

A paradigm shift towards competence based curriculum: The Experience of Rwanda.

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Abstract: The study on Competence-based training (CBT) is not a unique experience ever exercised in different scenarios of learning experiences. While this education is vastly practiced in vocational education and training world - wide, it has gained a paradigm shift in Rwanda: encouraging the hands-on activity and the sense of self-employment. This model has been adopted through the influence of constructivism theory which dwells largely on learner-centered orientation. Though the practice in Rwanda has taken over four years since its inception and that graduants from this system are already in the market, the study seeks to assess the feeling, competence, accessibility in the market, and future prospects of such candidates. The study has developed a null hypothesis to test if there is a significant difference between CBT curriculum and the actual skills gained by learners on the ground. The study used a descriptive approach and inferential statistics to determine results. An independent Sample T-test and ANOVA were employed to analyze significant differences of variables in the study. The target population was 140 candidates and a random sampling of 56 candidates was selected to become respondents of the study. The overall results indicated that CBT program has indeed helped improve the lives of youths in Rwanda.

Keywords: Competence-based training, curriculum, constructivism, paradigm shift

Introduction

Competence-based training (CBT) with its teaching and learning approaches has received a good deal of attention and support within the educational profession in recent years. However, as with any newly emerging concept, there is no common definition being used but there are some common elements. Bartram [1], adds that, the most important of these elements is that the learner must be engaged and active in all aspects of acquiring the knowledge, skills and professional behaviors needed to demonstrate practice in a specific discipline. In other words, competency-based education uses teaching and learning strategies that facilitate the development and demonstration of competency [2]. Competency-based education can be pursued through various approaches to curricular design. Keating [3], postulates that whatever the design, however, all curricula need to be evidence-based and outcome focused and all teaching strategies need to be matched to their learning domain (psychomotor, cognitive and affective).

CBT is further explained as an institutional process that moves education from focusing on what academics believe graduates need to know (teacher-focused) to what students need to know and be able to do in varying and complex situations [4]. CBT is focused on outcomes (competencies) that are linked to workforce needs, as defined by employers and the profession. CBT's outcomes are increasingly complex

in nature, rather than deriving from the addition of multiple low-level objectives. CBT often necessitates more complex assessment, involving portfolios, experiential learning assessment in field experience through demonstration in varying contexts. Large skill sets are broken down into competencies, which may have sequential levels of mastery. Competencies reinforce one another from basic to advanced levels as learning progresses; the impact of increasing competencies is synergistic, and the whole is greater than the sum of the parts. