own particularities, which not only are different but also change over time, it is beyond the scope of this text to mention all of them. However, we wanted to highlight one of the most relevant examples in all of Spain, the one corresponding to the autonomous community of the Basque Country, which we summarize in the following table.

25.6 The Initial Training Model for Technical Faculty of Vocational Education

As mentioned above, technical teachers in vocational education cannot take the MA degree as secondary teachers do as their initial training, since their basic degree is lower than ISCED 5 and does not automatically give them access to university studies. However, in the Spanish system of initial teacher training, this does not mean that they should not have such an initial training: the training system envisions the possibility of conducting studies at training institutes or universities which lead to the acquisition of a certificate of pedagogical and didactic training.

Table 25.4 Regulations for the recognition of collaborating entities and internship tutors in the Basque Country

Selection requirements[a]	Entity mentor	3 years in public service and 1 year at the internship center Work actively at the internship center A favorable report from the director of the traineeship center Preferential criteria: permanent job at the center, indefinite contract, mentoring experience; teacher training in the field of tutoring; minimum training in equality and coeducation Commitment to carrying out training oriented to the exercise of tutoring of interns Maximum two students per tutor
	University tutor	Not specified
	Coordinator of the training entity	Director of the internship center Possible delegation to the head of studies of the internship center Possible functions as coordinator of the center mentor if there are fewer than two interns
	Collaborating entity	Teaching in early childhood education, primary, compulsory secondary school, baccalaureate, vocational education, special education, or adult training Approval of the Higher Representation Body, in the case of public schools, or of the School Board, in the case of private schools with which there is an arrangement, for the proposal of the school management and after a consultation with the faculty Having teaching staff that can be accredited as internship mentor Preferential criteria: centers that develop innovative projects and methodologies or other quality experiences

[a]In all categories, recognition may be terminated in the event that the mandatory requirements no longer exist

Source: Own elaboration (2020) from Decree 33/2018, 2020

The purpose of this certificate is to provide the basic pedagogical and didactic training required for teaching in secondary education to professionals who have a diploma which is accepted for teaching purposes (Royal Decree 276/2007) but who are not able to pursue an MA degree in teacher training (ECD/1058/2013; EDU/2645/2011).

The competences that students enrolled in this program must obtain are the same as those of the MA degree for secondary teachers, as already discussed in the previous section.

In order to be able to access this training, the following requirements are required: a degree that is recognized as equivalent for teaching purposes, not to have a university degree that allows access to the MA degree in teacher training, and to be able to demonstrate proficiency in a foreign language at the B1 level of the Common European Framework of Languages.

This training has a value of 60 ECTS credits and is structured into three content modules: generic (10–16 ECTS), specific (15–22 ECTS), and internship (15–22 ECTS). The corresponding subjects can be studied, according to the regulations, either face-to-face or in a distanced mode (in the Catalan case, e.g., they are carried out entirely in online mode, with the exception of the defense of the final thesis and the internship). During the course of the training, students must demonstrate the acquisition of the aforementioned competences, integrating aspects related to learning and personality development, educational processes and contexts, society, family upbringing and education, professional guidance, the teaching-learning process, as well as innovation in teaching and initiation into educational research.

The internship module of these certificate studies includes credits for the final thesis. Both are organized around the rest of the subjects and should reflect the training and skills acquired throughout the training. More specifically, they are required to:

- Acquire experience in the planning, teaching, and evaluation of the modules or subjects corresponding to their area of specialization.
- Demonstrate a good proficiency of oral and written expression in teaching practice.
- Master the social skills and the competences necessary to foster a climate which facilitates learning and coexistence.
- Participate in proposals that aim to improve the various areas of action based on reflection on their practice.
- Know the business typology that corresponds to the productive sectors and understand the most common organizational structures in companies.

The autonomous communities are responsible for establishing the selection criteria for institutions and mentors responsible for the guidance and tutoring of students during the internship, as in the case of the MA degree in initial training. The organization of the internships carried out by the autonomous community of Catalonia is a good example. The internship training module is equivalent to a total of 350 h (280 of which are face-to-face) and it is distributed in three phases: the first, observation (40 h); the second, guided intervention (100 h); and the third, autonomous intervention (140 h).

25.7 Closing Remarks

The initial training of vocational education teachers has undergone major changes in recent decades, and these have gone hand in hand with the changes inherent in the educational system itself.

We agree that restructuring successive reforms developed in recent decades in the Spanish system of initial training for teachers of vocational education is a major challenge which must be met if a substantial improvement in the quality of the system is to be achieved.

However, it should be pointed out that the homologation and the equalization of vocational education faculty with secondary education faculty make it difficult to give specific attention to the particularities of vocational education that must be addressed. This would result in an improvement of the quality of the initial training they receive.

It is also paradoxical that there are two different routes of initial training for vocational education teachers. While the level of accreditation has different origins (MA or certificate), the training requirements for both programs are essentially identical. Furthermore, the decentralization of the system to the local level generates dispersion and differences in the quality of training for an educational system that should be similar across the country.

All of this suggests that there are great challenges still ahead for the improvement of the initial training of vocational education teachers: improvements that must come from a fluid and committed dialogue between educational administrations, teachers themselves, and economic and civic agents. It is from this dialogue that the new model of initial training that vocational education teachers urgently need should emerge.

References

Decree 33/2018, of March 6, on the internship of university studies that enable for the exercise of the teaching profession in non-university educational establishments of the Autonomous Community of the Basque Country, as well as equivalent training for those who cannot access a MA degree for reasons of previous qualification. Official Gazette of the Basque Country, 59, of March 23, 2018. Retrieved from https://www.boe.es/eli/es/rd/2014/07/11/592/con [Last query: 12 May 2020].

Institut Obert de Catalunya (s.f.). Qualifications declared equivalent for the practice of teaching. Retrieved from https://ioc.xtec.cat/educacio/attachments/article/387/Taula_titulacions_octubre_2017.pdf [Last query: May 02, 2020].

Law 26/2015, of July 28, amending the system for the protection of children and adolescents. Official Gazette of the State, 180, of July 29, 2015. Retrieved from https://www.boe.es/eli/es/l/2015/07/28/26/con [Last query: 11 May 2020].

Organic Law 2/2006, of May 3, on Education. Official Gazette of the State, 106 of May 4, 2006. Retrieved from https://www.boe.es/eli/es/lo/2006/05/03/2/con [Last query: April 30, 2020].

Order ECD/1058/2013, of June 7, amending Order EDU/2645/2011, of September 23, establishing training equivalent to the pedagogical and didactic training required for those persons who, being in possession of a qualification declared equivalent for teaching purposes, cannot enroll in the MA degree. Official Gazette of the State, 140, of June 12, 2013, p. 44309–44311. Retrieved from https://www.boe.es/eli/es/o/2013/06/07/ecd1058 [Last query: May 8, 2020].

Order ECI/3858/2007, of December 27, establishing the requirements for the verification of official university degrees that qualify for the exercise of the professions of Teacher of Compulsory Secondary Education and Baccalaureate, Vocational Education and Language Education. Official Gazette of the State, 312 of December 29, 2007, p. 53751–53753. Retrieved from https://www.boe.es/eli/es/o/2007/12/27/eci3858 [Last query: 28 April 2020].

Order EDU/2645/2011, of September 23, establishing the equivalent training to the pedagogical and didactic training required for those persons who, in possession of a qualification declared equivalent for teaching purposes, cannot enroll in master's studies. Official Gazette of the State, 240, of 5 October 2011, p. 104665–104671. Retrieved from https://www.boe.es/eli/es/o/2011/09/23/edu2645 [Last query: May 8, 2020].

Royal Decree 1834/2008, of November 8, which defines the conditions of training for the exercise of teaching in compulsory secondary education, baccalaureate, vocational education and special education and establishes the teaching subjects for secondary school faculty. Official Gazette of the State, 287 of 28 November 2008. Retrieved from https://www.boe.es/eli/es/rd/2008/11/08/1834 [Last query: April 30, 2020].

Royal Decree 592/2014, of July 11, regulating the external academic internships of university students. Official Gazette of the State, 184, of July 30, 2014. Retrieved from https://www.boe.es/eli/es/rd/2014/07/11/592/con [Last query: May 11, 2020].

Chapter 26
Australian TVET Teacher Training: Once Flourishing but Now Neglected

Erica Smith

Abstract This chapter describes the system of TVET teacher qualifications in Australia. A brief overview of the TVET system (known in Australia as VET, rather than TVET) is followed by a description of the VET teaching workforce, which is predominantly made up of mature people with significant prior industry experience. The chapter explains the current pedagogical qualifications available, which comprise two qualifications offered within the VET sector, at lower levels, and a small number of university-level qualifications. The content of qualifications at each of these levels is described. The chapter explains that the qualification levels of VET teachers have dropped considerably since the year 2000, such that only 10% of Australian VET teachers now have pedagogical qualifications at university level. The challenges created by such a situation are described, together with possible explanations of how this has come about. Implications for other countries are drawn out.

26.1 Introduction

Australia has a highly developed and partially marketised VET system. It is overseen and regulated by the national ('Commonwealth') government; but the eight States and two Territories provide funding for VET courses and employ VET teachers in the public system, TAFE (Technical and Further Education). In Australia, as in many other countries, VET is usually understood to have two main purposes. One is to improve people's skills by training them before they enter the workforce, or by upskilling them after they enter the workforce. This helps improve the overall skills of the Australian workforce and provides economic benefit. The other purpose of VET is to provide social benefit.

E. Smith (✉)
School of Education, Federation University Australia, Mount Helen, VIC, Australia
e-mail: e.smith@federation.edu.au

This paper begins by describing the VET system and providing some details about the VET teaching workforce. It then outlines the status of VET teacher training, covering both the VET sector qualifications and the university qualifications that are available in VET pedagogy. A historical overview is provided which covers the past 50 years and explains how the VET teacher training system developed over time into its current form. The institutional context of VET teacher training is also covered. The paper concludes by identifying some reasons for what is currently a low level of teacher qualification in Australia and suggests some potential ways to improve the situation as well as pointing out some errors along the way which other countries could avoid.

26.2 Australia's Vocational Education and Training System and Its VET Teachers

26.2.1 The System

VET has qualifications covering most industry areas, for occupations that are not regarded as needing university preparation. The Australian Qualifications Framework (AQF) (*www.aqf.edu.au*) ranges from AQF 1 (pre-employment courses) to AQF 10 (university doctorates). VET covers AQF Levels 1 to 6.[1] The first four levels are Certificate I to Certificate IV, Level 5 is Diploma, and Level 6 is Advanced Diploma. Most VET students are in Certificate II to Certificate IV qualifications, with apprentices, for example, usually studying Certificate III qualifications; almost half (47.2%) of students were in Certificate III programs in 2019 (NCVER, 2020).

Most qualifications are contained in 1 of 65 'Training Packages', based around industry and/or occupational areas, all of which have large numbers of units of competency which are gathered into multiple qualifications.[2] Training Packages can be viewed at https://training.gov.au/ under the 'National Register of VET'. Each contains three components: units of competency, a qualifications framework and assessment guidelines.

The Australian VET system has been competency-based since the mid-1980s, and as in many countries, competency-based training has been heavily critiqued on a number of fronts; a summary of the arguments can be seen in Smith (2010). Many occupations, especially in the service industries, health and community care, did not have formal VET qualifications until the advent of the Training Package system; Training Packages were first introduced in 1997 (Smith & Keating, 2003).

---

[1] Some Training Packages contain Graduate Certificate and Graduate Diploma (AQF Levels 7 and 8) qualifications, but these are becoming less common and are rarely taught.

[2] There are also a small number of other 'accredited programs', usually accredited by individual States.

VET teachers are generally required to deliver very highly specified training based on the units of competency in the Training Packages. Training Packages do not specify the method of teaching delivery, except by proxy via the units' assessment guidelines, but in practice many TAFE (Technical and Further Education) Institutes and other training providers tightly control curriculum delivery. There is a national regulatory body for the VET sector, known as the Australian Skills Quality Authority (ASQA) (www.asqa.gov.au). This body registers and reaccredits training providers, as well as carrying out special audits in qualifications known to be 'at risk'.

Training Packages are developed and updated by Industry Reference Committees (IRCs) for each specific industry, which typically manage a small number of Training Packages. Skills Service Organisations, formerly known as Industry Skills Councils (which, however, had broader remits), provide support services for the Industry Reference Committees, whose members are drawn from the relevant industries, and are therefore providing voluntary services to the IRC.

Training providers are known as 'Registered Training Organisations' (RTOs). As noted earlier, there is a public provider, TAFE; there are also 4000–5000 other training providers at any one time. Many non-TAFE providers are very small, operate in niche areas and may be transitory. Often the term 'RTO' is used to refer only to non-TAFE training providers, although it also covers TAFE Institutes.

Generally, non-TAFE RTOs are divided into four major groups (Harris, Simons, & McCarthy, 2006):

- Adult and community providers (not for profit).
- Enterprise-based (providing qualifications to their own workers) (see Smith, Walker, & Smith, 2013).
- Industry providers (e.g. employer associations/chambers of commerce).
- Commercial (often known as 'private' or 'for-profit') training providers.

The latter group has the greatest proportion of non-TAFE RTOs.

The Australian government funds much of the vocational education and training effort, with funding channelled through State and Territory governments. Non-TAFE providers can access government funding and/or student loans for their students, under certain circumstances; there are parameters around government funding, both for RTOs and for students. In the past decade there have been a number of financial scandals, mainly involving misuse of government funding by commercial RTOs. This problem has led to a heavy focus on regulatory compliance, with strict rules put in place to try to prevent further problems. Strong arguments (e.g. Zoellner, 2016) are mounted by many commentators against the use of public funds for private training organisations.

In 2019, there were just over one million students – 1,011,000 – enrolled in government-funded VET (NCVER, 2019); 565,400 were enrolled in TAFE Institutes. Some training is delivered on an entirely fee-paying basis, with the total number of students in VET qualifications around double the government-funded number (NCVER, 2020). The number of students in VET has declined over the past 8 years, from a high of 1.54 million in 2012, when there was what is regarded as a

'false peak' caused by the financial misuse mentioned earlier. The fall has mainly been due to Commonwealth and State governments withdrawing funding from some qualifications, which has reduced the availability of courses for students, especially in certain geographical areas (e.g. Guthrie, Smith, Burt, & Every, 2014).

Australia also caters for international VET students, mainly those studying in Australia, but also a small number in other countries, with Australian RTOs, mainly TAFE Institutes, delivering training there. The students living overseas may or may not achieve Australian qualifications, depending on local arrangements. Finally, VET is also taught in most senior secondary schools (students aged 16–18), but that subsector is not generally considered to be part of the VET sector. Some secondary school students attend an external RTO for their VET classes, while some schools are registered as RTOs, with in-school VET teachers.

Unlike some countries, VET is not primarily for young people. Students are evenly distributed across age ranges, with the largest concentration in the group 25–44 years (NCVER, 2020). The six Training Packages with the most students are community services (which include child-care training); construction; business; tourism and hospitality; electrotechnology; and health (NCVER, 2019).

26.2.2 The Teachers

The VET teaching workforce in Australia is very diverse (Tyler & Dymock, 2017), as is the sector. Because of the wide range of training providers, teachers operate in widely different contexts. Many VET teachers work part-time in VET, sometimes as well as working in their industry areas; some part-time or casually employed teachers work across a range of RTOs.

Some generalisations can, however, be made. Most teachers teach in a specific industry area[3] and they are required to have industry qualifications and experience. Hence VET is always their second career, and often their third or fourth. Because of this, the VET teaching workforce has a high proportion of mature aged workers (Guthrie, 2010a). For example, almost half of TAFE teachers in 2008 were aged 50 or over, with only 21% aged less than 40 (Guthrie, 2010a). It is generally understood that teaching staff in non-TAFE RTOs tend to be younger. Approximately half of VET teachers are female (Guthrie, 2010a).

