Chapter 23
Competence and TVET Innovation in Sub-Saharan Africa: The Case of Rwanda

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23.1 Introduction

It is expected that by 2050, sub-Saharan Africa will have a larger and younger workforce than China or India (ACET 2014). This workforce, in combination with comparative economic advantages such as the abundance of natural resources on the continent, signifies a development opportunity for sub-Saharan Africa to grow in importance on a global scale. It is believed that through stimulation of industrialisation and the development of a service-oriented economy, many new jobs can be created outside the primary sector. Obviously, job creation serves not only economic purposes but also social purposes. For many countries in sub-Saharan Africa, a scenario whereby a large proportion of the youth would remain unemployed would be a dark one. Education and skills development are considered crucial elements for economic development *and* for social stability in the near future.

Rwanda, in terms of its enrolment performance towards the education-for-all millennium goal, is representative for sub-Saharan Africa (Filmer et al. 2014): more than 70 % primary school completion rates coming from less than 50 % 20 years ago. Unfortunately, the generally poor quality of this education makes that up to now, schooling has relatively small effects on productivity and poverty reduction (op cit. p. 67). Technical and vocational education and training (TVET) is at the centre of socio-economic development strategies of many African governments as a more focused approach to building worthy human capital amongst youth. In Rwanda, the government has introduced some important changes that attempt to transform the relationship of educational credentials to employment. The creation of the Workforce Development Authority (WDA) in 2008 embodies the restructuring

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of the TVET system towards more modular and practical, labour market-responsive courses (Paxton 2012). Central to this approach is the notion of *competence*.

The concept of competence has been 'imported' from the West with its well-developed, highly diversified job markets. Competence is then seen as a 'unit' or endowment of human capital in demand by the labour market for specific jobs, which is transferable via TVET. For curriculum developers, it holds a promise of structuring educational programmes in such a way, that this competence is reproducible and can be generalised. For governments it suggests the possibility to centrally plan for it via manpower planning and requirement forecasting, rate-of-return analysis or labour market information studies (LMIS). It also suggests the possibility to measure its effectiveness via tracer studies and return-on-investment studies. CBE can ultimately be considered as an approach or educational philosophy that is intended to result in competent graduates. The concept of 'competence' refers in generic sense to the 'quality or state of being competent' (Kouwenhoven 2003, p. 43), but is often related to a specific domain (context specific). Mulder (2014) refers to *professional competence* in a behavioural manner and defines a person as being *competent* when he or she acts responsibly and effectively according to given standards of performance. It is seen as a generic, integrated and internalised capacity of a worker or learner to deliver worthy or value-adding performance in a given professional domain. People can be competent in different domains, hence the possibility to use the plural: *competencies*. Mulder (2007), based on a thorough study of over 40 definitions of the concept of competence, distinguishes between *competence* and *competency*. The former is then seen as the generic capability of persons or organisations to perform, a capability that is developing as a result of integrative learning, whereas the term 'competency' is considered a more specific, task-related capability within the general competence for a job with a coherent set of tasks.

The Central African republic of Rwanda applies its specific notion of competence more in a behaviouristic way and more as an engineering element in a TVET-system reform. The government wants to achieve the status of middle-income country by 2020 and intends to strongly develop its formal economy and job market. The country is successful in implementing regulations and tax-collection practices and performs well on several economic and accountability indicators. This ambitious development agenda includes, however, the discouragement of manifestations of the informal economy. Rwanda has a distinct profile compared to neighbouring states, and has a strongly government-directed and control-oriented culture of central planning and obedience. McKay (2005) refers to this characteristic as an important element of the *developmental state* that partly explains the initial success of the South Korean economy and their TVET model. In the developmental state, education is often considered important for creating national identity and pride, enhancing a general determination to succeed and stabilise the regime through a targeted process of strong economic growth driven by job creation and job-oriented TVET. Given the recent Rwandan history of genocide and civil war and the ongoing security menaces in the great lakes region, these elements are valid for Rwanda too. Making comparison between the two countries (South Korea then and Rwanda now), the following similarities effervesce: a strong human capital approach to TVET,

stressing the centrality of education and skills in all aspects of development; a close relationship between planning targets of education with those of job creation; the recognition of education, including TVET, as the key mechanism for the social and economic mobility of individuals, and an export-oriented urge for permanent restructuring and adaptation. When McKay (2005) tries to identify key success factors and lessons from the South Korean experience for Africa, he wisely states that it is not advisable to take any successful feature from any other region and bolt it to the existing systems of an African country. Without thorough analysis of the context and consequent adaptation of the features to be imported, this is doomed to fail. For sub-Saharan Africa, despite ambitious planning and a growing mass of support in terms of financial and human resources made available, the expansion of TVET rarely follows the set targets. ACET (2014) states that apart for Mauritius, TVET enrolment numbers generally do not match the rising aspirations of industrialisation.

In the next section, it is argued that only by targeting various levels of intervention that are interlinked and conditional for competence-based learning to take place, durable change could be expected. In an attempt to facilitate the TVET reform in Rwanda, the Belgian Technical Cooperation (BTC) implemented a comprehensive development programme (2010–2015). The implementation of this programme is used as a case study to evaluate the use of 'competence' as leading principle in TVET reform in sub-Saharan Africa, and specifically in Rwanda.

23.2   Developing *Competence* in Rwanda: A Systems Approach

For TVET to be labour market relevant, it must be of a certain quality. This quality of TVET has an unequivocal linkage to the quality of prior education. Zambia, as an example, has an impressive primary school completion rate of 100 % in 2011. However, when the basic competencies *math* and *reading* of school leavers are tested independently, Zambia scores lowest in basic numeracy, very low in beginning numeracy and extremely low in competent and above levels. The same goes for reading, where Zambia comes second to Malawi in basic reading levels, with extreme low capabilities for reading for meaning and even worse for interpretive and above levels (Filmer et al. 2014, pp. 68–77). Statistics are not necessarily the best indicator for the quality of TVET being implemented. An enrolment rate of 100 % is encouraging but nevertheless insignificant if no relevant learning takes place. Having curricula in TVET that are 100 % competence based is a good start, but if the capacity to understand and deliver these curricula is not present at schools, they remain impracticable documents. If the targeted 25 % of the TVET teachers receive training in competence-based pedagogy but are not facilitated by their school managers nor allowed to apply different forms of assessment, the training probably has little impact. The aforementioned numbers are real targets for the

Rwandan TVET sector to be reached by 2018 (RoR 2013). It is argued that when aiming for TVET reform, it is essential to address issues at different interrelated institutional levels simultaneously or, in other words, pursue a systems approach to TVET reform and aim for durable quality improvement.

The Belgian TVET Support Programme in Rwanda (PAFP) ran with a budget of 11 million euro and about 30 staff. About half of these staff were technical experts in various TVET areas such as school management, competence-based pedagogies, teacher training (ToT), business development and information systems for sector-monitoring or tracing graduates. At the core of the TVET-system reform are the vocational training centres (VTCs) where TVET actually takes place and where quality improvement is expected to have a direct bearing on the employability of graduates. PAFP worked with 24 pilot schools in the Southern Province, covering ten districts. Other intervention levels concerned higher institutional levels on which the schools depend, also called *the upstream*; the relationships with employers and businesses could be marked as *the downstream*. In the upstream, PAFP intervened at the provincial level (Integrated Polytechnic Regional Centre: IPRC) and national level (Workforce Development Authority: WDA) with institutional support aimed at introducing and improving competence-based TVET in the schools. The IPRCs represent larger regional polytechnics offering courses up to the diploma level; this should promote horizontal and vertical mobility of learners. According to their second mandate, IPRC assures the coordination and support of TVET in their province. The WDA is in charge of developing curricula, standards of assessment and accreditation, quality assurance and partnership with private sector and supporting organisations. They have been supported by PAFP in developing competence-based curricula in priority trades such as agriculture and veterinary science, food processing, tourism and hospitality and civil engineering. In addition, accreditation standards have been developed, and a qualification framework adjusted to those of neighbouring countries has been formulated and validated.

Since PAFP was not the only external support partner to the Rwandan TVET institutions, the authorities have created consultation platforms in which Development Partners and their Rwandan counterpart discuss strategies and operations and in which alignment and harmonisation in line with the Paris Declaration can take place. Each development sector, such as *Education*, has formed a cluster working group, with several sub-cluster working groups, such as the one for TVET. The latter is subdivided into three technical working groups, focusing on TVET delivery systems, on skills development and on TVET standards. PAFP was co-chairing the TVET standards working group and participated as member in the other two.

In this multi-level and multi-institutional systems approach, *competence* is at the core of quality TVET. In the first place, it comes back in curriculum development, whereby competence was defined as a combination of knowledge, skills and attitudes (see also: Le Deist and Winterton 2005) related to specific job characteristics that are demonstrated in professional performance. Competence-based TVET is understood as a structured approach to training and assessment that is directed towards achieving specific learning outcomes. In competence-based TVET, the

outcomes to be achieved are clearly stated in advance so that learners know exactly what they have to be able to do, trainers know what training or learning is to be provided and industries know the skill levels offered by qualified job applicants. The emphasis in CBE is on 'performing' rather than just 'knowing'. In the case of WDA, each job type is divided into overall responsibilities or duties, each of which is subsequently divided into tasks through a process of occupational analysis based on the DACUM method. This method to job/occupational analysis is widely used in North America (Norton 1997) and also applied in Rwanda. This analysis is usually done in meetings representing employers, educators and curriculum specialists. The context of job execution is also made explicit, such as types of enterprise; area of intervention; place of practice; positioning within a company; the type of equipment and materials used and working conditions. This then results in related competency statements that cover a task-related performance, such as 'Maintain health and safety and sustain a good environment in the workplace'. These statements are operationalised into 'indicators' such as 'Storage techniques for perishable goods, such as "first in, first out", are respected'. In the course structure, each competency is translated into a learning unit or module that indicates performance and result criteria, such as 'Food is not contaminated with any body fluids or tobacco product from sneezing, coughing, blowing nose, spitting or smoking'. The learning unit is then described in terms of the learning outcome, the content in terms of knowledge or skills to acquire, the proposed learning activities and the needed resources. Various forms of assessment are proposed.

In order to prepare the schools for delivering competence-based TVET, a provincial structure of in-service master trainers consisting of pedagogical representatives of each pilot school and some representatives of the regional training authorities has been established. These master trainers have been trained during a period of 2 years in fourteen modules developed by PAFP. The master trainers on their turn deliver similar training and accompany colleagues in their respective schools. The fourteen modules cover standards for delivering competence-based training in TVET, addressing four main aspects of competence-based teaching skills:

– Task skills: Instructing and assessing learners so that they are able to perform individual tasks
– Task management skills: Instructing and assessing learners to be able to manage a number of different tasks within the job as to demonstrate a consistent occupational performance
– Contingency management skills: Instructing learners to be able to respond to sudden changes in routine
– Work readiness skills: Instructing and assessing learners to be able to deal with the responsibilities and expectations of the work environment

In addition to competence-based curriculum development and the installation of a competence-oriented teacher training system, pilot schools were intensively coached on implementing the new curricula and stimulated to reflect on their possible improvement. A culture of *action learning* in the class room was enhanced: an adult-learning cycle for teachers identifying curriculum-implementation problems;

trying out improvements within the scope of their abilities and resources available; sharing the results with colleagues and members of a more extensive learning network and documenting knowledge for further dissemination towards 'the upstream'.

Since management of schools is considered a crucial element for the success of TVET reform, an extensive school management and leadership learning programme was implemented. School leaders and their deputies were trained in and coached on matters such as strategic and operational planning; finance and administration; ICT; English language as medium of instruction; designing and maintaining computer-based management information systems; implementing an internship programme for students based on logbooks and industry-based assignments; introducing and managing production units for additional income generation and practice-based learning and the establishment and running of business incubation centres (BIC) to create an experimental environment where demand from clients for products or services are met by graduates, accompanied by tutors from the TVET centre, in a business type of centre. As such, practical entrepreneurship is trained, leading to possible self-employment.

A specific concern was the risk of dispersed activities due to the quantity of subjects and the geographical spread of interventions and the consequent risk for lack of consistency and sustainability. As an exit strategy, PAFP in 2014 started actively supporting a process of accreditation-focused quality improvements of the 24 pilot schools. After further capacitating the relevant departments within WDA and IPRC, schools were jointly visited and audited on the basis of pre-established standards for accreditation of schools, programmes and teachers. The visitations resulted in pre-accreditation plans for capacity building and material investment per school. The plans for acquisition, installation and maintenance of training equipment was based on national Standard TVET Equipment Lists (STEL) for the specific trades and were purchased by PAFP though public tenders. Established capacity gaps were subject to specific training and coaching in the pilot schools via the IPRC structures. As such, the pilot schools were prepared for final accreditation, IPRC was aided in their coordination and capacity building mandate and WDA was supported in its standardising and inspection role. The programme outcome also obtained a very clear and measurable indicator for success: the number of accredited schools. By capacitating the institutions involved in this process, an autonomous process of quality definition, measurement and improvement was enhanced. The underlying assumption is that accredited schools produce more competent and employable graduates, which is verifiable through subsequent tracer studies.

Monitoring and evaluation (M&E) was an important instrument of organisational learning for PAFP. On a weekly basis, the technical staff of PAFP reported on their activities to the M&E officer according to an efficient and result-oriented format. The M&E officer also visited operations in the field in order to test result hypothesis, i.e. the presumed effects of programme activities on aspired results (BMZ 2012, p. 8). Every quarter, a synthesis of these inputs was drafted and discussed in a plenary meeting with technical staff and the partners. As such, the programme-organisation identified obstacles and opportunities that could be addressed by adapting the programme-operations and approaches. This flexibility or

exploratory nature was an important feature of the programme, which in a way turned the programme into a form of action research. The main inquiry for that action research concerned the impact of activities and approaches in the ability of TVET organisation to deliver labour market-responsive, competent alumni. More specifically, this also allowed evaluating the scope of the use of *competence* as an aspired bridge between TVET and the needs of the world of work.

