# Chapter 30
# Quality Management of Competence-based Education

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## 30.1 Introduction

The concept of competence in relation to competence-based education as well as to measurable outcomes in outcome-based educational approaches is highly contested in the community of educational scholars (see, e.g. Alderson and Martin 2007; Frick 2014; Grabowski 2014; Salling-Olesen 2013; Vonken 2005). Both are innovation-driven concepts, often used synonymous although there are subtle differences. Much has been written and argued about the meaning of competence and if competence is teachable, accessible or measurable (see, e.g. Artelt et al. 2013; Bauer and Przygodda 2003; Fleischer et al. 2013; Weber and Achtenhagen 2014). The understanding of the term differs quite a bit among various scholars. In discussions on the alignment of vocational education and training systems across Europe, the term is widely used these days, although according to Mulder et al. (2007, 67) the 'lack of a coherent definition of the concept of competence, the lack of a one-to-one relationship between competence and performance, the misled notion that employing the concept of competence decreases the value of knowledge, the difficulties of designing competence-based educational principles at the curriculum and instruction levels, the underestimation of the organizational consequences of competence-based education, and the many problems in the field of competence assessment' is problematic. Wesselink et al. (2005) differentiate three traditions in competence research and call them the behaviourist, the generic and the cognitive approach. Above and beyond that other authors came up with their own classifications or competence frameworks (Ellström 1997; Mulder 2001; Weinert 2001). Mulder (2001, 2014) provided a general working definition of competence where the term

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describes the capability of a person to reach specific achievements, while Cedefop (2014) defines competence as the capability to use knowledge in practice. Both definitions complement each other.

Quality assurance in VET is a key priority within European policy. It is supported because VET qualifications need to become more transparent in order to ease mobility of workers between member states. The European quality assurance reference framework for VET (EQARF) provides recommendations to national and regional authorities. European countries started to cooperate within this priority in 2001 when the European forum on quality in VET was established jointly between the European Commission and Cedefop. Until the mid-2005, there was also a technical working group consisting of representatives of the two institutions and the member states, which was then replaced by the European Association for Quality Assurance (ENQA), the European policy learning platform for the exchange of experiences, consensus building and support for the common quality assurance framework for VET (CQAF) model in 2008 and 2009. The cooperative work has led to the definition of common principles, guidelines and tools for quality development. The concept of quality assurance comprises of four dimensions: quality of learning outcomes, assessment and validation, standards and competencies of the awarding institution. Quality assurance is also an essential part of many EU tools, such as the European qualifications framework (EQF) and the European credit transfer system in vocational education and training (ECVET). The EQF is a transnational meta-framework based on learning outcomes. It consists of an eight-level structure that has the objective of making qualification systems more transparent to employers, learners, qualifications authorities and education and training providers. It can be used as a tool that supports the translation between different qualification systems and their levels.

In the process of developing common criteria for quality, ten quality indicators have been proposed (European Commission 2008 in Cedefop 2009).

The ten quality indicators proposed[1] are:

1. Relevance of quality assurance systems for VET providers
2. Investment in training of teachers and trainers
3. Participation rate in VET programmes
4. Completion rate in VET programmes
5. Placement rate in jobs
6. Utilisation of acquired skills at the workplace
7. Unemployment rate
8. Prevalence of vulnerable groups
9. Mechanisms to identify training needs in the labour market
10. Schemes used to promote better access to VET

These indicators cover a wide range of aspects relevant for the delivery of VET. The majority of them refer to measurable outcomes at the national level. For

[1] Based on Annex 1 and Annex 2 of the proposal for a recommendation of the European Parliament and of the Council on the establishment of a European quality assurance reference framework for vocational education and training.

some, e.g. the utilisation of acquired skills at the workplace is partially addressed within European surveys. Cedefop has in cooperation with the European commission developed skills forecasting tools and statistics. At the national level, the amount of activities towards quality assurance differs widely and varies in emphasis. Some countries conduct yearly statistics on participation, completion and placement (e.g. Germany, Austria). Existing approaches include further (Ebbinghaus et al. 2008):

- Support of enterprise-based VET through chambers.
- Proximity between VET training among different enterprises and according to standards provided by chambers.
- Orientation of school education in VET at the praxis in enterprises.
- Shaping of framework condition of VET training (e.g. salaries) through enterprises in cooperation with unions.
- Monitoring of competence development through enterprises and schools.
- Apprentices or VET students are increasingly expected to take on responsibilities.