Because of the diversity of teachers and contexts, data collection has been notoriously difficult (Mlotkowski & Guthrie, 2010). However, in 2020 the National Centre for Vocational Education Research, a government-funded body responsible for maintaining VET sector statistics and for collating VET research, published the results of a comprehensive 2019 survey of the VET workforce (Knight, White, &

---

[3]Those who do not teach in a specific industry area may be teaching foundation skills (language, literacy, numeracy and related skills) or may be teaching VET teaching itself at a Certificate or Diploma level (see below for more information).

Granfield, 2020). This survey[4] indicated that just under 250,000 people were employed in VET in early 2019, of whom around 45,000 worked for TAFE, the public provider of VET, and the remainder at other training providers. To put this in context, Australia currently has a population of 25.5 million (Australian Bureau of Statistics [ABS], 2020). Overall, only about 30% of the VET workforce were teachers (or 'trainers and assessors' as the report called them). Just over half of these teachers worked full-time in their VET teaching job. The total results were consistent with an estimate made by the Australian Productivity Commission (2011) in an inquiry into the VET workforce, but, in one difference, the 2011 study had found around 75,000 teachers working in TAFE compared with the 45,000 found in the 2019 survey. As TAFE systems suffered considerable funding cuts during the 2010s, this reduction in the public sector VET teaching workforce could well be accurate.

26.3 Status of VET Teacher Training

Australia's VET teachers, in common with those in many countries across the world, are generally viewed as being 'dual professionals' (e.g. Harris, 2020). That is, they identify with and have expertise in both the industry area in which they teach and in VET teaching itself. Some teachers in VET teach general subjects or language, literacy and numeracy, but most teach for an industry or occupational area. Depending on the industry area, their industry qualification levels might be relatively low (e.g. in plumbing or hairdressing, where a Certificate III level qualification is often the highest industry qualification held), while in other areas, they might be quite high (e.g. youth work, marketing or nursing teachers often have degrees in their industry areas). There is a regulatory requirement that teachers must have an industry qualification at or above the level at which they are teaching and that they keep up to date with their industries (Clayton, Jonas, Harding, Harris, & Toze, 2013).

The required level of pedagogical qualifications, however, does not vary by industry area. The requirements in Australia are very low compared with most countries and also with other education sectors; VET teachers are currently required to have only a Certificate IV level qualification in VET teaching – three levels below a degree. Some VET teachers choose to undertake a higher level of qualification, either at Diploma level within the VET sector or at university at Associate Degree, Degree or postgraduate level. These higher-level qualifications are invariably undertaken part-time while already working in the VET sector.

The Certificate IV in Training and Assessment is the mandated regulatory minimum pedagogical qualification for VET teachers; the requirement is enshrined

---

[4]The survey was undertaken via employing organisations, i. e. training providers, and a 40% response rate was achieved. The headcounts at the non-responding RTOs were calculated on a weighting basis which is not fully explained in the report.

Table 26.1 VET teacher training qualifications

Qualification	Education sector offering the qualifications	Approximate number of hours of study	Number of 2020 providers of the qualification	Proportion of VET workforce with this as their highest teaching qualification *
Certificate IV in training and assessment	VET sector	350	107	77%
Diploma of vocational education and training[a]	VET sector	570	30	6%
University qualifications at associate degree, degree or postgraduate level	Higher education	From 400 for a graduate certificate up to 2000+	8	10%

[a]There is also a Diploma of Training of Development, which is almost identical
Source: Knight, White & Granfield (2020, p. 18)

in the 'RTO standards' with which RTOs must comply. The qualification requirement has been in place for the past 20 years. Since 2016, there has been a regulatory requirement that teachers update their teaching skills and knowledge, in line with the requirement about industry skills and knowledge.

The available qualifications may be summarised as follows (Table 26.1). The final column shows the proportion of the VET workforce having each of these three levels as their highest pedagogical qualification in 2019, according to Knight et al. (2020, p. 18).

Table 26.1 shows the low level of teaching qualification of the VET teaching workforce. In comparison, 100% of school teachers are university-educated in pedagogy. An overview of each level of qualification is now provided.

26.3.1   Certificate IV in Training and Assessment

The content of this qualification can be viewed at the Australian government web site training.gov.au. The current version is coded TAE40116. Previous versions can also be viewed.

There are ten units of competency, of which nine are compulsory, or 'core'. The core units are:

- TAEASS401 – Plan assessment activities and processes.
- TAEASS402 – Assess competence.
- TAEASS403 – Participate in assessment validation.
- TAEASS502 – Design and develop assessment tools.
- TAEDEL401 – Plan, organise and deliver group-based learning.

- TAEDEL402 – Plan, organise and facilitate learning in the workplace.
- TAEDES401 – Design and develop learning programs.
- TAEDES402 – Use training packages and accredited courses to meet client needs.
- TAELLN411 – Address adult language, literacy and numeracy skills.

(Source: https://training.gov.au/Training/Details/TAE40116, viewed August 2020)

The 350 hours shown in Table 26.1 is not a mandated figure, but is a proxy derived from the amount of State government funding received; in the Australian system, which has been, for decades, what might be called aggressively and ideologically competency-based, it is not considered appropriate to mandate delivery hours or method. It is, unfortunately, an established fact that the Certificate IV in Training and Assessment is particularly prone to poor-quality delivery and insufficient volume of learning (Smith & Keating, 2003); it is regarded by ASQA, the regulatory body, as one of the major 'at-risk' qualifications. Since 2016, the Certificate IV qualification may only be taught by somebody holding a higher-level qualification in 'adult education', i.e. the Diploma of VET or a university-level VET or adult education teaching qualification. Prior to 2016, it could be taught by anyone who merely held the Certificate IV. The Certificate IV is often delivered online, but no national data are collected on this matter.

The qualification contains virtually no teaching practice – just three training sessions are required to be delivered and evaluated, as part of the unit TAEDEL401. These must be carried out with groups of at least eight people. This practicum requirement may seem a low bar; however some providers who deliver the qualification have complained that the need to train actual groups of people is too rigorous and campaign for its reduction.

The Certificate IV also has 'skill sets' within it which can be studied by people wishing to undertake limited roles in VET. The skill sets include an 'assessor' skill set and an 'enterprise trainer' skill set. The latter is aimed at trainers in industry. People with skill sets may work in VET under supervision.

26.3.2   The Diploma of Vocational Education and Training

This qualification (coded TAE50116) has ten units of competency, of which six units are compulsory. The core units are as follows:

- TAEASS501 – Provide advanced assessment practice.
- TAEASS502 – Design and develop assessment tools.
- TAEDEL502 – Provide advanced facilitation practice.
- TAEDES501 – Design and develop learning strategies.
- TAELLN501 – Support the development of adult language, literacy and numeracy skills.
- TAEPDD501 – Maintain and enhance professional practice.

(Source: https://training.gov.au/Training/Details/TAE50116, viewed August 2020)

This qualification has higher demands, and is of course at a higher level, than the Certificate IV qualification and is normally taken in addition to a Certificate IV qualification rather than as an alternative. It requires a mandatory 100 hours of VET teaching practice to pass the unit TAEDEL502, as well as a requirement for the 'teacher-trainee' to assess 20 candidates as part of the TAEASS501 unit. There are currently no skills sets, but in 2020 a 'virtual delivery' skill set is being developed, using two units from the list of electives. This is meant to meet the increased imperative for on-line teaching due to the COVID-19 crisis.

26.3.3   University Qualifications in VET Teaching

Six universities (15% of the 40 Australian universities) currently offer VET teacher training, with fewer than 1000 students studying overall.[5] In comparison, even in 2012 there were 12 universities involved, with around 1700 students enrolled. Because university qualifications are almost always undertaken part-time while VET teachers are working, and because student numbers are quite low, the courses are now all delivered by distance, with on-line delivery sometimes supplemented by printed learning materials and/or occasional workshops. VET teachers report a high level of satisfaction with their experiences studying their courses (Smith, Yasukawa, & Hodge, 2015).

Most courses offer credit (advanced standing) for the qualifications that VET teachers typically have on appointment to an RTO. These comprise the industry qualification, the Certificate IV in Training and Assessment and a number of years of industry experience, normally providing the equivalent of around a year's worth of full-time credit. Some university courses also qualify teachers to teach VET in schools; the latter courses tend to be longer, as they must meet school teacher regulatory frameworks in their respective States, and may not be allowed to offer such credit (cf. Table 26.2).

An analysis of university VET teacher training courses (Hodge, 2013) found the following core knowledge and skills in university VET teacher training programs at that time:

1. *Context – social, policy, systemic:* Concerns the multiple contexts of VET, from international developments, national demographics, economic settings and policy frameworks to national and State systems.
2. *Curriculum, program and learning strategy – planning, design and development:* Addresses the practice and theory of curriculum, including competency-based training and Training Packages.

---

[5]The reasons for these low numbers are provided in the next section.

Table 26.2 Structure of Federation University's VET teaching course

Year	Semester 1	Semester 2
Year 1	Writing and analysis for study and work	Learning theories: VET in context
	VET teaching and assessment practice	Developing VET curriculum for training providers and industry
Year 2	Contemporary VET pedagogical practice	Applied research and reflective practice in VET
	VET in society	VET links with the economy and industry

3. *Teaching and learning – theory and practice:* Includes learning theories, instructional theories, theories of development, critical perspectives and applications.
4. *Literacy and numeracy:* Addresses literacy, numeracy and communication in and for work and the challenges of integrating literacy and numeracy teaching in VET practice.
5. *Learner diversity:* Addresses the multiple challenges and opportunities of learner diversity in VET and other post-compulsory learning contexts.
6. *Assessment and evaluation:* Encompasses the wide range of theories of assessment and evaluation, including competency-based assessment.
7. *Workplace and organisational context – learning, issues:* Covers workplace [i.e. industry], workforce and organisational learning, development and policy.
8. *The VET profession – identity, practices, issues, content knowledge:* Concerns the complex issue of the nature and development of the VET professional, including industry knowledge and teaching capability development.
9. *VET research:* Covers quantitative and qualitative research methodologies, data collection and analysis methods, research ethics and critically reading research (found in courses at AQF Levels 7 and above only).
10. *Leadership and management:* Covers organisational leadership and management theories and application (found in courses at AQF Levels 7 and above only).

One example of a university qualification in VET teaching is Federation University Australia's Associate Degree of VET. Associate Degrees are at Level 6 (immediately sub-degree) on the AQF and form two-thirds of a full degree. The structure of the Associate Degree – which provides eight subjects' credit for the prior qualifications discussed earlier and is hence quite short – is shown in Table 26.2.

Students in the Federation University qualification undertake two courses a semester, half a full study load, as they are also working, normally full-time in the VET sector. The course contains on-line learning, printed learning materials and optional workshops. Additional credit is available for those with a recent Diploma of VET qualification; they are excused from two of the above units. Such complicated arrangements are typical of the efforts that VET teacher training courses make to engage with often-shifting practice and qualifications in the VET sector, involving either credit arrangements or embedding of the Certificate IV and/or Diploma

qualification (Smith & Bush, 2006). The Federation University qualification requires 100 hours of teaching practice in one of the subjects, with an additional 100 hours needed for those entering without the Diploma.

26.4   Historical Overview of VET Teacher Training in Australia

The current qualification regime for VET teachers is quite different from the past. From the 1970s up until 1998, States and Territories required full-time TAFE teachers to enrol in a university VET teacher training qualification on appointment (if they did not already have such a qualification). These courses were specific to teaching in the VET sector. This provision created a well-educated workforce that had appropriate skills and knowledge for the complex job of VET teaching. The 1970s–1990s period of VET teacher training is recounted by Harris (2020) in an overview of 'landmark' documents relating to the VET workforce on the web site of the NCVER (see https://www.voced.edu.au/vet-knowledge-bank-landmark-documents).

Harris describes the gradual recognition from the late 1960s that VET teachers should have high-level pedagogical skills. An inquiry into TAFE teacher education (Fleming, 1978) showed that by that date teacher training courses had been established in each State for TAFE teachers but that more consistency was needed. The Fleming report advocated a short induction course followed by a minimum 2-year 'in-service' VET teacher training program, and this became the pattern until the end of the 1990s. Generally, although there were variations from State to State, new TAFE teachers without degrees undertook associate degrees or degrees; and those with degrees in their discipline/industry areas undertook graduate diplomas. This system, developed at a time when the public VET system [TAFE] was predominant, was maintained until 1998. Some private training providers also encouraged their staff to undertake university VET teacher training qualifications.

The situation changed when the Certificate IV in Assessment and Workplace Training, as the Certificate IV qualification was known at that time, was introduced in 1998 (Smith & Keating, 2003). This qualification grew from a previous version which had been designed for workplace trainers, and its use for VET teachers in RTOs has always sat uneasily (Guthrie, 2010b). The new qualification was associated with the introduction of a VET regulatory framework, which established the Certificate IV as the minimum requirement for VET teachers. There had not previously been a minimum qualification required to practise as a VET teacher. The qualification quickly became the 'ceiling' as well as the 'floor' for most VET teachers (Smith & Keating, 2003). Each State/Territory government, in turn, ceased to require teachers to undertake university-level VET teacher training and at the same time withdrew their financial and workload support for teachers undertaking the qualifications in a voluntary manner. As a result, some States are currently

Table 26.3 Characteristics of different levels of professionalism in full-time VET teachers

	Qualifications in VET teaching	Qualifications in discipline area	Professional development
Highly professional	The highest available VET teacher training qualification (degree or graduate diploma)	The highest available qualification of relevance to the discipline area	Engages in frequent professional development (PD), whether funded or not, and often on own time. Identifies and seeks out PD. provides PD to others
Moderately professional	Diploma of VET	One level higher qualification than that taught to students	Engages in PD as often as possible when brought to attention; makes occasional own-expense and own-time contributions
Not professional	Certificate IV in training and assessment	The qualification level that is taught to students	Only attends PD where it is funded and in working time; may even avoid PD unless necessary

Source: Smith (2019, p. 1664)

without a 'local' teacher training provider, while in previous decades each had at least one university offering programs.

While pre-1998 data are not readily available, Guthrie, McNaughton and Hamlin (2011) found that in 2006, the numbers of students (i.e. VET teachers) in VET teacher training programs were 2384 across Australia, which by 2008 had already fallen to 1984. In the 1980s and 1990s, there had been a strong network of university VET teacher educators in Australia (Harris, 2015), holding annual conferences and meeting frequently. By the late 1990s, this network had disappeared, although an informal network was formed in 1999, known as AVTEC (Australian Vocational Teacher Educators' Colloquium) (Guthrie, 2010b).

A recent national research study which engaged all relevant stakeholders in the VET sector, and had over 1200 participants (Smith et al., 2018), examined whether higher-level qualifications for VET teachers improved teaching. As there is a legacy of highly qualified teachers in the system, comparisons could be made. It was found that higher-level qualifications in VET pedagogy improved teaching approaches, confidence and ability to address diversity in contexts, learners and AQF level of teaching. It found that the qualification which made the most significant difference was a degree, although Diploma level qualifications did make some difference. The study also found that degree-qualified teachers were more likely to engage in professional development activities and also contribute to curriculum and assessment development, leadership and project work.

Smith (2019) analysed the project findings and other data to produce Table 26.3 of teacher professionalism.

The study had found that those with the lowest qualification levels were the least likely to undertake professional development; thus professional development could not substitute for qualifications, as has sometimes been claimed.

26.5 Institutional Arrangements for the Current Qualifications

The Certificate IV in Training and Assessment and the Diploma of VET can only be delivered by Registered Training Organisations. As noted earlier, 107 training providers are registered to deliver the Certificate IV and only 30 to deliver the Diploma of VET (www.training.gov.au, August 2020).

The current number of providers is considerably lower than previously. The Certificate IV in Training and Assessment had been singled out by ASQA in a 'review of unduly short courses' (Australian Skills and Quality Authority (ASQA), 2017), as being a qualification prone to skimpy delivery. In fact such was the extent of 'under-delivery' of the Certificate IV qualification that it was decided to change the qualification to an extent that all providers had to re-register to deliver it. A much-reduced number of training providers, of high quality, was then approved in 2016 to deliver the new version. It may seem ironic that the qualification to work as a VET teacher has been considered one of the most problematic in the whole VET sector.

As noted earlier, Training Package qualifications are developed and maintained by Skills Service Organisations under direction from Industry Reference Committees. The Skills Service Organisation which manages the Training and Education Training Package is currently PwC's Skills for Australia.[6] This organisation took over the Training Package in 2016 following the re-organisation of the government's previous Industry Skills Council system. The Industry Reference Committee for the Training and Education Training Package[7] has been trying to revise the Certificate IV qualification for the past 2 years, but there has been resistance in the VET sector to any changes, and the relevant government committee has stalled proposals.

As noted earlier, universities have been delivering qualifications in VET teaching since the 1970s. The Australian Council of Deans of Education Vocational Education Group (ACDEVEG) is the peak body of the VET teacher training universities, having emerged in 2011 from the earlier AVTEC group. ACDEVEG is part of the Australian Council of Deans of Education, the peak body of Australian education faculty Deans, and represents ACDE on vocational education and training (VET) matters. The ACDEVEG working group's aim is to build and strengthen high-quality educational practices in VET teacher-education programs for VET practitioners. ACDEVEG also provides advice and works with a range of external stakeholders on VET teacher quality and development. For example, ACDEVEG maintains a dialogue with Skills for Australia, and they work together on annual awards for the 'VET teacher educator of the year', one for people delivering the Training Package qualifications (Certificate IV and/or Diploma) and one for people teaching on university teacher training programs (see: https://www.acde.edu.au/

---

[6]PwC is an international consulting organisation formerly known as Pricewaterhouse Coopers. Skills for Australia is the section of PwC Australia which manages VET-related matters.

[7]The author is a member of this committee.

networks-and-partnerships/acde-vocational-group/). ACDEVEG is proactive in relations with the Commonwealth government and international organisations such as the OECD.

Since the advent of the Certificate IV as the mandated qualification, it has generally been left to individual TAFE Institutes or private training providers to encourage teachers to undertake higher-level pedagogical qualifications, or to teachers' own initiative and drive. Each State or Territory has different industrial relations agreements with its TAFE teaching workforce, and in some States the agreements include a higher TAFE teacher pay scale associated with completion of the Diploma of VET. TAFE colleges often deliver the Diploma to their own teachers during working hours. Two States – Queensland and Victoria – also have higher pay scales accessible only with university VET teaching qualifications. Thus in those States, a higher proportion of TAFE teachers study university courses.

There is no association for VET teachers, nor any registration body. Proposals for such bodies have been put forwards from time to time, including in the government's report on the Quality of Assessment in VET (Department of Education and Training, 2016), but none have been followed through. However, one feature of recent years has been the development of various 'capability frameworks', designed to better understand the domains of work of VET teachers and the expected characteristics of teachers as mapped against those domains. Some frameworks are national, other specific to certain States, and others are developed by individual TAFE Institutes; some have different levels of practice. One well-known framework was developed by Innovation and Business Skills Australia, known at the time as the Industry Skills Council that managed the Training and Assessment Training Package (as it was known then). The IBSA framework has four domains: teaching; assessment; industry and community collaboration; and systems and compliance. Each domain is described at three levels: first level practitioner, second level practitioner and third level practitioner. An implementation guide and resources can be viewed at https://www.dtwd.wa.gov.au/sites/default/files/uploads/vet-capability-framework-implementation-guide.pdf.

26.6 Challenges and Current Issues

The job of VET teachers is becoming ever more complex, due to factors such as the growth of on-line delivery, the need for more STEM development in learners and the need to be abreast of rapid developments in the modern economy, as recognised by the Productivity Commission (2011). A Certificate IV level qualification, even if delivered well, could not possibly address all these requirements.

Table 26.1 shows that the VET workforce is now seriously underqualified, with only a small minority of teachers in TAFE and private RTOs trained to higher levels in pedagogy. This affects the quality of teaching and assessment and also the calibre of VET sector staff available for senior positions. Moreover, there is now a need for extensive, and expensive, professional development programs to compensate for the

lack of initial teacher training. Of course, ongoing concerns about quality in the sector as evidenced in many Australian government reports (e.g. Commonwealth of Australia, 2019; Department of Education and Training, 2016) could readily be at least partially addressed by raising the quality of the teaching workforce via higher-level qualifications. But higher-level qualifications are not considered as a potential solution, despite only two decades having passed since the VET teaching workforce was far better qualified.

Why is the low level of VET teacher qualification in Australia so readily accepted and not challenged more often? Several factors contribute to this. Firstly, as in many countries, in Australia the status of VET is low compared with the status of higher education. The status of VET teachers is concomitantly low. The occupation of VET teacher is less aspirational (e.g. Simons, Harris, Pudney, & Clayton, 2009), than that of teachers in other sectors. There is a lack of understanding of the sector and its history among government officials, at both national and State level, as the officials themselves did not study or teach in VET, thus leading them to value the sector and its teachers less than other education sectors. It is the mark of the low respect that a move to rebrand VET teachers as 'trainers and assessors' 20 years ago has been so successful (except among VET teachers themselves and the VET teachers' union, the Australian Education Union).

Secondly, as Harris (2020) argues, the continuing emphasis on industry voice in the VET system does not value good teaching but only teachers' industry experience. While research consistently shows that employers themselves value good pedagogy (e.g. Smith, Brennan Kemmis, Grace, & Payne, 2009), it is employer associations which influence VET policy at higher levels. Harris also refers to an underlying battle between 'education and training tribes' in the VET sector itself, which can be roughly equated to the economic versus social purposes of VET, with which this chapter began. These factors have naturally reinforced the reconceptualisation of teachers as 'trainers and assessors'.

Thirdly, a traditional rivalry between VET and university sectors is played out in the area of VET teacher qualifications. This rivalry has been exacerbated by concerns in the VET sector about losing students and funding with the expansion of higher education in recent decades, which has happened in other countries too (Deissinger & Gonon, 2015). Some VET sector managers, but by no means all, resent VET staff participating in university courses because of this. There have also been concerns raised in the past about the quality of VET teacher training by universities. These were first referred to in the Fleming (1978) report and came to the fore again in the 1990s. A legacy of those times may linger on.

The lack of a specific regulatory or registration body for VET teachers means that there is no specific external oversight of VET teacher training. University VET teacher training courses are naturally required to be approved by a universities' Academic Boards, but there is no external oversight, as there is in other discipline areas such as nursing or accountancy training. As the VET sector in Australia has not made up its mind what bodies should oversee the VET workforce (Harris, 2020) more generally, there is no suitable body to undertake such accreditation, although

ACDEVEG has stated that it would welcome an accreditation process for its member universities' qualifications.

26.7 Conclusion and Implications

There are many effects of having an underqualified VET teaching workforce. One must assume that students are not being adequately trained; but in the Australian competency-based system, very few courses are graded, meaning that all students who do not fail are deemed 'competent'. Therefore it is not possible to tell how good VET graduates are. Certainly, VET managers report (as in the Smith et al. (2018) research) that it is difficult to find staff in their organisations who are able to undertake curriculum and assessment development work because they do not have requisite knowledge and skills. Workplace employers also report (as in the Smith et al. (2009) study) that they prefer to deal with well-qualified VET teachers who can match the qualification level of the employer contacts, when developing training partnerships.

The capacity for VET teacher training has been considerably diminished over time. Many universities have closed their courses, and it is difficult for ACDEVEG to gain the attention of education faculties and the Australian Council of Deans of Education, as numbers in school teacher training courses are much higher. The low level of teacher qualification means that those who teach VET sector teacher training qualifications are unlikely to have university qualifications in the area, thus creating a downward spiral of expertise. Also, a consequence has been that there is little VET research carried out in Australia, compared with previous decades when there was a large body of academics who taught VET teachers and who naturally researched in their discipline area.

Some policy factors that are specifically Australian are at play. The division of powers among the Commonwealth and State governments in Australia means that responsibilities for VET are divided, and neither tier of government now accepts responsibility for the VET teaching workforce; the last national committee in this area was disbanded in 2015. The Australian government increasingly relies on private provision of all services (Aulich & O'Flynn, 2007), including VET, and more recently also relies on consultants to formulate policy. Therefore, little understanding of the VET system remains among government officials, as they have little role in administering the system and diminished responsibility for its outcomes. Industry lobbyists are very influential in VET policy development compared with those advocating for the social purposes of VET and for better pedagogy.

Despite the local nature of the facts, there are lessons for other countries. These may be described as follows: it is important to regard the VET teaching workforce as equally important compared with the teaching workforce in other sectors of education. Therefore, qualifications of the teachers should be comparable in level. Attentions should be paid to the content and quality of the delivery of VET teacher training (as per the 1978 Fleming report in Australia). The perverse consequences

of the introduction of a minimum qualification in Australia in 1998, to address the lack of mandatory teacher training in private training providers, were not considered. It was not anticipated that this would provide an excuse for higher-level qualifications to be abandoned, and hence no provisos were introduced to prevent this happening. Australia may act as a lesson to other countries in this respect. Finally, allowing the private training sector to deliver VET teacher training – i.e. the Certificate IV and Diploma qualifications – was a policy mistake, as the government has lost control over the quality of the country's VET teachers. The situation is difficult to rectify and therefore is one that other countries should avoid.

References

Aulich, C., & O'Flynn, J. (2007). From public to private: The Australian experience of privatisation. *Asia Pacific Journal of Public Administration, 29*(2), 153–171.

Australian Bureau of Statistics [ABS]. (2020). *3101.0 - Australian Demographic Statistics*. ABS.

Australian Skills and Quality Authority (ASQA). (2017). *A review of issues relating to unduly short training*. ASQA.

Clayton, B., Jonas, P., Harding, R., Harris, M., & Toze, M. (2013). *Industry currency and professional obsolescence. What can industry tell us?* National Centre for Vocational Education Research (NCVER).

Commonwealth of Australia. (2019). *Strengthening skills: Expert review of Australia's vocational education and training system*. Australian Government.

Deissinger, T. & P. Gonon (2015). Tertiarisation as a major challenge for the VET system – what happens with apprenticeships in Germany and Switzerland in the face of an "academic drift", Researching Vocational Education and Training: Journal of VET 11th International Conference. Oxford, 3–5 July.

Department of Education & Training. (2016). *Quality of assessment in vocational education and training – Discussion paper*. Department of Education & Training.

Fleming, P. (1978). The formal preparation of TAFE teachers in Australia. Tertiary Education Commission. Retrieved from https://www.voced.edu.au/content/ngv%3A8125.

Guthrie, H.. (2010a). *Vocational education and training workforce data 2008: A compendium*.

Guthrie, H. (2010b). *A short history of initial VET teacher training. Occasional paper*. NCVER.

Guthrie, H., McNaughton, A. T., & Gamlin. (2011). *Initial training for VET teachers: A portrait within a larger canvas*. NCVER.

Guthrie, H., Smith, E., Burt, S., & Every, P. (2014). *Review of the effects of funding approaches on service skills qualifications and delivery in Victoria*. Service Skills Victoria.

Harris, R. (2015). What do we learn from 40 years of history? Issues in VET teacher education from Kangan to today. Refocusing on teaching and training in vocational education and training. 1st Annual Conference of the Australian Council of Deans of Education Vocational Education Group, Melbourne, 14 December.

Harris, R. (2020). *Landmarks in the development of the VET workforce: An overview*. NCVER.

Harris, R., Simons, M., & McCarthy, C. (2006). *Private training providers in Australia: Their characteristics and training activities*. NCVER.

Hodge, S. (2013). *Core knowledge and skills developed in universities' VET teacher training qualifications*. Internal paper produced for the Australian Council of Deans Vocational Education Group (ACDEVEG).

Knight, G., White, I., & Granfield, P. (2020). *Understanding the Australian vocational education and training workforce*. NCVER.

Mlotkowski, P., & Guthrie, H. (2010). Getting the measure of the VET professional: An update. In H. Guthrie (Ed.), *Vocational education and training workforce data 2008: A compendium* (pp. 13–28). NCVER.

NCVER. (2019). *Government-funded students and course 2018*. NCVER. Retrieved from https://www.ncver.edu.au/__data/assets/pdf_file/0034/6579304/Government-funded-students-and-courses-2018.pdf

NCVER. (2020). *Total VET students and courses 2019*. NCVER.

Productivity Commission. (2011). *Vocational education and training workforce*. Commonwealth of Australia.

Simons, M., Harris, H., Pudney, V., & Clayton, B. (2009). *Careers in vocational education and training: What are they really like?* NCVER.

Smith, E. (2010). A review of twenty years of competency-based training in the Australian vocational education and training system. *International Journal of Training and Development, 14*(1), 54–64.

Smith, E. (2019). The importance of VET teacher professionalism: An Australian case study. The international handbook of education for the changing world of work. Edited by S. McGrath, J. Papier, M. Mulder & R. Stuart, : Springer. Vol. 2, part XI, no. 88, pp. 1627-1648.

Smith, E., Brennan Kemmis, R., Grace, L., & Payne, W. (2009). *Workforce development for service industries VET practitioners*. Service Skills Australia. Retrieved from https://www.voced.edu.au/content/ngv:42246

Smith, E., & Bush, A. (2006). The delicate dance: The assessment implications of awarding students vocational qualifications within university degrees. *Higher Education Research & Development, 25*(4), 387–402.

Smith, E., & Keating, J. (2003). *From training reform to training packages*. Social Science Press.

Smith, E., Walker, A. & Smith A. (2013) Enterprise Registered Training Organisations: What are some benefits and challenges? NCVER 22nd 'No Frills' conference, Mooloolaba, Queensland, 10–12 July.

Smith, E., Yasukawa, K., Harris, R., & Tuck. (2018). *Executive summary, the effects of teacher/trainer qualifications on the quality of VET teaching/training*. Federation University Australia. Retrieved from http://federation.edu.au/research-vet-quality

Smith, E., Yasukawa, K. & S. Hodge. (2015). Australian VET teacher education: What is the benefit of pedagogical studies at university for VET teachers? TVET@Asia, Issue 5, July. Retrieved from http://www.tvet-online.asia/issue/5.

Tyler, M., & Dymock, D. (2017). *Continuing professional development for a diverse VET practitioner workforce*. NCVER.