23.3 Noises in the Competence-Development Chain in Rwanda: An Analysis

It is too early to measure in a quantitative manner the presumed impact of increased labour market-relevance due to the introduction of competence-based TVET via the PAFP programme. For this, tracer studies and employer satisfaction surveys over a series of years after graduation from schools that went successfully through the TVET reform would probably be the most appropriate instrument. However, it is possible to make a number of qualitative observations resulting from the innovations introduced in the 24 pilot schools of PAFP over the four project years. Further study of ground literature helps in putting these observations in a theoretical context that permits drawing some conclusions.

The 'competence-development chain' starts with involving the industry in the formulation of competence profiles of the workers they expect to engage or need in the near future. The competence profile consists of a number of competency statements that are the backbone of curriculum documents developed by educational specialists. The curriculum is used by a TVET centre in shaping their education in such a way that the competencies are personalised and reproduced by their learners. These graduates, the laureates, become part of a competent workforce and either find a job or create a business in the respective industry. By planning this in a central way, this stimulates the formal economy in strategic sectors and provides meaningful livelihood to youth, leading to an organised form of socio-economic development.

Figure 23.1 refers to various forms of 'noise' in this competence-development chain in the form of transactional challenges that appeared when putting it in practice in Rwanda. Five categories of challenges representing this noise have been identified and will be further discussed below.

23.3.1 Challenge of Representation

Data about market needs in Rwanda are limited and not always of convincing quality. Since 2012, Rwanda has the so-called Sector Skills Councils (RoR 2014) that are meant to bring together employers and education providers. Some other initiatives that envisage bridging employment needs with educational output exist,
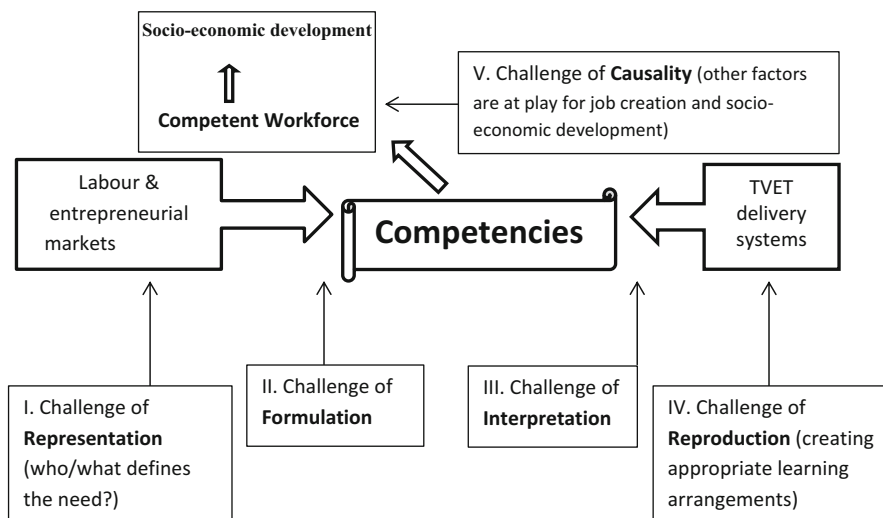
Fig. 23.1 Transactional 'noise' in the competence-development chain in Rwanda

such as the Kigali Employment Service Centre (KESC), but are nevertheless too new (2013) to have a noticeable impact. The best central source of information that could inform the formulation of competency gaps comes probably from the Rwanda Development Board, which manages a labour market information system (LMIS). However, this system is entirely based on secondary data and has few links with the main statistical agency NISR. Data are of a rather general nature and not of much use for specific competency analysis. Another initiative of RDB is conducting the so-called skills surveys, which comes closest to something like a central inventory of competence needs. Skills gaps of existing workforce are identified and quantified (RDB 2012). The general picture is that over 90 % of employed staff needs further training in almost all competencies. Competencies, or in the terminology of the surveys, skills, are however not clearly defined, only alluded to by stating occupations such as Head Maize Reception, Fishery and Aquaculture Labourer or Assistant Tea Maker. The skills gap is then identified by giving numbers about vacancies in specific occupational categories. Certainly one may expect that the organisations that employ these workers do have task descriptions, but these are neither generally validated nor centrally available.

Curriculum developers therefore have to resort to a series of meetings joining a limited number of experts from industry, representatives of TVET institutions, including WDA, and an outside-consultant specialised in the DACUM approach, such as a technical assistant of PAFP. In open sessions, occupational profiles and related competency profiles that form the basis for the curricula are designed. The main question here is whether the experts from industry represent sufficient body to represent 'the demand side' from the world of work. Experts are often identified through personal networks and there is no specific methodology to establish their numbers, qualities or provenance. The validity and reliability of the information provided by the demand side is therefore highly doubtful.