Over the past decade, there has been a paradigmatic shift in many European countries from a rather input-oriented approach towards the concept of learning outcomes. With awarding a qualification not only is the character and profile of specific learning communicated, it also signals the relative level and value of specific learning experiences and learning outcomes. In order to achieve transparency of qualifications, the outcomes of VET training need to be trusted, which is achieved through quality assurance within the assessment process (Cedefop 2009). Blömeke (Chap. 29) in this volume elaborates comprehensively on the various challenges to ensuring the quality of assessment in VET. These are naturally embedded within the multidimensional nature of education. In order to address them, the author proposes various approaches to competence testing and explains how they, when combined, ensure a high validity and reliability. However, Blömeke cautions that while conclusions from this research can be drawn towards group behaviour and results, at the individual level, competences can have very different characteristics.

Investing more in education might not necessarily lead to better outcomes in terms of educational achievements. Therefore, further investments in education need to be based on evidence that provides a rational for these decisions. In order to understand better if various forms of education lead to similar outcomes, these need to be measurable and ensure a high quality. Measuring the outcomes of vocational education therefore should not solely be based on achieving quantitative targets as indicators for effectiveness and efficiency of educational provision. Quality assessment needs to be based on multiple sources of evidence. Van der Vleuten, Sluijsmans and Joosten-Ten Brinke (Chap. 28) in this volume explain how portfolios provide evidence. It is secured through the provision of artefacts, recorded activities and other assessment documentation. Peer assessment can further ensure the validity of an assessment.

Policy makers across Europe increasingly pay attention to quality management within educational provision. For example, in many member states, accreditation of educational institutions is used as one among other governance tools to ensure the quality of training institutions and training programmes. Accreditation systems are

already in place in the Czech Republic, Greece, Italy, Luxembourg, Portugal, Romania, Scotland, Slovenia and Finland. In others, such as Cyprus, Estonia and Malta, an accreditation system is under construction (Cedefop 2011a).

Outcome orientation has often been driven by the development of national qualification frameworks and credit transfer arrangements, with the European qualifications framework (EQF) being a key driver in most countries. Cedefop closely monitors the introduction and further development of European instruments (EQF, ECVET), publishes programme reports and organises events for information exchange between member states.

Another driver for policy development towards outcome-based education has been the recognition or validation of non-formal and informal learning (such as Bulgaria, the Czech Republic, Denmark, Estonia, Finland, France, Hungary, Iceland, Malta, Norway, Portugal and the UK (Cedefop 2012). Especially in countries where many adults do not complete post-secondary or tertiary education but acquire extensive work experience, standardised procedures for the validation of knowledge and skills are particularly important (e.g. in Spain and Portugal). Other countries have already established practices in place, e.g. Bilan de Competence in France.

Common principles have been formulated at the EU level for quality assurance in higher education and VET in the context of the European qualifications framework according to Annex III of the EQF recommendation (European Parliament and Council of the European Union 2008 in Cedefop 2009). These include:

- Quality assurance should be an integral part of the internal management of education and training institutions.
- Quality assurance should include regular evaluation of institutions, their programmes or their quality assurance systems by external monitoring bodies or agencies.
- External monitoring bodies or agencies carrying out quality assurance should be subjected to regular review.
- Quality assurance should include context, input, process and output dimensions, while giving emphasis to outputs and learning outcomes.
- Quality assurance systems should include the following elements:
  - Clear and measurable objectives and standards
  - Guidelines for implementation, including stakeholder involvement
  - Appropriate resources
  - Consistent evaluation methods, associating self-assessment and external review
  - Feedback mechanisms and procedures for improvement
  - Widely accessible evaluation results
- Quality assurance initiatives at the international, national and regional level should be coordinated in order to ensure overview, coherence, synergy and system-wide analysis.

- Quality assurance should be a cooperative process across education and training levels and systems, involving all relevant stakeholders, within member states and across the community.
- Quality assurance orientations at the community level may provide reference points for evaluations and peer learning.