Zoellner, D. (2016). Active social policy meets the discipline of the Australian marketplace: the outcomes of mobile policies. Journal of Vocational Education & Training. vol. 68, no. 2, pp. 214–228. Internet: https://www.voced.edu.au/vet-knowledge-bank-landmark-documents

Chapter 27
Career and Technical Education in the United States

R. Adam Manley and Katherine Manley

Abstract Career and technical education (CTE) in the United States is defined as courses at the high school level and programs at the postsecondary level that focus on the skills and knowledge required for specific jobs or fields of work. This paper defines ten major sections. Section 27.1 defines CTE in the United States, its legislated regulations, and the delivery methods for both secondary and postsecondary. Section 27.2 describes how CTE programs are funded in the United States and the general methods states distribute funds to local school districts. Section 27.3 describes the federal and state oversight of CTE as well as identifying the CTE Core Performance Indicators at the secondary and postsecondary levels and the consequence to districts who don't meet the performance indicators. Section 27.4 summarizes four states' statutes and regulations related to credential attainment by students through CTE programs. Section 27.5 describes the five types of certification and licensure requirements for secondary CTE teachers and the requirements for CTE professors and instructors at the postsecondary level. Section 27.6 differentiates between industry certifications that are usually issued by a nongovernmental body and often affiliated with a specific industry or association and government-required licenses that are awarded by a government agency and convey a legal authority to work in an occupation or complete a specific task. Section 27.7 provides a list of validated CTE teacher competencies that document the standards required of CTE teachers developed by the National Board for Professional Teaching Standards (National Board) in Career and Technical Education and an updated set of Performance-Based Teacher Education (PBTE) standards originally published by the National Center for Research in Vocational Education at the Ohio State University. Section 27.8 describes seven different processes teachers and professors use to continue to improve their teaching skills. Section 27.9 describes how CTE programs

R. A. Manley (✉)
Workforce Education and Development, Western Michigan University, Kalamazoo, MI, USA
e-mail: adam.manley@wmich.edu

K. Manley
School of Education, Ferris State University, Big Rapids, MI, USA

in the United States partner with business and industry including the various methods industry and school partners work in the career pathway system. Finally, Section 27.10 provides the authors' description of the new image of CTE in the United States.

27.1 Introduction: What Is Career and Technical Education in the United States?

Career and technical education (CTE) is the updated terminology used for what used to be called "vocational education" in the United States. "Vocational education" was used to define traditional training programs in agriculture, homemaking, and trade and industrial education for over 100 years. Today, CTE training prepares students for career success in 16 different career clusters that lead to 79 different career pathways and hundreds of different careers requiring varying levels of education (Advance CTE, 2020). The United States uses the term "career and technical education" and no longer uses the term "vocational education." In fact, in 2006 the Congress replaced "vocational" with "CTE" in the major federal law impacting secondary and postsecondary CTE programs.

The National Center for Education Statistics defines CTE as courses at the high school level and programs at the postsecondary sub-baccalaureate level that focus on the skills and knowledge required for specific jobs or fields of work (BLS, 2020). The career clusters included in this definition are as follows: Agriculture, Food, and Natural Resources; Architecture and Construction; Arts, A/V Technology, and Communications; Business Management and Administration; Education and Training; Finance; Government and Public Administration; Health Science; Hospitality and Tourism; Human Services; Information Technology; Law, Public Safety, Corrections, and Security; Manufacturing; Marketing; Science, Technology, Engineering, and Mathematics; and Transportation, Distribution, and Logistics (Advance CTE, 2020).

The federal legislation for CTE in the United States is called Perkins V (Public Law 115–224). The Strengthening Career and Technical Education for the twenty-first Century Act (Perkins V) was signed into law by President Trump on July 31, 2018 (Public Law 115–224) and reauthorized the 2006 Carl D. Perkins Career and Technical Education Act (Perkins IV). Perkins V maintains a focus on CTE program improvement, flexibility, data, and accountability and provides new opportunities to improve CTE and enables more flexibility for states to meet the unique needs of learners, educators, and employers (Congressional Research Service, 2018).

27.1.1 Secondary CTE Delivery

CTE at the secondary level is delivered in the United States through various state and local settings including comprehensive high schools, magnet or theme schools, area CTE centers, "schools within a school" often called career academies, early college high schools, and other unique models.

27.1.2 Postsecondary CTE Delivery

CTE at the postsecondary level is delivered through community or technical colleges or area CTE centers, depending on the state model. At the postsecondary level, the Higher Education Act provides funding that supports CTE students through financial aid, and some other federal programs, including the Workforce Innovation and Opportunity Act, Elementary and Secondary Education Act, and Individuals with Disabilities Education Act, provide funding which benefits CTE programs and students as well (ACTE, 2019).

27.2 How Are Career and Technical Education Programs in the United States Funded?

According to the Association for Career and Technical Education (ACTE), funding for CTE programs largely comes from state and local sources with additional federal funds legislated and allocated annually to secondary and postsecondary programs in all 50 states.

Because of added costs of CTE (for supplies, equipment, smaller class sizes, etc.), it is estimated that CTE costs may be between 20 and 40 percent higher than those for general academic instruction (ECS, 2019). To meet the higher cost of offering CTE, state's appropriate considerable funds in addition to federal Perkins funds. There are a variety of strategies commonly used for funding secondary CTE, and the strategies vary depending on the state funding system. However, according to the Education Commission of the States (Keily, 2020), the four general ways states distribute funds to districts for CTE are as follows:

- Student-based formulas.

  - Under student-based funding formulas, the amount of state funding a school district receives is based on the number of students enrolled in CTE. At least 19 states use student-based formulas to distribute CTE funds.

- Unit-based formulas.

- – Unit-based formulas distribute funds based on factors such as the number of instructors or administrators employed by a local education agency or the equipment used to deliver instruction. At least seven states use unit-based funding to distribute funds.

- Cost-based formulas.

  - – States may approach funding for career and technical education programs based on the cost of the programs. In other words, districts receive reimbursement from the state for the costs incurred to provide CTE programs. There are eight states that use a cost-based mechanism to distribute funds for career and technical education programs.

- Funding for CTE centers.

  - – At least nine states fund CTE centers that exist separately from high schools. Districts use funds from the state aid allocations to support these CTE centers where secondary students can attend to complete CTE coursework.

27.3 How Are CTE Programs Evaluated in the United States?

27.3.1 CTE Oversight

At the federal level, programs that are related to adult education and literacy, career and technical education, and community colleges are administered and coordinated through the Office of Career, Technical, and Adult Education (OCTAE). According to a 2019 report by the US Department of Education, almost all public school districts in the United States offer CTE programs of some kind to high school students, about three-quarters of which can earn student dual credit in postsecondary programs (U.S. Department of Education, 2019).

Under the Perkins Act, states are required to use the funds to help CTE students acquire technical skills and earn an industry-recognized credential, a certificate, or a postsecondary degree. The framework for accountability under the Perkins Act requires state and local recipients of Perkins funds to strive for target levels of performance in a series of core indicators of performance. The actual performance levels for each core indicator are reported by the states and disaggregated by several special populations and subgroups. If a state fails to meet 90% of any of its projected target performance levels, it must implement a program improvement plan for each of the core indicators of performance for which the target performance levels were not met (Gravovskiy, 2018).

27.3.2 CTE Core Indicators of Performance at Secondary Level

Core indicators of performance at the secondary education level (Section 113(b)(2) (A)), of Perkins V (PCRN, 2020), include:

- CTE concentrator proficiency as measured by state academic performance standards on the mathematics, language arts, and science assessments, as determined by the state in accordance with Title I of the Elementary and Secondary Education Act (ESEA).
- The percentage of CTE concentrators who graduate from high school.
- CTE concentrator placement in postsecondary education or advanced training, national service programs, military service, or employment.
- CTE concentrator participation in CTE programs that lead to nontraditional fields.
- At least one of the following:

    - The percentage of CTE concentrators graduating from high school having attained recognized postsecondary credentials.
    - The percentage of CTE concentrators graduating from high school having attained postsecondary credits through dual and concurrent enrollment or another credit transfer agreement.
    - The percentage of CTE concentrators graduating from high school having participated in work-based learning.

27.3.3 CTE Core Indicators of Performance at Postsecondary Level

The core indicators of performance at the postsecondary education level for Perkins V (PCRN, 2020) are:

- CTE concentrator placement in education or training activities, advanced training, military service, national service activities, or employment.
- The percentage of CTE concentrators who receive a recognized postsecondary credential during participation in a program or within 1 year of program completion.
- The percentage of CTE concentrators in CTE programs that lead to nontraditional fields (Section 113(b)(2)(B)).

27.4   What Are the Policies Related to Students Earning Career Credentials?

States have taken a range of policy approaches to provide opportunities for students to earn industry credentials. The Education Commission of the States' 50-state comparison on secondary CTE researched state policies permitting secondary students to receive career credentials through CTE courses and found that at least 27 states and the District of Columbia have policies in place allowing students to attain credentials. Examining these states' statutes and regulations revealed at least four state policy approaches (Keily & Pechota, 2020) to credential attainment through CTE programs, including:

- Incentives and funding to support district and school programs.

    – In some states incentive funds are provided by the state to encourage districts and schools to develop and support CTE and work-based learning programs that lead to state-approved, industry-recognized credentials.

- Graduation requirements and areas of study in college career and readiness pathways.

    – Some states include CTE courses that lead to industry-recognized credentials and serve as indicators of college and career readiness as part of their high school graduation requirement.

- Performance assessments to measure credential progression.

    – States also use academic performance assessment to measure a high school student's progression in career credentials.

- Dual credit at community and technical colleges.

    – Some states do not provide opportunities for students to earn career credentials through secondary education but do provide a pathway to earn credit that may be applied to a postsecondary and career credential.

27.5   What Are the Requirements to Become a CTE Teacher in the United States?

27.5.1   Certification and Licensure Requirements for Secondary CTE Teachers

The Education Commission of the States performed a 50-state comparison of teacher certification requirements for secondary CTE teachers in the United States and determined that states require a range of qualifications for teachers seeking CTE certification or licensure. In some states, requirements differ by specific CTE subject area or by existing educational or work experience. In addition to meeting a state's

general requirements for becoming a teacher, the comparison identifies five types of requirement areas (Keily & Perez, 2020) for CTE teacher certification or licensure:

- Education.
  - This may include a high school diploma or equivalent, a postsecondary degree, or a completion of postsecondary level CTE coursework.
- Work Experience.
  - This may include completion of a specified number of hours or years of work or an apprenticeship experience in the occupational area.
- Certification.
  - This may include possession of an industry-recognized license or certification.
- Assessments.
  - This may include the successful completion of testing in CTE subject matter, content area expertise, or another relevant knowledge.
- Teacher or CTE Training.
  - This may include completion of professional development or training required for teachers generally, professional development or training in the CTE field or in a specific occupational area, mentorship experience, or other pedagogical training.

27.5.2 Certification Requirements for Community College CTE Professors and Instructors

According to an article from Study.Com (2019), community college teachers are professors and instructors who work at the postsecondary level, teaching in 2-year college settings. Unlike professors, who work in 4-year colleges and universities, the focus for these professionals is more often on teaching, with less emphasis on research and publication. Most community colleges require teachers to have a master's degree or at least graduate study in the subject to be taught. Certification as a community college teacher is not required by state law, but it is helpful for those who do not have teaching experience.

27.6 What Is the Importance of Industry Credentials for CTE Students?

US employers are struggling to find qualified applicants across a range of career sectors. According to Burning Glass Technologies (2018), 12 career areas – including healthcare, computers, and mathematics – report that the demand for workers exceeded available supply by a total of 4.4 million job openings in 2016. This gap undermines the innovation and competitiveness in many of our leading industries and threatens our economy. This gap is estimated to only worsen as jobs increasingly require candidates to display skills from multiple traditional jobs.

Industry-recognized credentials, issued by a third party, help address this skills gap by documenting a student's career readiness using a standardized validation of the knowledge and skills required for success in a given occupation or industry. The industry credential can include educational certificates, degrees, certifications, and government-issued licenses (ExcelinEd and Burning Glass Technologies, 2019). In fact, full-time employees with an industry credential earn more than their counterparts without one, and in some cases, the salaries of non-degree credential holders were found to be similar to workers with college degrees (National Skills Coalition, 2018).

According to the Bureau of Labor Statistics (2017), certifications and licenses are credentials that demonstrate a level of skill or knowledge needed to perform a specific type of job. Certifications are usually issued by a nongovernmental body that is often affiliated with a specific industry or association, while licenses are awarded by a government agency and convey a legal authority to work in an occupation or complete a specific task. People may earn more than one certification or license; people with a license may also have a certification. Similarly, employers may require certifications and/or licenses for employees to perform certain jobs, which varies by industry and occupation.

27.6.1 Credential Engine and Credential Finder

A new organization called Credential Engine (2020) provides a suite of web-based services that creates, for the first time, a centralized Credential Registry to house up-to-date information about all credentials, a common description language to enable credential comparability, and a platform to support customized applications to search and retrieve information about credentials. Their database, called Credential Finder (2020), allows individuals to view various credentials represent in terms of competencies, connections with other credentials, assessment rigor, and third-party approval status. The goals are transparency and clarity as well as helping align credentials with the needs of students, job seekers, workers, and employers.

27.7 What Are the Teaching Competencies Required by CTE Teachers and Faculty?

Two studies provide a list of validated CTE teacher competencies that document the standards required of CTE teachers. The first is a set of standards developed by the National Board for Professional Teaching Standards (National Board) in Career and Technical Education (National Board, 2014). The second is an updated set of Performance-Based Teacher Education (PBTE) standards originally published by the National Center for Research in Vocational Education at the Ohio State University (Norton, Harrington, & Gill, 1976/2012).

27.7.1 National Board of Professional Teaching Standards

The National Board for Professional Teaching Standards (National Board) is a not-for-profit professional organization, created and governed by practicing teachers and their advocates. The founding mission of the National Board is to advance the quality of teaching and learning by:

- Maintaining high and rigorous standards for what accomplished teachers should know and be able to do.
- Providing a national voluntary system certifying teachers who meet these standards.
- Advocating related educational reforms to integrate National Board Certification into American education and to capitalize on the expertise of National Board Certified Teachers.

In 1997, the National Board published their first edition of the CTE teacher standards. As a result of the significant changes in the CTE and educational fields, in 2014 the National Board updated their standards for CTE teachers to reflect what CTE teachers should know and be able to do.

Career and Technical Education Standards, Second Edition (2014), describes the standards that are meant to reflect the current professional consensus about the essential aspects of accomplished practice. The deliberations of the Career and Technical Education Standards Committee were informed by various national and state initiatives on student and teacher standards that have been operating concurrently with the development of National Board Standards.

The National Board for Professional Teaching Standards has organized the standards for accomplished teachers of career and technical education (CTE) into the following ten standards. These standards have been ordered to facilitate understanding, not to assign priorities. They each describe an important facet of accomplished teaching and often occur concurrently because of the seamless quality of accomplished practice. The following standards serve as the basis for National Board Certification in CTE:

- Standard I: Knowledge of Students.

  - Accomplished teachers have a rich, holistic understanding of who their students are as learners and individuals. They value their students' various learning styles and stages of development, and they create learning environments that differentiate instruction to meet the diverse needs of all students.

- Standard II: Responding to Diversity.

  - Accomplished teachers create learning environments characterized by fairness, equity, and respect for diversity. They use inclusive teaching practices and advocate that all students receive a quality career and technical education.

- Standard III: Knowledge of Content.

  - Accomplished teachers utilize their technical and professional knowledge as well as their interdisciplinary and pedagogical skills to develop curricular objectives, design instruction, promote student learning, and facilitate student success within industry.

- Standard IV: Learning Environments and Instructional Practices.

  - Accomplished teachers design contextualized learning environments that foster critical thinking, creativity, leadership, teamwork, and communication skills while preparing students for postsecondary education and careers.

- Standard V: Assessment.

  - Accomplished teachers design and implement a variety of valid and reliable assessments that allow students to provide an authentic demonstration of their knowledge and skills and help them establish goals to guide their technical and professional development.

- Standard VI: Postsecondary Readiness.

  - Accomplished teachers facilitate career exploration and promote the acquisition of knowledge and skills so students can make informed career decisions that match their interests and aptitudes with the needs, expectations, and requirements of industry.

- Standard VII: Program Design and Management.

  - Accomplished teachers design and promote quality programs aligned with industry demands. They manage materials and resources to enrich their programs and sustain meaningful educational experiences for their students.

- Standard VIII: Partnerships and Collaborations.

  - Accomplished teachers collaborate with family, education, industry, and community partners to create challenging real-world opportunities and support networks that help students plan, develop, and achieve their career goals.

- Standard IX: Leadership in the Profession.