23.3.2   Challenge of Formulation of Competencies

Competencies are formulated as a language-based sequestration of market needs that can be used as a learning outcome for TVET. It is formulated as a statement which generally follows the imaginary phrase of 'The ability to…' and then follows the competence statement starting with an active verb, such as '…*understand one-self as part of a team and respect the rules of the workshop*'. Subsequently, these competencies can be broken down either in sub-competencies, or, in more operational statements, as assessment criteria and standards that permit to evaluate products and performance of learners. As such these language statements suggest representing an achievable quality of universal value for a given sector that can be taught at a TVET centre. Through the social interactions during competence formulation meetings, a variety of participants, each with their own background, try to reach consensus on exact formulations and sequence of texts in curriculum documents (for more background, see also: Mulder 1992). This diversity is seen as an advantage, since it serves bridging the world of work with the world of education, each with its own specific requirements. A competency statement is thus a compromise, which results from negotiation between the more vocal individuals present in a meeting. Other individuals might have come up with a different compromise and consequent competency statement. As will be further described in the last section of this chapter, such a meeting can be considered an *arena* with different types of actors, each with their own 'baggage' influencing their input, determination and perceived importance. This makes that a competency statement is to a certain extent circumstantial and not necessarily reliable. Sitting in these meetings, one notices the presence of people from different language background: Dutch, American-English, Belgian-French, Rwandan with francophone background, Rwandan with Anglophone background and Rwandan who basically only speaks her mother tongue Kinyarwanda (see also: Halsema 2014). There are noticeable different schools of understanding of what competence is, and the more specialised someone is, the more difficult to align. Formulating statements of competence is then a cumbersome process of compromising. This makes also the validity of the statements doubtful. A more systematic and reliable process would be possible (see Mulder 1992), but is for various reasons rarely implemented.

23.3.3   Challenge of Interpretation

On the other side of the linguistic spectrum involved in the formulation of competency statements is proper understanding and interpretation. Curricula, including the competency statements that structure them, are published on the website of WDA and then 'rolled out'. This means as much as teachers and school directors in isolated districts are supposed to download the documents formulated in English and start using them. However, Rwanda faces specific language problems. Simpson (2012) refers to an important factor that exacerbates the language situation in

Rwandan education: the change from French to English as the main medium of instruction (MOI) in 2009. Halsema (2014, p. 13) describes how already in 1996, when the governing party came into power, English was introduced as a third MOI. With time, when Rwanda joined the East African economic Community, English received even higher status. The downside was that this resulted in an important setback for teachers, certain categories of pupils and the availability of appropriate learning materials that was French oriented. This implies that on the receiving side, the formulated competencies may be very difficult to understand or even completely incomprehensible for the end-users. Without appropriate training and coaching, these teachers are not likely to change their syllabi and ultimately the implemented curriculum. The whole mindset in the Rwandan education seems to be contrary to the requirement of competence-based teaching, which makes a correct understanding and interpretation of competence-based curricula extremely difficult.

This is illustrated in Honeyman (2013b, pp. 70–80), who describes in her dissertation how the precolonial Rwandan education was centred around the court of the Tutsi kings in the so-called *itorero*, where preparing for warfare, recital of poems and dance took place. Social mobility was only possible for a few that qualified for entry in the *itotero*, irrespective of their ethnic background since mental and athletic potential was prevailing over ethnicity. Others were kept in a rigorous patron-client system that linked pastoralists with agriculturalists, the so-called *ubuhake*, that established a culture of strict obedience, secrecy and dependency that somehow still characterises the Rwanda of today. When German colonial administration came in at the end of the nineteenth century, these were hardly interested in education. However, the church, and in particular the Catholic church through the *white fathers* order, introduced basic education on a large scale. General education was also new to Europe at the time and thought to be the right thing to do to uplift a people. In particular the masses went to school that previously saw themselves excluded from *itorero* as virtually the only way for social uplifting from their tough lives of subsistence agriculture. However, the curriculum of the catholic schools consisted almost entirely of the catechism, which needed to be rote learned and recited. *Together*, *these poetic and catechism (reproductive, WvH) pedagogical styles have created a limited, but firmly ingrained, repertoire of disposition for teachers and students that continues to shape the entire field of education in Rwanda up to the present day* (Honeyman 2013b, p. 77).

This demonstrates that, even if adequate and sufficient training of teachers and school managers would take place for appropriate interpretation and use of competence-based curricula, the hurdles to be taken in adjacent fields – such as understanding and demonstrating the appropriate mentality and attitude – are so many, that the aspect of correct interpretation of curricula documents creates much 'noise' in the competence-development chain.