These guidelines provide an orientation for the implementation of policies at the national level. Many European countries have already developed approaches for quality management (QM) to meet specific national policy objectives. The term 'quality management' refers to a set of systems and frameworks which are in place within a VET organisation to manage the quality of outcomes and processes (Eurostat 2014). Quality management comprises all activities of management that determine quality policy, objectives and responsibilities and implement them by means of a quality plan, quality control and quality assurance within a quality system (ISO 1994 in Cedefop 2011b). Taking a systematic approach to quality assurance in respect to the content of programmes, curricula, assessment and validation of learning outcomes within competence-based education requires the following steps: planning, implementation, evaluation, reporting and quality improvement. Countries are at very different development stages, which is also a result of different VET traditions and existing skills formation systems. As a result the implications of these policies are debated at the country level within Europe, while at the same time, some of the European tools are already guiding reformation processes in VET outside of Europe.

More information on approaches to quality assurance can be found in the chapter by Blömeke (Chap. 29) in this volume.

## 30.2 Curriculum Design and Learning Outcomes

Based on the raising interest in competence-based education and outcome-based curricula, it is essential for this book chapter to clarify the main concepts here. Sometimes the terms 'learning outcome' and 'competence' are used interchangeably. Learning outcomes are validated by their relationship with competencies, which relates to practices in the workplace (or society) and to wider social and personal practices. Learning outcomes, nevertheless, do not directly refer to practices in the real world. They are instead validated by their connection to competencies, and they are given value (in the labour market). All outcome-oriented curriculum approaches establish a systematic way of identifying competencies and translating them into learning outcomes, but the language chosen for this translation varies across European countries (Cedefop 2012).

One way of ensuring similar quality standards in VET programmes across Europe is to focus on outcome-oriented curricula that incorporate key competencies and general knowledge and are used across a country within a particular occupational training. In this way equality within educational provision could be assured.

The policy of focusing on outcome-oriented curricula is linked 'to raising the status of initial vocational education and training (IVET) so that it is regarded as a positive choice rather than what people do if they fail to secure a place on a general/academic programme leading to university' (Cedefop 2012). Learning outcomes can have a social and political purpose through ensuring transparency within a VET system and in respect to qualifications. By introducing quality standards to the assessment of outcomes, a new approach to accountability is introduced as well.

Learning outcomes are a distinctive way of outlining what learners should gain from their learning programmes. This:

1. Implies a particular focus on what skills, knowledge and attributes a learner should acquire
2. Implies, at the very least, a rebalancing of emphasis from inputs to outputs in VET and, at the very most, the complete omission of normative descriptions of inputs
3. Makes a claim to validity, for example, that a set of learning outcomes are warranted because they correspond to a set of workplace performances or competencies (Cedefop 2012)

Research on the form and function of outcome-oriented curricula in general is growing, but to a smaller extent within the field of VET. A big debate within the research community circled around the meaning of competence and outcomes in education. Within Germany the concept of competence with its unique emphasis on occupational identity (Beruf) is well established, but it has had little influence outside the German-speaking nations (Brockmann and Winch 2011; Fischer 2013; Gehmlich 2009). A bit more influential has been the explicitly outcome-oriented system of initial vocational qualifications (NVQ) in the UK. It provided a model for other countries, both in Europe and beyond, albeit not always with great success (Allais 2012). Conceptual work has also been done in France during the 1990s which leads to reforms in education and training and eventually to a combination of the concepts of competence and learning outcomes (Cedefop 2012; Le Deist 2009).

The shift from a rather input orientation in curriculum design requires a number of changes at schools. Input orientation implies a strong emphasis on teachers' qualification and their ability to interpret the framework curricula according to individual, school, regional or societal needs. In the outcome orientation approach, the emphasis lies on common measurable competence acquisition. While traditionally curriculum design as much as school organisation focused on objectives, contents, disciplines, durations and activities (input), administrators, teachers and instructors would now be more concerned with measurable skills, knowledge and competencies. This ideological shift 'implies that outputs must be determined first; subsequently, the inputs may be selected which will serve to achieve those outcomes in the most efficient and equitable manner' (Cedefop 2012, 33–34).

The approach is not new to all European countries. Spain, for example, had competence-based approaches in place within adult and continuing training, but these were not explicitly introduced into initial vocational education and training (IVET). In other countries, such as Germany or France, competence-based IVET

curricula have been a reality for years now and are subject to innovation programmes and continue to be improved (Cedefop 2012). In the UK a skill-based model towards learning outcomes has been established which is strictly focusing on the fulfilment of very specific narrowly defined tasks, while in France it is a knowledge-based model based on the integration of theoretical and practical knowledge and incorporating aspects of personality development (Brockmann et al. 2008).