– Accomplished teachers collaborate with stakeholders within their schools and communities to improve instruction, promote student learning, and advocate for their fields of expertise in education and related industries.

- Standard X: Reflective Practice.

  – Accomplished teachers reflect analytically throughout the instructional process, using multifaceted feedback to increase the efficacy of their teaching, strengthen its impact on student development, and model the importance of lifelong learning.

For elaboration on the context for the ten standards, along with an explanation of what teachers need to know, value, and do if they are to fulfill the standard, the entire document can be accessed at http://nbpts.org/wp-content/uploads/EAYA-CTE.pdf.

27.7.2 Performance-Based Teacher Education Validation Study

In 2011, Adam Manley conducted a research project (Manley & Zinser, 2012) to create a contemporary taxonomy of CTE teacher competencies by updating the Performance-Based Teacher Education (PBTE) competency profile that was developed by the Center for Vocational and Technical Education at Ohio State University (Norton, 1977). Published in 1977 (ibid) and partially updated in 1987 (Norton & Harrington, 1987), the PBTE profile is segmented into 14 categories. Within the 14 categories are 132 competencies that detail what CTE administrators consider to be important for teachers to understand and practice. After publication, these competencies became the foundation for many teacher education institutions' curriculum. Additionally, many CTE administrators across the country used the competencies as a rationalization and guide for the improvement of their professional development offerings. This study sought to update these competencies to better reflect twenty-first century CTE in Michigan and thus answer the question: what are the PBTE categories and competencies that are important to the practices of Michigan's CTE program?

To determine which competencies are rated the most important, the researchers calculated the coefficient of variance (CV) for each competency. This calculation factors in the competency's mean, as well as the variation within the mean standard deviation, to determine the dispersion of each rating's distribution. To calculate the CV, each competency's mean was divided by each competency's standard deviation. The resulting values provided a method for ensuring that the ranking of the competencies was not solely based on the mean, but also the variability within it. Therefore, the CV values assisted the researchers in identifying which competencies were of higher importance and had a high level of consensus.

The following is the updated list of PBTE competencies. Each category's competencies are ranked by the CV. The 25 highest ranked competencies (CV = 6.44

and above) are italicized with their ranking in parentheses. The competencies highlighted in gray are ones that the participants failed to form a consensus as to their importance. New competencies are identified by the asterisk next to the competency number (Table 27.1).

27.8   How Do Teachers and Professors Continue to Improve their Teaching Skills?

The US Department of Education reports that 31 states are currently identifying a critical shortage of CTE educators (2019). Underprepared teachers are two to three times more likely to leave the profession compared to fully prepared teachers contributing to shortages. Fortunately, the Congress responded to this crisis when they reauthorized the Carl D. Perkins Act in 2018. With a renewed focus on teacher recruitment, retention, and professional development, Perkins V prioritizes filling the CTE teacher talent pipeline while ensuring retention by promoting professional development for teachers to remain successful.

For example, state plans must include "a description of how the eligible state agency will support the recruitment and preparation of teachers, including special education teachers, faculty, school principals, administrators, specialized instructional support personnel, and paraprofessionals to provide career and technical education instruction, leadership, and support, including professional development that provides the knowledge and skills needed to work with and improve instruction for special populations."

A focus on expanding instructional capacity is also required at the local level, where local applications must describe how they "will improve recruitment, retention, and training of career and technical education teachers, faculty, specialized instructional support personnel, paraprofessionals, and career guidance and academic counselors, including individuals in groups underrepresented in those professions."

Most teachers and professors consider professional development as continuing to learn and grow within their discipline, not in their "teaching" development. Unfortunately, for college faculty, regular participation in their teaching development is neither a workplace expectation nor a professional obligation (Haras, 2018). Too often professional development focuses on *what* is taught, not *how* it is taught and delivered in a workshop format. Many professional development practices focus on delivering information rather than creating experiences for learning that professionals would find relevant or useful to improving their teaching practice. This implies that knowledge about teaching and learning can be acquired through transfer and is primarily a cognitive activity (ibid).

At the secondary level, when teachers earn a state-issued teaching credential, they have typically earned a bachelor's degree, completed a supervised teaching experience, successfully passed teacher training courses, and received a state-issued

Table 27.1 Performance-based teacher education categories and competency ratings

Category A: Program planning, development, and evaluation			
Comp. #	**Competency**	**Mean**	**SD**	**CV**
A3	**Develop program goals and objectives (11)**	4.67	0.63	7.47
A7	Conduct a student follow-up	3.96	0.65	6.09
A5	Develop a course of study based on industry or state standards	4.5	0.77	5.86
A6	Develop long-range plans	4.4	0.83	5.30
A8	Evaluate CTE programs	4.22	0.90	4.72
A10	Collaborate with other CTE teachers and administrators to plan, develop, and evaluate a CTE program	4.16	0.92	4.54
A2	Organize and maintain an occupational advisory committee	4.07	1.11	3.65
A9	Search for existing regional employment forecasts	3.61	1.02	3.55
A4	Conduct an occupational analysis	3.58	1.03	3.48
A1	Prepare, conduct, and report community survey	2.82	1.11	2.54
Category B: Instructional planning			
Comp. #	**Competency**	**Mean**	**SD**	**CV**
B3	**Develop a unit of instruction (6)**	4.65	0.59	7.94
B5	**Research and select instructional materials (8)**	4.64	0.59	7.81
B2	**Develop student performance objectives (15)**	4.58	0.64	7.17
B1	**Determine needs and interest of students (21)**	4.55	0.70	6.54
B6	**Prepare teacher-made instructional materials (22)**	4.5	0.69	6.53
B4	Develop a lesson plan	4.53	0.79	5.71
B7	Integrate academic instruction within CTE courses	4.21	0.94	4.50
Category C: Instructional execution			
Comp. #	**Competency**	**Mean**	**SD**	**CV**
C7	**Direct students in applying problem-solving techniques (5)**	4.7	0.57	8.32
C32	**Present information using instructional videos (12)**	4.18	0.57	7.40
C12	**Employ reinforcement techniques (14)**	4.6	0.64	7.18
C9	**Introduce a lesson (19)**	4.57	0.66	6.91
C16	**Demonstrate a concept or principle (20)**	4.55	0.67	6.80
C6	**Direct student lab experience (23)**	4.61	0.71	6.53
C13	Provide instruction for slower and more capable learners	4.54	0.71	6.42
C11	Employ oral questioning techniques	4.49	0.71	6.32
C10	Summarize a lesson	4.53	0.73	6.22
C8	Employ the project method	4.49	0.75	5.99
C1	Direct field trips	4.17	0.74	5.61
C4	Employ simulation techniques	4.34	0.77	5.61
C34	Present information using a variety of internet resources	4.38	0.79	5.52
C15	Demonstrate a manipulative skill	4.41	0.80	5.50
C17	Individualized or tailored to fit instruction	4.35	0.84	5.19
C5	Guide student study	4.25	0.82	5.16
C19	Use subject matter experts to present information	3.98	0.81	4.91

Table 27.1 (continued)

C31	Present information using a variety of electronic media (LCD projector, tablet, document camera, interactive whiteboard, clickers, etc.)	4.43	0.91	4.88
C3	Direct students in instructing other students	4.13	0.86	4.81
C21	Present information with models and real objects	3.93	0.85	4.62
C33	Present information using presentation software (PowerPoint, keynote, etc.)	4.2	0.91	4.60
C14	Present an illustrated talk	4.11	0.96	4.27
C2	Conduct group discussions, panel discussions, and symposiums	3.64	1.04	3.50
C24	Present information with televised and videotaped materials	3.66	1.06	3.44
C26	Employ the brainstorming technique	3.57	1.06	3.38
C18	Employ a team-teaching approach	3.6	1.09	3.31
C25	Employ programmed instruction	3.19	1.06	3.02
C20	Prepare bulletin boards and exhibits	3.02	1.03	2.92
C29	Present information with the whiteboard	3.47	1.30	2.67
C22	Present information with overhead and opaque materials	2.53	1.41	1.80
C23	Present information with audio recordings	2.27	1.39	1.63
C28	Employ the question box technique	2.27	1.48	1.53
C27	Employ the buzz group technique	2.32	1.67	1.39
C30	Present information with a flip chart	2.09	1.61	1.30

Category D: Instructional evaluation

Comp. #	Competency	Mean	SD	CV
D4	**Assess student performance – Skills (3)**	4.72	0.55	8.63
D6	**Evaluate instructional effectiveness (4)**	4.67	0.55	8.48
D2	**Assess student performance – Knowledge (13)**	4.63	0.63	7.40
D1	**Establish student performance criteria (17)**	4.59	0.65	7.04
D3	Assess student performance – Attitudes	4.51	0.76	5.97
D5	Determine student grades using formative and summative assessments	4.48	0.76	5.93
D7	Search for industry-related assessments for use in class	3.99	1.01	3.95

Category E: Instructional management

Comp. #	Competency	Mean	SD	CV
E5	**Provide for student safety (2)**	4.79	0.55	8.66
E1	**Project instructional resource needs (24)**	4.52	0.70	6.46
E7	Assist students in developing self-discipline	4.54	0.72	6.27
E9	Manage the CTE lab	4.44	0.87	5.13
E4	Maintaining a filing system	3.98	0.81	4.89
E8	Organize the CTE lab	4.37	0.91	4.79
E6	Provide for the first aid needs of students	4.42	0.93	4.73
E3	Arrange for improvement of CTE facilities	4.19	0.92	4.55
E2	Manage budgeting and reporting responsibilities	4.07	0.94	4.33
E11	Assist other professionals (teachers, counselors, administrators) with student behavioral issues (drug abuse and bullying)	3.79	1.23	3.08
E10	Monitor students' use of CTE lab chemicals	3.68	1.74	2.12

(continued)

Table 27.1 (continued)

Category F: Guidance				
Comp. #	Competency	Mean	SD	CV
F4	**Provide information on educational and career opportunities (16)**	4.59	0.65	7.07
F5	Assist students in applying for employment or further education	4.38	0.79	5.54
F3	Use conferences to help meet student needs	4.24	0.83	5.10
F2	Gather student data through personal contacts	3.69	0.94	3.94
F1	Gather student data using formal data-collection techniques	3.69	0.97	3.80
Category G: School-community relations				
Comp. #	Competency	Mean	SD	CV
G14	Develop and maintain a relationship with school guidance counselors	4.5	0.75	5.97
G8	Work with members of the community	4.38	0.84	5.22
G10	Obtain feedback about the CTE program	4.35	0.87	5.01
G2	Give presentations to promote the CTE program	4.21	0.92	4.58
G7	Conduct an open house	4.34	0.95	4.57
G3	Develop brochures to promote the CTE program	4.21	0.98	4.32
G9	Work with state administrators and local educators	4.21	0.98	4.31
G12	Develop a professional relationship with parents and guardians	4.18	0.99	4.23
G4	Prepare displays to promote the CTE program	4.17	0.99	4.20
G5	Prepare news releases and articles concerning the CTE program	4.22	1.03	4.11
G1	Develop a school-community relations plan for the CTE program	4.03	1.00	4.02
G13	Develop student-ambassador programs to assist with marketing CTE programs	3.68	1.19	3.10
G15	Develop and maintain a program website	3.86	1.38	2.79
G6	Arrange for television and radio presentations concerning the CTE program	2.77	1.19	2.32
G11	Develop and maintain a program social media presence	2.72	1.50	1.81
Category H: Career and technical student organizations				
Comp. #	Competency	Mean	SD	CV
H5	**Supervise activities of the CTSO (7)**	4.72	0.60	7.89
H6	**Guide participation in CTSO (9)**	4.72	0.61	7.80
H3	**Prepare CTSO members for leadership roles (10)**	4.69	0.61	7.74
H1	Develop a personal philosophy concerning CTSOs	4.33	0.85	5.09
H4	Assist CTSO members in developing and financing a yearly program of activities	3.91	0.97	4.05
H7	Develop creative/effective alternatives to official CTSOs (local or regional competitions and/or service-learning projects)	3.73	1.00	3.73
H2	Establish a CTSO	4.35	1.38	3.16

Table 27.1 (continued)

Comp. #	Competency	Mean	SD	CV
Category I:Professional role and development				
I1	**Keep up-to-date professionally (1)**	4.78	0.53	9.00
I4	**Serve the school and community (25)**	4.51	0.70	6.44
I5	Obtain a suitable teaching position	4.63	0.73	6.33
I2	Serve the teaching profession	4.47	0.80	5.62
I3	Develop an active personal philosophy statement	4.47	0.83	5.40
I9	Mentor new CTE teachers	4.29	0.94	4.58
I8	Supervise student teachers	4.36	1.16	3.77
I10	Build a network of supportive resources such as a mentor teacher, as well as state and national organizations (MBEA, MHOEA, etc.)	4.04	1.08	3.76
I6	Provide lab experiences for prospective teachers	4.11	1.11	3.72
I7	Plan the student teaching experience	4.31	1.19	3.63
I11	Work summer externships to keep up-to-date with industry trends and changes	2.96	1.49	1.99
Category J: Coordination of cooperative education				
J9	Prepare for students related instruction	4.22	1.12	3.77
J11	Develop alternative work-based learning experiences (job shadowing, unpaid internships, etc.) where co-op experiences are not possible	4.25	1.31	3.26
J1	Establish guidelines for a cooperative CTE program	3.77	1.29	2.92
J8	Evaluate co-op students on the job performance	3.83	1.32	2.91
J7	Coordinate on the job instruction	3.61	1.26	2.86
J3	Enroll students in a co-op program	3.46	1.22	2.84
J4	Secure high-quality training stations for the co-op program	3.41	1.23	2.77
J5	Place co-op student on the job	3.41	1.26	2.71
J6	Develop the training ability of on the job instructors	3.29	1.30	2.54
J10	Supervise an employer-employee appreciation event	3.15	1.32	2.39
J2	Manage the attendance, transfers, and terminations of co-op students	3.32	1.56	2.13
Category K: Serving students with special needs				
K7	Improve teacher communication skills	4.34	0.89	4.86
K5	Promote peer acceptance of students with special needs	4.28	0.94	4.56
K6	Use instructional techniques to meet the needs of students with special needs	4.29	0.94	4.55
K8	Assess the progress of students with special needs	4.22	0.95	4.45
K1	Prepare to serve students with special needs	4.22	0.95	4.43
K2	Plan instruction for students with special needs	4.15	0.95	4.36

(continued)

Table 27.1 (continued)

K3	Provide appropriate instructional materials for students with special needs	4.15	1.01	4.10
K4	Modify the learning environment for students with special needs	4.2	1.04	4.03
K11	Prepare special education students for employability	4.11	1.04	3.97
K13	Work collaboratively with special education personnel including assisting in the development of IEPs and accommodations	4.06	1.06	3.82
K10	Assist special education students in developing career planning skills	4.05	1.07	3.77
K9	Counsel special education students with personal-social problems	3.53	1.23	2.88
K12	Promote a CTE program for students with special needs	3.73	1.40	2.66

Category L: Assisting student in improving their basic skills

Comp. #	Competency	Mean	SD	CV
L7	**Assist students in improving their career and employability skills (18)**	4.71	0.68	6.96
L4	Assist students in improving their oral comm. Skills	4.3	0.85	5.07
L6	Assist students in improving their survival skills	4.33	0.86	5.03
L2	Assist students in developing technical reading skills	4.27	0.87	4.89
L5	Assist students in improving their math skills	4.17	0.90	4.61
L3	Assist students in improving their writing skills	4.47	1.12	3.99
L1	Assist students in achieving basic reading skills	3.98	1.38	2.88

Category M: Teaching adults

Comp. #	Competency	Mean	SD	CV
M1	Prepare to work with adult learners	2.76	1.33	2.07
M5	Manage the instructional process	2.6	1.35	1.92
M4	Plan instruction for adults	2.48	1.31	1.89
M6	Evaluate the performance of adults	2.48	1.31	1.89
M3	Determine individual training needs	2.6	1.44	1.81
M2	Market the adult education program	2.48	1.40	1.77

Highest ranked competencies bold-faced with their rank in parentheses
Gray-shaded competencies are ones which participants failed to form consensus as to their importance

license to teach. At the postsecondary level, often a professor's background does not require previous experience as a teacher nor the earning of a state-issued license to teach. Without adequate preparation, professors then replicate familiar techniques they had observed when they themselves were students. They may develop PowerPoint presentations and read them to students, and some may set unreasonable expectations, assign difficult problems, or fail too many students for the sake of increasing academic rigor.