23.3.4 Challenge of Reproduction

Creating the right learning environment to teach the competencies cited in the new curricula is by far the most daunting element of the competence-development chain. Supposing that the curricula are well interpreted, and that the teacher in question has received the necessary pedagogical training, the magnitude of CBE impacts on almost every element of the educational system. This includes difficult-to-control aspects such as the view from pupils and parents of what constitutes good education. Important training elements such as opportunities for authentic learning in a workplace, meaningful internships, professional assessors and teachers with professional experience, are often lacking. School-based workplaces are very expensive and rapidly outdated. Students have no books or photocopies of learning material, so they spend much time of theoretical classes on copying or memorising the crumbling notes chalked by the teacher on the black-painted wall of a crowded classroom. Business incubation centres, if existent, are mostly empty buildings with some empty desks which is a result of a lack of clients interested in a product or service that a school-coached graduate could provide.

These and other aspects are often articulated by school managers when asked what their most pressing obstacles are for CBE-implementation. However, perhaps the most difficult aspect of change, which occurs with teachers throughout the world, is that teachers are an authority over pupils, and that by letting go this role of knowledgeable expert, they may be seen as losing authority and competence. The aforementioned culture of obedience may also prevent individual teachers to implement elements of the competence-based curricula as soon as someone above them in the hierarchy pronounces different views or takes decisions that are not consistent with it, irrespective if it is out of ignorance or for other reasons. Teachers receive also very low wages that do not relate to those of their professional counterparts in industry. Someone with professional experience who would be able to create situations of cognitive apprenticeship for learners within a specific trade will most likely refuse a job in TVET. The public image of TVET is negative, and, amongst learners, TVET is seen as the last resort. Students in TVET are probably amongst the poorer and weaker, with more limited learning capacities or motivational issues. Poor basic education makes that additional skills development is often inefficient and ineffective. The students in this kind of education do not respond well to student-centred, reflective ways of teaching. So in the end, the excuses are many not to go for change, to stick to old habits and maintain the classical, lecture-based and rote-learning oriented style of TVET that is not able to reproduce the desired competencies described in the new curriculum documents.

23.3.5 Challenge of Causality

Assuming, once arrived at the top of the competence-development chain, that all previous steps were successful, does then competence as predictor of performance of graduates allow new companies to be established and existing business to grow because of an increased competent workforce following massively developed competence-based TVET? Rwanda has a strong economic growth rate of on average 8 % per annum, but this is for an important part driven by demographics and official development assistance (ODA). Some sectors are clearly booming, such as construction, micro, small and medium enterprises (MSMEs) in transport and telecommunication, small holder and cooperative agriculture and also mining is coming up. But where do the 200.000 formal, off-farm jobs have to come from that Rwanda is planning to create annually (RoR 2014, p. 5)? Each year, 125.000 youngsters out of the youth bulge of 18 years and younger (52 % of the population) enter the job market, so the need for those jobs is indisputable. Given the freeze on government jobs, these new jobs need to be created mainly by the private sector. Yet recent surveys (RoR 2014, p. 6) suggest that the Rwandan economy is not creating productive and remunerative jobs fast enough to keep up with demographics. It is notable from discussion with former students how few graduates actually seem to engage in the trade they were prepared for in TVET and how many have diversified approaches in the informal sector being active in various trades in order to make ends meet. Johanson and Adams (2004, pp. 47–51) put this aspect in a wider sub-Saharan African context by stating that real wages have fallen in many countries and wage employment in the modern sector is stagnant. They argue that because of this, the informal sector remains crucial for youth employment in the foreseeable future (it constitutes 85 % of total employment, of which two third in smallholder agriculture). This situation leads to an increase of poverty because of increased competition or crowding-in of low-skilled labour. This vicious circle could be broken by innovation in the informal sector via technical skills development and above all, the development of generic skills such as innovative entrepreneurship, problem-solving and creativity. Yet Rwanda does not encourage the informal sector, or even actively discourages it through regulation and taxation, and encourages a type of *orderly entrepreneur* (Honeyman and Mutimukeye 2013) that mainly has theoretical knowledge about, and not so much skills for, business development.

This argument leads to the question: *Are the right people and the right job-profiles targeted when formulating the competencies for the Rwandan youth of tomorrow?* If not, this would imply that there is an attempt ongoing to meticulously and massively try to engineer a competent workforce that will not be needed in the intended way. Is Rwanda the 'Singapore of Africa' as it is aiming for, or just another, relatively promising but nevertheless landlocked, mineral-poor and overpopulated Sub-Saharan African country?

23.3.6   Concluding Remarks Concerning the Competence-Development Chain

Focusing on the sometime resounding noise within the competence-development chain draws away attention from a more positive effect that nevertheless became evident from observations during several years of implementation in pilot schools, from reports and testimonies. Depending on the school and the capacity of the teachers concerned to reflect on and adapt their own educational practices, the new, competence-based curricula are used as a reference to change their syllabi and make their courses more practice oriented. There appears to be an increase in focus on personal performance of learners according to presumed needs of future professions, and a tendency to move away from previous less effective educational practices exists. Testing is more focused on abilities and problem-solving and less on reproducing memorised texts or protocols. These observations suggest that competence development, although perhaps not in the intended mechanical way, offers opportunities for reducing the gap between education and the world of work.