Until now, very few studies are available that indicate to what extent learning outcomes have been introduced into curricula in a meaningful way. The governance of IVET differs enormously across Europe and so does the responsibility for the design and renewal of curricula. Scepticism and a lack of knowledge about the implementation of the concept often prevent further efforts.

The assessment of learning outcomes (Cedefop 2009) can be pursued in various ways. First, they are used to:

1. Characterise (at the systemic level) overall aims for education and training.
2. Express the requirements or standards set by qualifications.
3. Clarify the intentions of curricula and learning programmes.

Furthermore, learning outcomes serve a variety of purposes:

1. To recognise prior learning
2. To award credit
3. To ensure quality
4. To improve credibility
5. To increase transparency (Cedefop 2009, 10)

More information on assessment of learning as well as assessment for learning can be found in the chapter by Van der Vleuten, Sluijsmans and Joosten-Ten Brinke in this volume.

Not only curricular design is essential when implementing a learning outcome approach. The quality of education also needs to be assured within the learning environment, which ideally supports learner-centred pedagogies. Learner-centred refers to a shift from transmissive instruction where information is transmitted by the teacher to learning as a process constructed by the student (Jonassen and Land 2012). The learning venues range from work-based learning, e.g. within an apprenticeship and alternation, to full-time vocational schools. The right balance between practical versus more theoretical instruction is another essential component, completed with the use of appropriate teaching materials (Cedefop 2012). When taking all these aspects together, it becomes clear that the shift towards outcome-oriented curricula and education means that the input orientation remains to be an essential part of it. On the base of these considerations, the challenge that teachers and schools are facing now is to find appropriate ways for the integration of the two approaches.

One way of delivering competence education can be in the form of modularisation of IVET programmes. The approach is discussed in a range of countries, e.g. Austria, Germany, Hungary, Latvia, Luxembourg, Portugal, Slovenia, Spain, Sweden and Turkey. According to Pilz (2009), different modular systems provide

students with varying degrees of freedom in their choice of modules. The approach centres at individuals' needs and preferences and is practised in Sweden, for example. The system enables students to gain credit for modules and transfer them between vocational and general education. In contrast, in highly structured education and training systems, such as those in Austria and Germany, modules are available only at certain stages of programmes and within certain tracks. Modularisation is up to now questioned as an approach that potentially undermines the occupational character of IVET (Cedefop 2012). The unitisation and credit accumulation might compartmentalise IVET; the occurring flexibilisation might be preferred by students who gain recognition for their achievements within a module. At the same time, the recognition of these modules at the labour market is not ensured. Employers might also tend to specialise units according to their needs and in this way compromise the overall transferability of an IVET certificate (Cedefop 2011a, b). In order to develop outcome-based curricula that are widely recognised among employers, it is essential to involve a greater number of diverse stakeholders and ensure that the curricula to be developed are not only addressing occupation-specific competencies but also learning outcomes associated with curriculum subjects, generic skills and other educational objectives (Cedefop 2012).

Overall, the approach to learning outcomes is still relatively new and highly debated. Many countries are currently transitioning towards outcome-based approaches, but little experience has been acquired yet. Also, where principles for training regulations are defined and instruments for learning standards are given, the description of learning outcomes in a way that standards for the competence acquisition can be derived is not developed accordingly. In Austria, for example, the apprenticeship training is based on a competence profile (specified in the training regulation) and based on learning outcomes. However, the competencies described are not translated into assessment standards. Austria and Germany also use a two-phase assessment within their apprenticeship programmes so that competencies are evaluated twice. Denmark has a competence-based approach within its VET system characterised by 'know, can and master' with an outcome orientation, but more is still in the development stage. A country in which learning outcome approaches have been implemented is Finland, where since the 1990s all qualifications are based on learning outcomes. They also form the basis of the certification process (Cedefop 2015).