27.8.1   Teacher/Faculty Mentors

New teachers are often provided teaching assignments without the benefit of experience while juggling the challenges associated with beginning a new career. At the secondary level, approximately 77 percent of new teachers stay in the profession for the duration of their first 5 years (Raue & Gray, 2015); however, staff attrition costs districts billions of dollars, contributes to low teacher morale, and disrupts student learning. Teachers identify the lack of administrative and instructional support as one cause of attrition. To address this, school districts across the United States have designed induction programs for new teachers. A common element of these induction programs is to assign mentors who guide new teachers' professional learning. For more information about this, the SREB (2018) published a document with helpful information for mentoring programs – Mentoring New Teachers: A Fresh Look.

27.8.2   Centers for Teaching and Learning (CTLs)

At the postsecondary level, many colleges have created teaching and learning centers to focus on faculty/professional development, instructional development, and organizational developers (Kelley, Cruz, & Fire, 2017). CTL staff offer professional development for individual faculty while often supporting broad institutional objectives that might include such decreasing DFW rates (the number of students in a particular course who receive Ds, Fs, or Withdraw), increasing access to the university for disadvantaged groups, and encouraging the use of the university's learning management system (Chism, Gosling, & Sorcinelli, 2010, p. 249).

27.8.3   Teacher/Faculty Improvement Plans

Both secondary and postsecondary CTE programs perform some type of faculty evaluations. These evaluations often address classroom performance; course organization and preparation; approachability and availability; and assessment of student learning. Improvement measures are often measured by student feedback or teacher/faculty observations, and/or peer evaluation. Self-assessment techniques are also used to provide data on various aspects of one's teaching.

Once a faculty evaluation is complete, many schools and colleges develop an individualized faculty improvement plan to address teaching, research and original creative work, service, or some combination of these areas of work. Common elements of improvement plans could include problems that need resolving, strategies for resolving a problem (including learning resources and mentoring), estimated

date for completing each strategy, and resources needed to implement strategies (Sampson, Wager, Driscoll, Carroll, & MceIrath, 2010).

27.8.4   *Universities Offering CTE Teacher Training*

All states have colleges and universities that offer Career and Technical Teacher Training programs at the undergraduate and graduate levels. The role of the universities has changed over the last few decades due to the change in Perkins funding for CTE teacher training and research. Additionally, some states are now allowing public schools and organizations to offer alternative teacher certifications. Since states determine their own teacher certification requirements, the degree to which universities impact CTE teacher training varies. In more traditional states that continue to rely on universities for CTE teacher training, there are typically multiple certification levels that may or may not include the need to complete a bachelor's degree. These states often have multiple universities offering CTE teacher certification options and degrees. In states allowing alternative certification routes beyond the universities, only a few universities, sometimes only one, offer CTE teacher certification routes.

27.8.5   *Professional Organizations*

Almost all of the professional organizations related to CTE offer resources for teachers in their content area. These resources often include informational publications, journals, research, seminars and conferences, etc.

There are also several exciting teacher training options available:

- The What Works Clearinghouse (WWW, 2020) is an investment of the Institute of Education Sciences (IE) within the US Department of Education that was established in 2002. The WWC reviews the existing research on different programs, products, practices, and policies in education. The goal of WWC is to provide educators with the information they need to make evidence-based decisions. They focus on the results from high-quality research to answer the question "What works in education?"
- The ACTE Online Learning Network offers CTE Learn (CTELearn, 2020) which offers continuing education credit courses as well as a wide variety of free resources for both secondary and postsecondary CTE professionals. CTE Learn offers over 150 self-paced courses for CTE professionals including instructional planning, delivery, and assessment courses. Each course provides 4 h of continuing education credits, and participants can enroll in any course at any time to meet their individual learning needs.

- The Teaching to Lead (T2L, 2020) teacher preparation program helps new career and technical education teachers become great teachers. Developed by the Southern Regional Education Board and the National Research Center for Career and Technical Education, T2L offers intensive, research-based professional development and coaching services that build new and early-career CTE teachers' capacity to plan instruction, engage students, manage classrooms, create standards-driven assessments, and gain confidence in their craft.

27.8.6 Career and Technical Student Organizations (CTSOs)

In the United States, there are over two million students enrolled in CTSOs who are integrated into CTE programs and courses across the country. CTSOs extend teaching and learning through innovative programs and essential partnerships with local, state, and national business and industries. Many of the student organizations provide digital curriculum with ready-to-use resources, classroom management tools, and automatic student tracking for the teachers and faculty who serve as advisors for these organizations.

These are the most common CTSOs in the United States:

- Business Professionals of America (BPA).
- Distributive Education Clubs of America (DECA).
- Future Business Leaders of America-Phi Beta Lambda (FBLA-PBL).
- Family, Career and Community Leaders of America (FCCLA).
- National FFA Organization (former Future Farmers of America (FFA)).
- Health Occupations Student Organization (HOSA – Future Health Professionals).
- SkillsUSA.
- Technology Student Association (TSA) including science, technology, engineering, and mathematics (STEM).
- Educators Rising.

27.8.7 Teaching Online

Learning House, an organization that helps colleges manage their online education programs, and the American Association of State Colleges and Universities found that nearly 40 percent of courses offered by the colleges/universities are in either an online (25 percent) or blended (13 percent) format (Magda, 2019). Many institutions offer incentives to faculty for developing online courses; another 14 percent said they previously provided incentives but no longer did, while 21 percent said they offer no incentive. Major findings of the study included:

- Training and development of online faculty isn't consistently mandatory.

  – Many faculty members in the United States have the choice to opt out of online training that provides best practices for online instruction. The most common training is instruction in navigating the online learning technology, whereas only 37 percent of responding institutions require faculty-led pedagogical training. The report overall concluded that required training seems modest given increased enrollment in online courses.

- Evaluation of online faculty isn't universal.

  – Over 90 percent of the universities request that online students evaluate their online instructors; only 18 percent of supervisors evaluate online faculty that often (70 percent of supervisors do annual evaluations). Peer evaluations are even less common, as only 60 percent of institutions collect this feedback. The report concluded that a combination of these evaluations could help online faculty improve their techniques and commit to best practices.

- Faculty engagement with online learners isn't often defined by policy.

  – The study reported that written policies for faculty-to-student interactions are rare. For example, 74 percent of the institutions surveyed don't have minimum frequency requirements regarding how often faculty members post topics on message boards, and 71 percent don't stipulate how quickly student assignments should be graded. The report concludes that a lack of documented policies may tie to faculty freedom and the structure of their contracts; however, this may limit valuable interactions between online faculty and students.

In the career and technical education arena, online learning has presented many new challenges. One of the major issues facing CTE instructors teaching online is the delivery of hands-on experience within their content area as it becomes difficult or impossible for instructors to demonstrate skills up close and students are not able to access campus facilities, equipment, and technology. To help with this issue, the California Department of Education's Career and College Transition Division partnered with ACTE, CTEOnline.org, and the San Diego County Office of Education's Office of College and Career Readiness to produce seven weekly publications highlighting sector-specific CTE lesson plans, webinars, and resources for the remainder of the school year (ACTE, 2020).

Most community colleges offer a combination of formal and informal training for online instructors. Instructors can view on-demand tutorials and participate in live webcasts as well as exchange ideas and information on forums. Other institutions provide opportunities for instructor gatherings designed to discuss challenges and share best practices, and most institutions do offer instructional designer assistance on an individual basis and for technical assistance.

27.9   How Do CTE Programs in the United States Partner with Business and Industry?

Employer partnerships have been integrated into CTE programs since their inception. Over the years, national, state, and local CTE leaders have integrated more systemic and diverse partnerships with business and the community. In addition, these new partnerships have been supported by federal policy, including various iterations of Perkins legislation and other policies. For instance, the School-to-Work Opportunities Act of 1994 directed that all students have access to work-based learning tied to school-based learning, supported by business-education partnerships (Gordon, 2014; School-to-Work Opportunities Act of 1994, 1995). The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) introduced the concept of programs of study and directed the inclusion of a wide variety of participants in the "development, implementation, and evaluation" of CTE programs (Carl D. Perkins Career and Technical Education Act of 2006).

The new Perkins V has continued to emphasize more systemic partnerships, particularly with business and industry, incorporating labor market alignment into the definition of programs of study and requiring increased stakeholder engagement at the local level. Enhanced coordination with the workforce system, through the Workforce Innovation and Opportunity Act, and the recognition of the value of career readiness within the Every Student Succeeds Act have also fostered cross-agency cooperation on the federal, state, and local levels.

Also, states have increasingly encouraged, incentivized, and required partnerships with industry, education stakeholders, and the community. ACTE and Advance CTE have been tracking and categorizing state CTE policies for the past several years, and the policy category "industry partnerships and work-based learning" is frequently high on the list of topics addressed in state legislation, state board of education actions, and executive orders (Advance CTE and ACTE, 2018). State sources of funding for CTE are often based on the ability to engage stakeholders. These high-level policies and the perceptions of the local schools to value partnerships have resulted in business and community partnerships assuming a key role in the development and implementation of quality CTE programs of study.

Sustained engagement with a variety of partners is highlighted in Perkins V, which requires initial and ongoing consultation among the following stakeholders for the comprehensive local needs assessment and local application (Hyslop, 2018). This requirement allows CTE programs of study to enhance their partnerships with stakeholders with whom they already engage and forge relationships with new partners:

- CTE program representatives at the secondary and postsecondary levels, including teachers, faculty, administrators, career guidance and advisement professionals, and other staff.
- State or local workforce development board representatives.
- Representatives from a range of local businesses and industries.

- Parents and students.
- Representatives of special populations.
- Representatives from agencies serving at-risk, homeless, and out-of-school youth.
- Representatives from Indian tribes or tribal organizations, where applicable.

Partners who are part of a broader career pathway system may work with CTE programs in many ways including:

- Industry-validated curriculum.
- Industry credentials recommended by partners.
- Reviews of facilities, equipment, technology, and materials.
- Equipment donated by partners.
- Work-based learning provided by partners.
- Teacher externships offered by partners.
- Mentorship and judging for CTSO competitive events.
- CTSO service-learning activities organized with partners.
- Metrics on time and money contributed by partners.
- Op-eds and presentations by partners about the programs of study.
- Participation in career fairs.
- Participation in community events that educate the public about the program of study.
- Participation in surveys, interviews, and focus groups for program evaluation.

Partnerships with employers, industry groups, economic and workforce agencies, community organizations, and others are fundamental to CTE program quality and student success. Strong business and community partnerships require active, intentional outreach; a diverse range of stakeholders who represent different local perspectives and needs; a formal structure, with processes that help each participant understand their roles and responsibilities; and a range of activities and opportunities for partners to contribute to the program of study and realize the success of their efforts (ACTE, 2019).

27.10 CTE's New Image

Business leaders and policy makers have focused on career and technical education (CTE) as an important part of college and career readiness. This new change from the past, when any coursework focused on workforce preparation (as opposed to college preparation), was usually relegated to the students deemed not ready or not smart enough for college. The previous image of CTE has thankfully transformed CTE, and now most people – including educators and parents – seem to agree that there is value in emphasizing both academic knowledge and career preparation in schools. The 2017 PDK poll made it clear: 82% of Americans expressed support for classes that teach job or career skills, even if that means students might spend less

time in academically focused classes (Ferguson, 2018). This is a new time and new image for CTE. It is an exciting time to be involved in CTE training in the United States.

As society progresses further into the twenty-first century, CTE will continue to play an integral role in the preparation of both youth and adults. CTE programs in the United States will be constantly challenged by the ever-changing technological landscape of the modern work world. However, with continued support, CTE seems to be positioned to continue the 100-year commitment to preparing the workers of today and tomorrow.

References

ACTE. (2019). *High quality CTE series: Defining quality: Business and community partnerships*. Retrieved from https://www.acteonline.org/wp-content/uploads/2019/03/HQ_Partnerships_March2019.pdf.

ACTE. (2020). *CTE distance learning lesson plan resources for multiple sectors*. Retrieved from https://www.acteonline.org/lesson-plan-resources/.

Advance CTE. (2020). *Career clusters*. Retrieved from https://careertech.org/career-clusters.

Advance CTE and ACTE. (2018). *Perkins V: Strengthening career and technical education for the 21st century act*. Retrieved from https://www.acteonline.org/wp-content/uploads/2018/08/PerkinsV_One-Pager_082418.pdf

BLS. (2020). *Bureau of Labor Statistics CTE*. Retrieved from https://www.bls.gov/ooh/education-training-and-library/career-and-technical-education-teachers.htm

Bureau of Labor Statistics. (2017). *Labor force statistics from the current population survey*.

Burning Glass Technologies. (2018). *Different skills, different gaps: measuring & closing the skills gap*.

Chism, N., Gosling, D., & Sorcinelli, M. D. (2010). International faculty development: Pursuing our work with colleagues around the world. In K. J. Gillespie & D. L. Robertson (Eds.), *A guide to faculty development* (2nd ed.). Jossey-Bass.

Congressional Research Service. (2018). Reauthorization of the Perkins Act in the 115th Congress: The Strengthening Career and Technical Education for the 21st Century Act. Document R45446, December 21, 2018.

Credential Engine. (2020). *Credential engine*. Retrieved from https://credentialengine.org.

Credential Finder. (2020). *Credential finder*. Retrieved from https://credentialfinder.org.

CTELearn. (2020). *ACTE Online Learning Network*. Retrieved from https://www.ctelearn.org/.

ECS. 2019. *Education Commission of the States*. Retrieved from https://ednote.ecs.org/state-approaches-to-secondary-cte-funding/

ExcelinEd and Burning Glass Technologies. (2019). *Credentials Matter: Report 1: A national landscape of high school student credential attainment compared to workforce demand*.

Ferguson, M. (2018). Washington view: The past, present, and future of CTE. *Phi Delta Kappan, 100*(2), 64–65.

Gordon, H. R. D. (2014). *The history and growth of career and technical education in America* (4th ed.). Waveland Press.

Gravovskiy, B. (2018). Reauthorization of the Perkins Act in the 115th Congress: The Strengthening Career and Technical Education for the 21st Century Act. CRS Report R45446, Version 2. Updated. Retrieved from https://eric.ed.gov/?id=ED593627.

Haras, C. (2018). Faculty Development as an Authentic Professional Practice, Higher Education Today. A blog by American Council on Education.

Hyslop, A. (2018). *Perkins V: The official guide to the Strengthening Career and Technical Education for the 21st Century Act*. ACTE.

Keily, T. (2020). *Education commission of the states*. EdNote: State Approaches to Secondary CTE Funding. Retrieved from https://ednote.ecs.org/state-approaches-to-secondary-cte-funding/.

Keily, T., & Pechota, D. (2020). *Education commission of the states-- EdNote: Opportunities for career credentials in secondary CTE*. Retrieved from https://ednote.ecs.org/opportunities-for-career-credentials-in-secondary-cte/.

Keily, T. & Perez, Z. 2020. *Education commission of the states—EdNote: What's required to become a CTE teacher*. Retrieved from https://ednote.ecs.org/whats-required-to-become-a-cte-teacher/.