23.4   Conclusions

From the above analysis of the competence-development chain, it can be concluded that within the context of sub-Saharan Africa in general, and Rwanda in particular, there are important transactional trade-offs and costs:

- It is difficult to establish objectively what the exact need for jobs is; projecting ambitious targets of economic growth in strategic sectors may not be a reliable basis for massive, centrally controlled and very specific competence development.
- Under the circumstances it is difficult to formulate exact and understandable statements of competence that could guide large-scale programme development for specific jobs.
- For the foreseeable future, the apparatus to carry out the intended TVET-reform policy does not have the potential to live up to expectations.
- The professional learning that is envisaged or realised does not equip graduates appropriately to engage in innovative economic activity if they do not manage to enter the formal market of waged employment, which may be the case for a vast majority of graduates.

The measures that would be needed to reduce 'noise' in the system will be very expensive and time-consuming, and still their outcome would be highly uncertain. Therefore, competence as 'bridge' between the world of work and TVET through detailed task analysis of jobs, central planning of competence through national curriculum development and massive rolling-out over the nation's TVET centres may just

be a bridge too far. However, there are sufficient encouraging signs of the usefulness of introducing an outcome-based pedagogical approach in TVET schools. The concept of 'competence' may be a useful vehicle to prioritise learning-content by a trainer, encourage new styles of teaching and testing, give more voice to students in their learning process and extend the school as space for learning more to the world of work and its professional practice.

Several questions remain. If competence is to play a meaningful role for TVET in sub-Saharan Africa, how should its definition adapt from the current behaviouristic understanding in order to make it more useful and practicable? And how can it better connect to the kind of professional learning that is supposed to take place for economic innovation? And how could the authorities better plan and regulate this?

In an attempt to angle discussion about these questions, it may be useful to first elaborate more on the notion of *competence* and the behaviouristic understanding of it. Benoist and Gibbons (1980) argue that competence-based training (CBT) and behavioural objectives of learning are two different concepts that are often wrongly associated or even erroneously mixed together: CBT (or CBE) by itself is not necessarily an expression of a behaviourist philosophy of education, whereas the assessment of predefined outcomes of (cognitive and physical) behaviour intrinsically is. By setting predefined outcomes, a reductionist view on reality is introduced; hence the envisaged learning is also limited. It therefore may impede engaging in an innovative manner when facing unpredictable professional situations. Wals (2005, p. 121) refers to the process of the disciplinary organisation of knowledge. This disciplinary organisation of knowledge (for TVET the subdivision in trades and teaching subjects could be a manifestation of that) penetrates learning institutions and through it contemporary society as a whole. Honeyman (2013a, b, p. 73) alludes to this when describing the 'disciplinary state' (Foucault) leading to a formal system of credentials in education that do not necessarily represent competence as defined in this chapter. The simplification serves to create a model of concreteness which allows concrete action and technology, or straightforward management models. However, it is often forgotten that this reductionist view is still a model: this 'forgetting' tends to turn it into reality by ignoring all aspects that do not fit in the preconceived models. Without disputing the usefulness of this kind of reductionist models, learning for innovation should create the ability to think 'out of the box' of these models and review reality in new terms.

Competence-based training (and education) is often seen in perspective of a constructivist approach to learning and more so in its social sense of taking place in group dynamics and through language and images (see Kibwika 2006, pp. 31–33). This implies that a learner actively constructs knowledge and skills based on his own world of reference. This is done on the basis of reflexivity and social interaction within a learning environment, hence the focus on student-centred learning approaches. A useful image is proposed Pierre Bourdieu (Grendfell and James 1998, pp. 6–26), arguing that through reflexive interaction, individual *agents* can intervene in a *champ* or *field* (p. 24) that represent an identifiable network of interconnecting relations, each with its own logic and hierarchy. The ability to be effective in such a field is determined by different forms of *symbolic capital* as

manifestations of power or influence. Bourdieu states three sorts of capital: economic capital, cultural capital (including skills and knowledge) and social capital. This capital is mostly used in an unconscious way in a 'market-game' of supply and demand (p. 20). TVET under the competence-based approach can be considered such a field which structures can shape a learner's '*sens pratique*' for the profession. This notion of 'reflexive objectivity' that in potential can restructure underlying structures is eventually marked as 'structural constructivism' (Bourdieu 1989, p. 14), whereby the reproduction of human activity takes places as a dynamic process in ever-changing contexts … through a synthesis between objective and subjective views of a phenomenon (p. 19). This allows for insights and the ability to react professionally to unpredictable situations in an unique way, allowing for a number of possible and original 'moves' based on a personal view on 'self', 'choice' and 'action'.