## 30.3 Practices of Assessment in Competence-based Education

The award of qualifications in competence-based assessments requires comprehensive tasks that lead to skills demonstrations. Their approved completion serves as a criterion for the quality of a person's competence. Certifying competencies includes the processes of assessing, validating and recognising learning outcomes, which lead to a qualification and occupational titles. Occasionally the terms certification

and qualification are used interchangeably. The following definitions of assessment, validation and recognition of learning outcomes are used by the OECD (2005):

- Assessment: methods and processes used to establish the extent to which a learner has attained particular knowledge, skills and competence.
- Validation: the process of confirming that certain assessed learning outcomes achieved by a learner correspond to specific outcomes which may be required for a unit or a qualification.
- Recognition: for purposes of this study, the term recognition is understood in a narrow meaning as the process of attesting officially achieved learning outcomes through the awarding of units or qualifications. This term refers to formal recognition by the education and training system which results in the award of a qualification (through issue of a certificate or grade). In this study the term does not include recognition by the labour market or wider social recognition.

The introduction of national qualification frameworks in many countries is currently leading to the reform of various VET programmes which in the future have to be based on common qualification standards. Curricula and assessment standards will be designed accordingly.

Assessment can be distinguished according to (Cedefop 2009):

- Formative assessment: typically continuing assessment which aims at providing feedback and further informing the learning processes. Formative assessment may be used to enable learners to pass from one training phase to another (first year to second year), but does not result in certification.
- Summative assessment: this aims at formally determining that the required learning outcomes have been achieved and (when this is the case) result in certification.

More information on these two approaches towards assessment can be found in the chapter by Van der Vleuten, Sluijsmans and Joosten-Ten Brinke (Chap. 28) in this volume and Black (2000).

When it comes to assessing learning outcomes, overarching quality criteria apply, which are listed in Table 30.1.

Objectivity is one of the most common quality criteria, although operationalised in different ways. In Austria, for example, a trainer cannot be the examiner. In Spain this can be combined in one person, but an exchange between various examiners could increase objectivity. Hungary applies a praxis in which at least two examiners are always present, one representing the examination committee and one is an expert within the professional field. Validity is improved in many countries through an examination board that jointly develops the questions and tasks. Sometimes additional professional experts are included. Reliability mainly refers to keeping the assessment situation constant across populations of students. Other quality criteria include transparency and practicability. Transparency refers to documentation of assessment procedures and practicability to technicalities of the assessment which need to be in place across various institutions. The exact combination of means to achieve objectivity, reliability and validity varies, but always relies on two dimen-

**Table 30.1** Quality criteria within assessments

| Quality criteria | Application |
|---|---|
| Objectivity | Assessment/examination boards, certification committee (assessment is carried out or at least verified by more than one person) |
| | Students' own teachers or trainers are not assessors |
| | Students own teachers/trainers assess, but are not part of the decision-making examination committee |
| Validity | Exam questions developed by a pool of experts |
| | Assessment is monitored by inspectors |
| | Assessment is monitored by quality monitors |
| Reliability | Authentic context for assessment |
| | Assessment tasks developed together with representatives from the world of work |
| | Assessment aligned to performance criteria set in training standards |
| | Assessment tasks have to comply with the assessment scheme set by the awarding body that designs the qualification. An assessment task is checked through an internal process at VET provider level to ensure that it is compliant |
| | Assessment decisions are checked through an internal and external verification process |
| | Standards on who and how a certificate can be issued |

Modified based on Cedefop (2015)

sions. There need to be binding guidelines in place with regard to assessment processes (e.g. who participates in an assessment, kind of assessment methods, assessment criteria), and assessment relies on trust and autonomy with regard to the competence and the experience of assessors (Cedefop 2009). The next chapter of Blömeke elaborates and discusses the criteria mentioned above in psychometric terms.

The European context shows that processes of assessing competencies vary widely and pose a number of challenges. Among them is the variety of governing institutions in VET (ministries, examination boards, VET providers, social partner, sectoral organisations, chambers, etc.) as well as the variety of actors and their role as awarding bodies (schools or employers). In addition the practical learning and the acquisition of practical competencies directly related to a real workplace, context and assessment can only capture part of these competencies, if it is at all aligned to real workplace situations. It is additionally complicated by the relativity in the assessment of performance.

In the German context the concept of 'Handlungskompetenz' is particularly relevant in the design of assessments. Assessments are defined on the basis of tripartite involvement and consensus reached between employers, trade unions and the state about occupational training standards. The German system does not conceptualise the occupational standard as being owned by employers and forming the foundation upon which the curriculum is built. Instead, the task of defining vocational education (Berufsausbildung) is shared between employers, unions, teachers and craft associations, and the 'Berufsbild' is produced as part of the collective process of

defining a qualification (Cedefop 2009). However, occupational standards have been introduced in countries that appear to share the 'Handlungskompetenz' concept (Austria and Luxembourg), which implies that cultures can change (Cedefop 2012).