Kelley, B., Cruz, L., & Fire, N. (2017). Moving toward the center: The integration of educational development in an era of historic change in higher education. *LWT, 35*(1), 142.

Magda, A. J. (2019). *Online learning at public universities: Recruiting, orienting and supporting online faculty*. Learning House.

Manley, R., & Zinser, R. (2012). A Delphi study to update CTE teacher competences. *Education and Training, 54*(6).

National Board. (2014). *National Board Publishes New Standards for CTE*. Retrieved from https://www.nbpts.org/newsroom/national-board-publishes-new-standards-for-cte/

National Skills Coalition. (2018). *Measuring non-degree credential attainment 50-state scan*. Retrieved from https://www.nationalskillscoalition.org/resources/publications/file/Measuring-Non-Degree-Credential-Attainment-50-State-Scan.pdf

Norton, R., Harrington, L., & Gill, J. (1976/2012). *"Performance-based teacher education: The state of the art", ERIC ED 142 713*. Center for Vocational Education/Ohio State University.

Norton, R. E. (1977). *The development of competency-based instructional materials for the preparation of local administrators of secondary and post-secondary vocational education*. National Center for research in vocational education.

Norton, R. E., & Harrington, L. G. (1987). *Administrator competency study: A National Identification and verification of the competencies important to secondary and postsecondary administrators of vocational and technical education*. National Center for research in vocational education.

PCRN. (2020). *Perkins collaborative resource network*. Indicators of performance. Retrieved from https://cte.ed.gov/accountability/core-indicators.

Raue, K., & Gray, L. (2015). *Career paths of beginning public school teachers*. National Center for education statistics.

Sampson, J. P., Wager, W. W., Driscoll, M. P., Carroll, P. S., & MceIrath, J. (2010). Creating effective faculty improvement plans. *Florida State University, 22*, 2010. Retrieved from https://education.fsu.edu/wp-content/uploads/2015/06/Creating-Effective-Faculty-Improvement-Plans.pdf

School-to-Work Opportunities Act of 1994. (1995). Pub. L. No. 103–239, 108 Stat. 568 et seq.

SREB. (2018). *Mentoring new teachers: A fresh look*. Retrieved from https://www.sreb.org/sites/main/files/file-attachments/mentoring_new_teachers_2.pdf.

Study.com. (2019). *Community college teacher certification requirements and information*. Retrieved from: https://study.com/articles/Community_College_Teacher_Certification_Requirements_and_Information.html

T2L. (2020). *Teaching to lead*. Retrieved from https://www.sreb.org/sites/main/files/file-attachments/teaching_to_lead_brochure.pdf

U.S. Department of Education. (2019). *Bridging the skills gap: Career and technical education in high school*. https://www2.ed.gov/datastory/cte/index.html#data-story-title

WWW. (2020). *What works clearinghouse*. Retrieved from https://ies.ed.gov/ncee/wwc/.

Chapter 28
Models of TVET Teacher Education in Germany and their Potential to Meet Growing Demands in TVET Teacher Education

Frank Bünning

Abstract The implementation of the Bologna Declaration (1999) has resulted in major changes to the structures of academic degrees in Germany. The recommendation to adopt a two-level system of degrees (Bachelor's and Master's) within a given time frame represents a radical conceptual shift for curriculum designers and policymakers in German universities, where the traditional degree system had consisted of one block of study which leads to a Master's degree. The influence of the Bologna Declaration on the development of new models in degree structures in TVET Teacher Training has resulted in a variety of approaches in German universities. An analysis of new structures implemented by German academic institutions reveals three emerging models. These models will be discussed from different perspectives here.

28.1 Introduction

The UNESCO International Meeting on Innovation and Excellence in TVET Teacher Education of November 2004 in Hangzhou, China, aimed, inter alia, to contribute to international discussions and developments about the quality of teaching, learning and scholarship in technical and vocational education and training (TVET) and the development and implementation of an international Master's degree standard in teacher and trainer education in TVET.

This paper expands the discussion on diverse models of TVET Teacher Training and the impact of such diversity on sustainable development. While describing emerging models for TVET Teacher Training in Germany, the writer will explore

F. Bünning (✉)
Faculty of Humanities, Otto-von-Guericke-University of Magdeburg, Magdeburg, Germany
e-mail: frank.buenning@ovgu.de

the impact of the new programmes and sustainable development in the German TVET sector against the backdrop of the Bologna Process.

The impact of the Bologna Process on higher education in Europe can be seen in many aspects of university provision, not least in the area of Initial Teacher Training for TVET. This sector faces particular challenges given its connections with employment and industry. As European universities approach the deadline for the achievement of the requirements set out in the Bologna Process, a new body of research is beginning to reveal emerging trends and new challenges created by the recent changes to programmes and processes both within individual countries and throughout Europe. Such research is already serving as an important touchstone for policymakers and curriculum developers in monitoring the ongoing success of the development of a cohesive Higher Education Area as recommended by the Bologna Process.

The development of a cohesive Higher Education Area in Europe has involved the structural realignment of degree systems. Ironically, this has created greater diversity within the (German) TVET Teacher Training system than was previously the case. This diversity has given rise to complexities which may serve as a new discourse for sustainable development in TVET Teacher Training not only against the backdrop of the Bologna Process but also for developments on a wider international scale. Lessons to be learned from case studies such as that described in this publication can serve as an impetus for further methodological analysis, policy and curriculum development.

28.2   The Bologna Declaration

The implementation of the Bologna Process Committee (1999) has resulted in major changes to degree structures in Germany. The recommendation to adopt a two-level system of degree awards (Bachelor's and Master's) within a given time frame represents a radical conceptual shift for curriculum designers and policymakers in German universities where the traditional degree system consists of one block of study leading to a Master's award. The process of this reform and its resultant consequences remain current issues in the university sector and were the focus of conference proceedings over the last 6 years. The reform has posed particular challenges to universities concerned with TVET Teacher Training, given the professional nature of this orientation. As the dust begins to settle on this landscape, a clearer picture of the newly established models for Bachelor's and Master's degrees can be observed.

28.3   The Two-Cycle System in TVET Teacher Training

The degree system at both the national and international levels was supposed to follow comparable frameworks. The first-level degrees should offer access to second-cycle programs, and second-cycle degrees should give access to doctoral studies. The new two-cycle system in TVET Teacher Training marks a radical change in the training of TVET teachers. The traditional system consisted of one-block degree programme at university lasting from 4 to 5 years with two *Praktikum (internship)* placements. The standard period of study finishes with the first state exam, which is followed by a probationary period (*Referendariat*) of 1.5 to 2 years which finishes with the second state exam. Since the two-level system only applies to the period of study which takes place in university, TVET Teacher Training curriculum designers are faced with a particular challenge when considering how to map the traditional probationary period against the new structures.

Providers of TVET Teacher Training envisaged that the introduction of a two-level system would result in new career opportunities for future graduates. The possibility for graduates to exercise flexibility in career choices on the completion of each degree was an aspiration of German curriculum designers for TVET. It was hoped that the new system of two levels of degrees would free graduates from a single career path (teaching) by enabling them to opt for alternatives at different stages of their course of study. This element was considered to be an important aspect of a rapidly changing job market (Thierack, 2004, p. 26).

A second, seemingly obvious, advantage of the new degree system was the possibility of shorter periods of study, which would enable graduates to enter the job market more quickly (Schulz, 2004, p. 114).

A third desired output of the new degree structures was the intensification of models of partnership to enhance practical training (Thierack, 2004, p. 25).

The adaptation of the two-level-degree system was also intended to help 'internationalise' higher education. This term is interpreted by the Bologna Declaration to mean several things, each aspect of which would engender significant reconceptualising of both curriculum design and the marketing of such programmes abroad (Ploghaus, 2004, p. 11). The integration of the European dimension in all curricular provision (including opportunities for additional language acquisition and bilingual teaching), although present in some universities, has not been a driving factor for change in TVET in Germany. The aim of strengthening the status and quality of European higher education in the international context (Bologna Process Committee, 1999) can be viewed with a particular irony with regard to TVET in Germany, as Germany has enjoyed a long and distinguished tradition of TVET both in Europe and the wider global context (Green, Wolf, & Leney, 1999). Furthermore, the priority for each academic institution for teacher training has been to recruit and train teachers for the domestic market since there is a shortage of well-qualified TVET teachers all over Germany, particularly in technical areas. The prognosis for the next 10 years is that the demand for TVET teachers will exceed the supply in Germany. According to KMK statistics, there is currently a shortage of 8800 TVET

teachers in Germany (Innovelle, 2006). Despite this seemingly inward looking profile, German academic institutions have enjoyed successful international relationships in TVET Teacher Training at local levels in a variety of forms, for example, joint programmes, Erasmus projects. The strategic introduction of an international element, both in terms of clientele and providers, represents a new and challenging dimension for TVET Teacher Training in Germany. This can be seen as something of a double-edged sword, offering both opportunities and threats to academic institutions such as universities and *Fachhochschulen (technical colleges)*. Opportunities for international expansion have been welcomed by most academic institutions, so that a variety of collaborative programmes are now advertised in university publicity demonstrating engagement with the international dimension proposed by the Bologna Declaration. The adoption of ECTS has enabled institutions to use a common academic 'currency' for participation in a 'borderless' European Higher Education Area (Karran, 2004); however this also poses questions of credibility as well as allegiance for TVET Teacher Training in Germany. A firm commitment to the traditional system in TVET Teacher Training, including compulsory state exams, is borne out even in the newly evolving models of TVET Teacher Training. Few academic institutions have designed programmes which rely solely on the accumulation of credit points without the stringent application of a summative assessment at the end of the training period, whether this is during the course of studies at a university or during the probationary period. It is hoped that the newly designed module examinations will soon be considered as 'equivalent' to the traditional 'state exam' (Ploghaus, 2004).

## 28.4   Emerging Models in TVET Teacher Training

The influence of the Bologna Declaration on the development of new models in degree structures in TVET Teacher Training has resulted in a variety of approaches in German universities. An analysis of new structures implemented by German academic institutions reveals three emerging models. For the purposes of this paper these models can be described as:

- The Consecutive Model.
- The Top-Up Model.
- The Blended Model.

28.4.1   The Consecutive Model

The most dominant model appears to be the Consecutive Model. This model is very similar to the former single block programmes in that the three educational strands of major, minor and vocational education and didactics are integral to both levels of
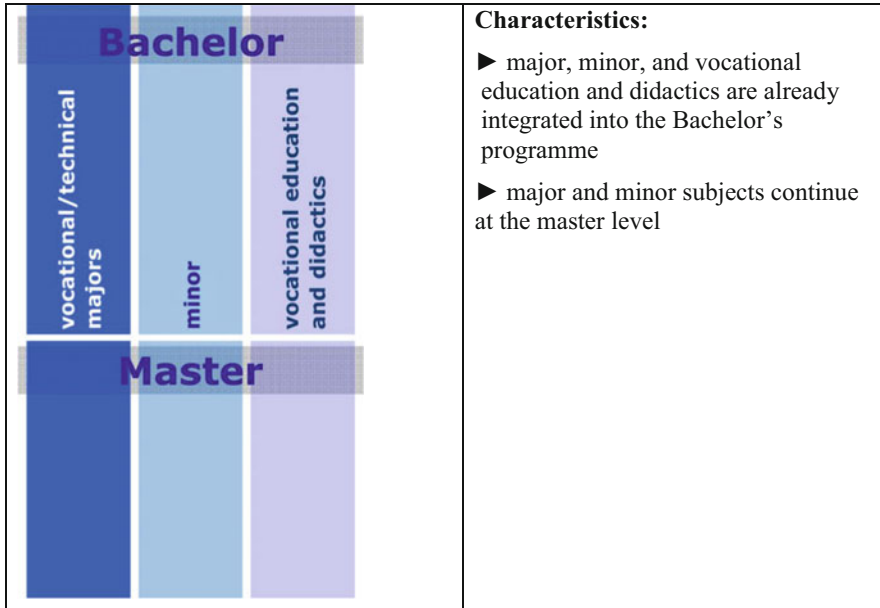
Fig. 28.1 Consecutive Model

study (see Fig. 28.1). An example of the Consecutive Model can be found at Berlin Technical University. Other universities are considering this model as part of their portfolio, e.g. Hannover University and Dresden University of Technology.

28.4.2   The Top-Up Model

In contrast to the Consecutive Model, the Top-Up Model introduces just one strand of teacher training at the Bachelor's level. This element is normally the technical or vocational strand. In this model, other familiar aspects of teacher training such as didactics and minor subjects are only introduced at the Master's level (see Fig. 28.2). This model has been in operation at Hannover University since 2003–2004.

28.4.3   The Blended Model

The Blended Model offers a two-level degree system which introduces two strands of teacher training at the Bachelor's level, together with one module of vocational education and didactics, open to students from other faculties. The Master's degree offers opportunities to deepen students' understanding of all three strands; see
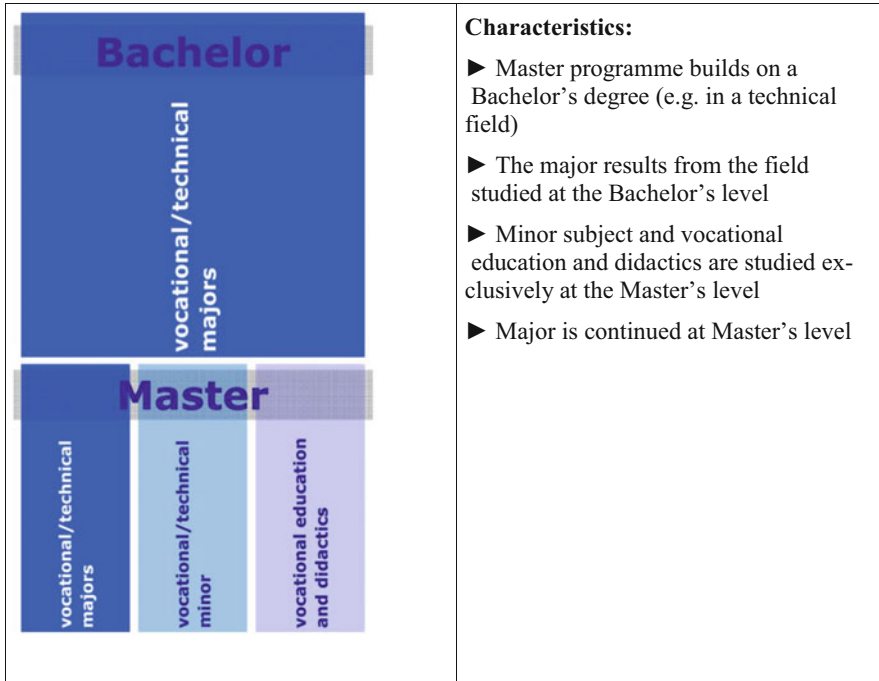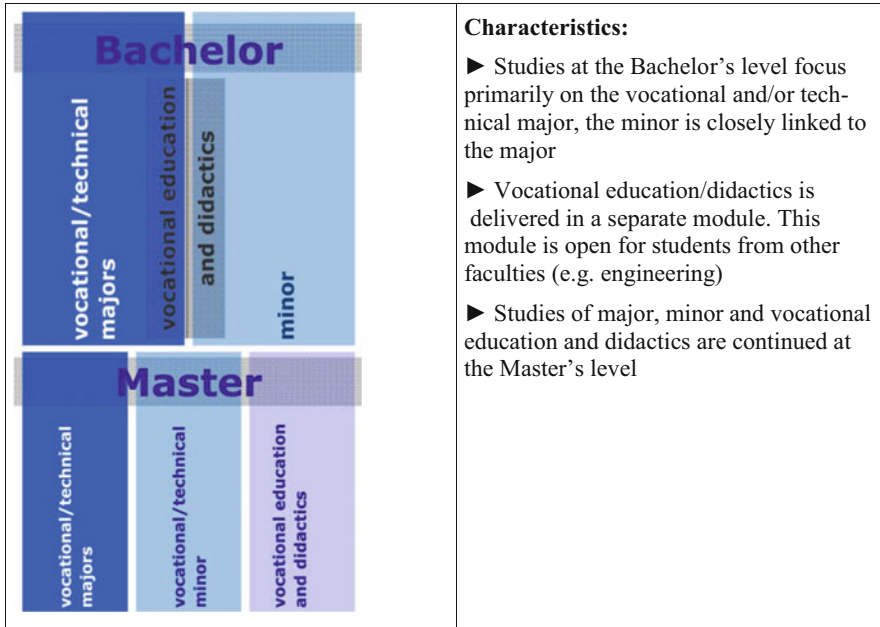
Characteristics:

► Master programme builds on a Bachelor's degree (e.g. in a technical field)

► The major results from the field studied at the Bachelor's level

► Minor subject and vocational education and didactics are studied exclusively at the Master's level

► Major is continued at Master's level

Fig. 28.2 The Top-Up Model

Fig. 28.3. This is an established model at Otto-von-Guericke University in Magdeburg (the Magdeburg Model).