Wals (2005, p. 118), without disputing the importance of different forms of learning, suggest a shift in focus from propositional 'learning for knowing' (savoir) on the basis of subject disciplines and the more practical 'learning for doing' (savoir-faire) towards the more experiential 'learning for being' (savoir-être) (see also Le Deist and Winterton 2005 and the chapter of Le Deist in this volume). By being an (aspiring) specialist in a given technical field, one uses skills and knowledge in constantly varying patterns according to new challenges in the changing context. Learning in CBE is therefore not necessarily based on a simplification of reality and a subsequent reduction of learning based on a representation of that simplified reality but can also be meaningfully guided by a tangible and measurable yet imperfect system, linking learning in a more general sense to the needs of the markets. Any CBE, in this vision, should recognise that learning is much more holistic and complex and the outcome much more diverse than could be preconceived and measured on the basis of a few criteria linked to a written statement of competence. This reminds of the iceberg model (Lyle, Spencer and Spencer 1993), whereby the behavioural aspects of knowledge, skills and attitude are visible and transferable, whereas many other aspects underlying performance, such as self-concept, traits, tacit learning and motivation, are hidden under the surface. Bourdieu refers to this phenomenon as *habitus* which can be influenced by an *agent* through reflexivity. Competence viewed in this perspective can therefore only *partly* be influenced through education, for instance, the element of motivation or self-concept. In, as an example, Germany, working on the professional identity is part of the CBE approach. However, other aspects of habitus such as traits, values or motives may be a result of previously established experiences or characteristics of a learner.

After the phase of industrialisation, South Korea went through a process of democratisation and globalisation, obliging the country to open up and focus more on skills as creativity, flexibility and individualism as elements of the capacity to respond to global market opportunities with limited predictability. This requires a different way of learning and teaching, as is demonstrated above. The transition from a developmental state with centralistic characteristics to a more neo-liberal state with devolution of power and responsibility to local levels of administration was crucial to that process. Honeyman (2013a, b) refers to this as a transition

towards the *post-developmental state*. The example of Singapore is often cited as successfully combining the elements of state-control and *laisser-faire*, favouring individual liberty, innovative entrepreneurship and creativity at decentralised level. For many emerging economies in sub-Saharan Africa this poses serious internal contradictions to their educational systems. In this view the role of the state is not that of central planning of and control over a precise outcome of TVET but one of providing an enabling environment for partly unplanned competence development at decentralised level. TVET governance should thereby take place through more self-regulation; the state should formulate *security policies* to assure that natural processes in the field of TVET can take place and resort less to the usual *disciplinary technology* of central management (Foucault, in Honeyman 2013a, b, p. 14). Concretely, in this logic, a national authority like WDA should entirely focus on setting general standards and regulate private and public TVET centres through a system of visitation and accreditation, instead of the current blurred mandate to both regulate and implement TVET. National standards should not consist of narrowly defined professional competencies, but of more generic level descriptors, which allows TVET centres to fill in these standards in their own, unique way, nevertheless within quality- and level-boundaries. National control is not relinquished in this way but rather shifted towards a focus on self-rule and self-reliance within a government-sanctioned framework.

To finalise this discussion, the spotlight should return to *competence* as a possible bridge between school and work: does the above entail that government should let go its ambition to develop specific strategic economic sectors through competence development? And on what competencies should individual TVET centres then focus? Current discourse such as conducted by the World Bank (Filmer et al. 2014) proposes to shift attention from development of the formal economy and projected job markets to a broader concept of *Youth Development* for sub-Saharan Africa. This implies aiming for both competencies needed in formal and informal employment. Examples of this include sectors such as small holders' agriculture, household enterprises and the modern sector wage jobs (pp. 11–23). Government could centrally focus on the crucial foundational skills of basic education, such as basic cognitive skills; behavioural skills; and socio-emotional skills. In addition, private and public TVET institutions should be enabled to provide more portable competencies. These could be focused on, for example, productivity improvement of smallholders' agriculture through processing, marketing, improved machinery operation and repair, transport facilitation, improved logistics and through quality control (p. 14). Entrepreneurial learning could be reinforced for household enterprises through technical training in a specific sector such as carpentry, business development and financial literacy, behavioural and life-skills (p. 18). For the modern-sectors wage-jobs, usually a higher, yet profession-oriented and competence-based

learning is required combined with creative and entrepreneurial skills.

Most important, however, is that these skills gaps are not taught as subject matter but experimented by learners in fields of interaction with peers, tutors and the professional world, so that competence will develop as an integrated ability to act

innovatively and technically sound to professional issues, or as an enhancement of the learners as an entrepreneurial-self with an intrinsic drive to recognise and use opportunities.

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