There seem to exist about three broad models of quality assurance based on the continuum of divisions of responsibilities (Cedefop 2009):

- Prescriptive model: design of assessment criteria to specification of the exact methodology and content of the assessments is realised by one awarding authority.
- Cooperative model: decisions on the form and content of the assessments are left to individual providers.
- Self-regulated model: VET provider is also the awarder of the qualification certificates.

Usually it is not possible that only one model fits in one country because there is also variation within its borders. Therefore, the use of this categorisation is limited but provides an idea about the approaches.

Common principles concerning important elements of quality assurance (QA) systems (Cedefop 2009, 43) include:

- Clear and measurable objectives and standards
- Guidelines for implementation, including stakeholder involvement
- Appropriate resources
- Consistent evaluation methods, associating self-assessment and external review
- Feedback mechanisms and procedures for improvement
- Widely accessible evaluation results

The quality of assessments can generally be ensured through the provision of assessment standards and guidelines as well as monitoring systems at the macro level, the provision of a suitable infrastructure at the meso level, as well as training of assessors at the micro level. Learning outcomes represent a combination of theoretical and practical elements as well as a mixture between trade-/specialisation-/profession-related learning outcomes and more transversal learning outcomes (key competencies) which need to be assessed by a variety of methods. Among them are written exams, oral exams, practical examinations, on-the-job assessment or a combination of them.

Assessment methodologies vary across countries. Practical exams are widespread. While some countries (e.g. Germany) highly regulate the application of certain assessment methods, others provide a framework with general guiding principles. In the latter case, VET providers decide which methods shall be applied (e.g. the Netherlands). The possibilities for VET assessment are manifold and include skills demonstrations, simulations, portfolio, project presentations, fabrication of work pieces, role plays, theoretical and practical tests and standardised written tests (Cedefop 2009; Cedefop 2015).

The following list provides an overview of assessment practices in the countries (Cedefop 2015):

- Denmark: electronic tests with random test questions.
- Germany: chambers of industry and commerce develop exams, which often are applied across the country or broader regions.
- Austria: 'LAP-Clearingstelle' develops standardised assessments that are used across the country.
- Hungary: centrally organised written tests.

Several countries have developed quality indicators for VET providers which include quality assurance indicators for assessments. Estonia, for example, has implemented internal and external evaluation processes to assure quality. In Austria, the quality framework for VET quality initiative (QIBB) contains a field within the quality matrix, called 'Securing the quality and transparency of exams'. Several indicators for this quality field are provided and schools are expected to implement processes to meet the formulated requirements. In Romania, the National Quality Assurance Framework for IVET includes descriptors for assessment and certification. Hungary uses self-assessments conducted by students.

However, converting a learner's performance on an assessment to a clear indication of attainment (such as a grade or pass/fail) is not as simple as might be thought, as it may entail various other activities (Cedefop 2009, 16):

(a) QA of assessment: practices to ensure that the assessment is accurately and consistently applied across the range of awarding bodies delivering a qualification. Examples include centrally set assessments, standardisation meetings, assessment by multiple examiners/juries and internal and external moderation/verification.
(b) QA of validation: practices designed to ensure that the evidence from the assessment is accurately and consistently judged against a predefined standard. Examples include boundary setting, benchmarking, direct grading by individuals or juries and the use of grading descriptors and grading grids.
(c) QA of recognition: practices to ensure that those responsible for recognising qualifications on the basis of assessment and validation are competent to do so.

This section provided a comprehensive overview about quality assurance in VET assessments. There are different terms used for assessments, sometimes interchangeably, but in order to determine what kind of quality assurance should be approached, their clarification matters. There exist a variety of forms of assessment and approaches to assessment. Their application varies between VET programmes and countries.

## 30.4 European Quality Assurance in Vocational Education and Training

Implementing the learning outcome approach involves significant changes in the design of curricula because learning outcomes are validated by their relationship with competencies. This means it needs to be tested to what extent the student masters practices in the workplace. The relationship between learning outcomes and competencies is a critical one. To what extent this relationship has been achieved in institutional arrangements and procedures will be described at the example of various countries in this section (Cedefop 2012).