28.4.4   The New Models and Sustainable Development

The three emerging models which are described above offer both advantages and disadvantages for TVET Teacher Training in Germany. Although they have been explained as discrete systems in this paper, there is evidence to show that some universities do not exclusively limit themselves to one model. Hannover University, for example, introduced the 'Top-Up' model in 2003–2004, but there are plans for the Consecutive Model to be offered from 2008 to 2009. As each model becomes part of the established fabric of TVET Teacher Training, the advantages and disadvantages of each model can be identified and monitored in relation to the envisaged outcomes of this restructuring. To recap, the intended outcomes of restructuring include:

• New opportunities for flexibility in considering career options.
• Shorter study periods.

	Characteristics:
	► Studies at the Bachelor's level focus primarily on the vocational and/or technical major, the minor is closely linked to the major
	► Vocational education/didactics is delivered in a separate module. This module is open for students from other faculties (e.g. engineering)
	► Studies of major, minor and vocational education and didactics are continued at the Master's level

Fig. 28.3 The Blended Model

- Enhancement of practical training.
- Internationalisation of degree programme.

For the purposes of this paper, these four aspects are considered to be indicators of sustainability in the European dimension in the first instance, although the principles revealed from the study may also be applied to the international domain of TVET Teacher Training.

The significance of the concept of 'emergence' with regard to the different models for TVET Teacher Training structures cannot be emphasised enough, as the models will evolve according to the extent to which stakeholders are convinced or persuaded by their quality. Saarinen (2005) notes that 'international influences find their way into national policies persuasively rather than authoritatively'. The new degree models appear to be meeting the intended outcomes in a variety of ways both positively and negatively as follows.

28.5 New Opportunities for Flexibility in Considering Career Options

New opportunities for graduates to consider alternative career options were envisaged as one outcome of the newly structured programmes. Although, in theory, this applies to both the Master's and the Bachelor's level degrees, in practice the broadening of career opportunities is more relevant in graduates at the Bachelor's level than for Master's degree graduates, who will normally have a particular career orientation. It is worth noting that this was always a challenge, as evidenced by Alesi, Bürger, Kehm, and Teichler (2005) who discovered, in a study conducted in France, the Netherlands, Austria, Hungary and the UK, that employers were not convinced about the feasibility of offering employment to Bachelor's graduates from universities. Both the Bachelor's graduates and employers from all countries which were analysed (apart from the UK) perceived a Bachelor's degree from a university as fulfilling only a part of the training necessary to enter a vocational profession with expertise and confidence. The same study revealed that Bachelor's graduates from universities in Germany could find employment in positions which formerly filled by employees with a mid-level professional qualification *(Fachwirt/Meister)*. Of those employers interviewed, 37.5% indicated that if they were to employ Bachelor's graduates from universities, they would be willing to offer them such positions. Only 29.9% expressed a willingness to offer them positions equal to their qualification. It is, however, also worth noting that over one third of those employers surveyed (36.6%) said that each case would be considered on its individual merits. The survey revealed that the larger the company, the greater the acceptance of the Bachelor's degree from a university as an adequate level of qualification for entry into the profession. The authors of the survey conclude that the acceptability of the Bachelor's degree as an entry-level qualification into a profession is not yet widespread in Germany given the diversity of perspectives of different employers. In this respect, simply relying on changed structures alone cannot guarantee increased employment opportunities for Bachelor's graduates from universities (Alesi et al., 2005).

This scepticism about the possible employment benefits gained from Bachelor's degrees from universities is also reflected in the TVET Teacher Training sector in Germany *Polyvalenz von Abschlüssen auf Krücken* (Spöttl, 2004, p. 76) (acceptance of academic degrees is still making halting progress). This scepticism is grounded in the lack of confidence in new degree systems when compared with the success of the traditional German TVET Teacher Training system. It is feared that the introduction of the new Bachelor's programmes could undermine the high status and quality of academic TVET Teacher Training. Furthermore, the fear also exists that an opportunity to introduce positions at public VET colleges may arise which could be filled with Bachelor's degree graduates from universities, thus undermining existing salary structures. Such issues of governance in TVET Teacher Training are identified by Kyvik (2004) as complicating factors for the process of reform. Indeed, analysis of the three emerging models for TVET Teacher Training in relation to employment opportunities reveals that each model could have a different impact on such

opportunities. While this perception may have potential negative impacts in Germany, it may ironically result in more sustainable development in the international dimension as German graduates may find employment more easily outside Germany.

The Consecutive Model offers a programme which is closely focused on teacher training with the result that the graduates (at Bachelor's level) will already be experts in the field in which they received their teacher training; however this could be a disadvantage if graduates try to find employment only on the basis of their Bachelor's degree alone and outside the teaching domain. Employers may not value the emphasis on teacher training in the first degree portfolio. Moreover employment opportunities in the public sector are currently limited. These factors alone mean that the graduates emerging from the Consecutive Model with a Bachelor's degree from a university could be faced with limited options for employment, which could be seen as a direct contradiction of one of the intended benefits of restructuring.

The Top-Up Model offers an initial degree programme which is predominantly focused on subject-based expertise in a given discipline. Thus, the graduates emerging from the Top-Up Model could be considered to have an advantage over their peers who are graduating from the Consecutive Mode, when seeking employment outside the teaching field. However, although they may be well qualified in their subject discipline, they will not have the equivalent depth of expertise in teacher training as those from the Consecutive Model obtain; thus, they are at a disadvantage if they seek employment in education. The Top-Up Model is commonly offered for areas in TVET where there is a great need for teachers, e.g. engineering, electrical engineering, etc. This may initially appear to be an obvious solution to an employment crisis; however, the limited pedagogical training offered at the Bachelor's level in the Top-Up Model might even exacerbate the dearth of good teachers in shortage subjects if many Bachelor's graduates are employed from this route.

The Blended Model can be considered as a compromise between the first two models. It aims to provide graduates with alternative career options by focusing on areas which are relevant for careers outside the teaching field while simultaneously introducing pedagogy and didactics at the Bachelor's level, thus offering a compromise between the Consecutive and the Top-Up Model. Bachelor's graduates of this model may not possess the equivalent subject expertise as their counterparts who have graduated from the Top-Up Model, but their command of knowledge on the subject would enable them to compete for jobs in a non-teaching environment.

The majority of Master's level programmes in TVET Teacher Training in Germany are specifically career oriented, thus limiting graduates' choice in employment opportunities at this stage of training in TVET. Students at this level in TVET usually follow one career path. An exception to this is the 'Magdeburg Model' where three different types of Master's degree programmes are offered and where only one of these leads to a career in teaching in the state sector.

28.6   Transfer between Programmes

When considering the flexibility offered by TVET Teacher Training programmes, it is also worth noting the degree to which students are able to transfer from any given programme to another. Each model offers a different degree of flexibility.

Transfer between programmes would be problematic in the Consecutive Model. This model arguably produces the most confident professionals as the training includes subject-based expertise and didactical skills at each stage of the training. However, this model does not lend itself readily to transfer. Although students can transfer credits, in terms of subject discipline, a seamless transfer would only be possible if students transferred to a programme following the Consecutive Model.

The Top-Up Model offers most flexibility in terms of transfer from one programme to another. As long as students achieve their Bachelor's degree, they are entitled to register for a Master's programme leading to a career in TVET teaching. This may represent the most suitable model for countries where teachers are in great demand, as it ensures a more rapid output of qualified teachers; therefore it may represent the most secure model in terms of sustainable development.

The Blended Model is open to graduates from different models, the prerequisite being that graduates should have completed a module which covers vocational education and didactics as part of their Bachelor's studies. In this respect, the Blended Model offers a solution which lies between the Consecutive and the Top-Up Models.

28.6.1   Shorter Periods of Study

Although the period of study is reduced for a Bachelor's degree, the employment situation outlined above indicates that graduates emerging with a Bachelor's degree will probably still need to go on to study for a Master's degree if they are to gain employment. In this case the new study period of 5 years (to obtain a Master's degree) may, in some cases, represent a longer period of study than the former system, which often only required 4.5 years. This outcome may indicate that the opposite effect of the original objective of shorter study periods has in fact been achieved in Germany; however, on the other hand, this has a positive effect on sustainable development in the wider international context.

28.6.2   Enhancement of Practical Training

The link between theory and real-life practice has often been identified as a possible weakness in the traditional system of TVET Teacher Training (HRK, 2006; Nielson, 2002), and one of the aims of the Bologna Declaration was to strengthen the practical

elements of TVET Teacher Training through this restructuring. In this respect the reforms were welcomed as an opportunity to plan programmes which had a strengthened practical training element. However, although this 'by-product' was hoped for, the three emerging models neither demonstrate the inclusion of more intensive practical training periods, nor do they ensure stronger links with practical training.

Since all Bachelor's and Master's programmes have traditionally included a practical element, it has been difficult to envisage how this might be strengthened. One possible approach is to combine the university stage of TVET Teacher Training with the *Referendariat* (Schulz, 2004, p.113) or practical training period. Schulz raises the question of the feasibility of a 1-year probationary period. This approach would simultaneously achieve two goals of the Bologna Declaration by shortening the study period and strengthening the practical elements of TVET Teacher Training.

28.7 Internationalisation of Degree Programmes

The promotion of European dimensions through curricular development, inter-institutional cooperation, mobility schemes and integrated programmes of study, training and research as cited in the Bologna Declaration pose particular challenges for TVET Teacher Training in Germany, despite the expectation that degree programmes, in general, would become more attractive to international students (Alesi et al., 2005). The traditional focus for the TVET Teacher Training sector has been the German education system and employment market. Despite the apparently limited interest in creating an international dimension for TVET, the Magdeburg Model includes two Master's programmes specifically designed to encompass an international perspective. Although the Bologna Process provides an opportunity for universities to develop international programmes, very few universities have taken advantage of this. Dresden University of Technology and Otto-von-Guericke University in Magdeburg are two universities which have done so. Although these programmes are proving to be popular with international students, the overall experience to date is that reciprocal arrangements can prove challenging where an exchange requires relative fluency in a language other than English; for example, a cohort of students from Otto-von-Guericke University were registered on a dual awards international Master's degree programme in 2005–2006 and spent a semester in England, but there were no British students to reciprocate the exchange. Otto-von-Guericke University also received a number of Chinese and Vietnamese students during the same year, but no German students went to China or Vietnam. The most common reason given for this lack of interest was language difficulties. Development of this dimension of TVET Teacher Training would clearly contribute positively to sustainable development as German institutions of higher education increasingly work in an international framework.

28.8   Conclusion

This study concludes that although the demands of the Bologna Process are being met in Germany, there remains some inconsistency in the development of convergent programmes, and the pace of change is sometimes hindered by the rate at which the new programmes are being recognised by employers. At the time of this writing, many institutions are running both the traditional degree programme and the new two-cycle programmes. The TVET Teacher Training sector faces particular challenges in this respect. The three emerging models, when considered as a whole, offer a range of approaches to TVET Teacher Training, which, in some respects, represents broader thinking in terms of preparation for a vocational profession. However the new diversity of programme structures is beginning to raise questions for the stability or coherence of the TVET Teacher Training system within Germany with the result that although the requirements of the Bologna Declaration may be being met, enabling mobility and flexibility within Europe, these two aims may be thwarted in the German context by the emergence of three models which do not always map neatly onto each other.

The emerging models have given rise to complexities which may serve as a new discourse for sustainable development in TVET Teacher Training not only against the backdrop of the Bologna Process but in the face of developments on a wider international scale. The lessons being learned from these case studies can serve as an impetus for further methodological analysis, policy and curriculum development.

References

Alesi, B., Bürger, S., Kehm, B. M., & Teichler, U. (2005). *Stand der Einführung von Bachelor- und Masterstudiengängen im Bologna-Prozess sowie in ausgewählten Ländern Europas im Vergleich zu Deutschland*. Bundesministerium für Bildung und Forschung.

Bologna Process Committee. (1999). The European higher education area/joint declaration of the European ministers of education convened in Bologna. *The Bologna Declaration, 19*, 1999.

Green, A., Wolf, A., & Leney, T. (1999). *Convergence and divergence in European education and training systems*. London.

HRK. (2006). *Hochschulrektorenkonferenz. Von Bologna nach Quedlinburg – die Reform des Lehramtsstudiums in Deutschland*. Brandenburgische Akademie der Wissenschaften.

Innovelle. (2006). *Berufsbildungspolitik in Deutschland ist mehr als Pisa*. Retrieved April 24, 2006, from http://www.praxiswissen-schulleitung.de/public1/pwsl/home.ns.

Karran, T. (2004). Achieving Bologna convergence: Is ECTS failing to make the grade? *Higher Education in Europe, xxix*, 3.

Kyvik, S. (2004). Structural changes in higher education Systems in Western Europe. *Higher Education in Europe, XXIX*, 3.

Nielson, S. (2002). The experience of the Nordic countries and Germany. Joint Cedefop-ETF conference, workshop, theme 2: Teacher and trainer training systems and quality. Aalborg, pp. 21-22.

Ploghaus, G. (2004). Der Bologna-Prozess und die Einführung von Bachelor- und Masterabschlüssen – Stand und Bedeutung. In R. Schulz, M. Becker, & R. Dreher (Eds.),

Bachelor und Master für das Lehramt an beruflichen Schulen. Programmträgerinfo, Nr. 06. Innovelle-Bs.

Saarinen, T. (2005). Quality' in the Bologna Process: from 'competitive edge' to quality assurance techniques'. *European Journal of Education, 40*(2), 11.

Schulz, R. (2004). Szenarien für die BA/MA-Ausbildung aus Sicht der 2. und 3. Phase. In R. Schulz, M. Becker, & R. Dreher (Eds.), *Bachelor und Master für das Lehramt an beruflichen Schulen. Programmträgerinfo, Nr. 06*. Innovelle-Bs.

Spöttl, G. (2004). Bachelor und Masterstudiengänge: Entwicklungen in Hochschulen und Konsequenzen für die 2. Phase der Lehrerbildung in den "Gewerblich-Technischen Fachrichtungen". In R. Schulz, M. Becker, & R. Dreher (Eds.), *Bachelor und Master für das Lehramt an beruflichen Schulen. Programmträgerinfo, Nr. 06*. Innovelle-Bs.

Thierack, A. (2004). Bestandsaufnahme und Diskussion von BA−/MA-Konzepten für das Lehramt an Berufskollegs bzw. Berufsbildenden Schulen. In R. Schulz, M. Becker, & R. Dreher (Eds.), *Bachelor und Master für das Lehramt an beruflichen Schulen. Programmträgerinfo, Nr. 06*. Innovelle-Bs.