The approach towards competence-based education based on a common outcome orientation varies widely across the EU. In some countries learning outcomes are relatively holistic and embedded in framework curricula. The expectation towards teaching and assessment is provided through the specification of knowledge outcomes, e.g. in France, or the specification of key competencies, e.g. in the Netherlands. In Iceland and Ireland, there is an explicit intention to restrict the degree of prescription at the level of the national standard to leave room for specification at the local level. Similar developments are observed in the UK. A highly regulative outcome-oriented curriculum is sometimes associated with a relatively unregulated competitive VET market. Instead of heavily regulating the quality of providers, the state ensures the quality of VET by specifying in the curriculum which learning outcomes will be assessed (Cedefop 2012).

When an outcome-oriented curriculum is highly regulated, it responds to a relative unregulated and diverse market of VET provision. In this case less emphasis is put on quality assurance at the input level, but by specifying which learning outcomes will be assessed. Praxis across Europe varies. In France, for example, a relatively prescriptive curriculum combines holistic vocational outcomes with demanding knowledge requirements. In the case of the UK, learning outcomes are relatively granular, while the Netherlands have a complex set of requirements regarding key competencies (Cedefop 2012).

The credibility of qualifications is not only achieved through an emphasis on input or output. Building a reputation within VET providers, e.g. through a high transition rate into the labour market or the recognition of skill levels achieved within institutions by employers, is a quality measure in itself, e.g. in Hungary and Norway (Cedefop 2012). Other countries do not have national measures for quality assurance at the enterprise level in place, e.g. Slovenia (Cedefop 2012).

Overall it can be concluded that a cooperation of various stakeholders, including employer and employee representation, in working groups on curriculum design or in the form of consultation ensures the acceptance of learning outcomes at the employers' level. In the case studies, examples of strong representation were found, for instance, in Austria, France, Germany and Spain. Experts play a crucial role in informing the development of written outcome-oriented curricula and qualifications, in operating the complex procedures and in working with stakeholders to reconcile differences and solve problems. Quality assurance does not need to be in

the authority of the state. Other bodies, such as chambers of industry and commerce, can also play the leading role in this respect (Cedefop 2012).

In terms of the accreditation of VET providers, the main function of the accreditation systems is to assure that minimum standards in delivery of VET are respected. They rarely push forward dynamics towards continuous improvement of training quality in VET provider organisations. It is difficult to combine these two functions: respect of minimum standards and continuous improvement of training quality. Most accreditation systems focus on certifying what is in place and pay little attention to improvement. Therefore there is room for enlarging their scope to include an improvement function (Cedefop 2011a). Overall, national responses to quality assurance of certification are diverse and reflect different traditions and philosophies of coordination and governance of education and training systems.

## 30.5 Conclusions

This chapter proposes that more attention has to be paid to quality assurance in competence-based education with a particular emphasis on certification processes. The shift towards outcome-based approaches in education is still relatively new, considering that it has not been fully implemented in most European countries. Most of the research done in the past focused on quality assurance at the input side, such as the content and delivery of teaching, teacher and trainer qualification, governance and administrative arrangements as well as internal/external communication. While this focus is still highly relevant, the continuing political shift towards learning outcomes at the national and European level requires a stronger focus on assessment and certification. In this light research on different forms of VET assessments (Rauner and Haasler 2009; Rauner and Heinemann 2009; 2011; Winther 2010) provides approaches towards quality assurance. New arising questions in this respect are if computer-based standardised approaches of assessment (see the chapter of Blömeke (Chap. 29) in this volume) based on practice-based units are sufficiently signalling the acquisition of VET competencies or if new approaches towards the training and certification of assessors need to be taken in order to ensure that they are judging performance in practical exams according to common standards. The arising debate on learning outcomes and quality has certainly provided VET researchers with a new push towards empirical research and evidence building.

The learning outcome approach implies that there is no single route to a qualification; learning may take place in different ways, in formal and non-formal and informal settings. This requires high-quality assessment, validation and recognition approaches able to guarantee that individuals meet the expectations set by the standards in question. Quality assurance must, therefore, address both the input and the outcome side, teaching and training and assessment, validation and recognition. Based on the large discrepancy in approaches employed by European countries, it

seems too early to arrive at common assessment practices. The biannual world skills competition (see the chapter of Nokelainen et al. (Chap. 36) in this volume) is certainly a playful way to compare outcomes of VET education with the addition of a peaceful competition between teams from around the world.

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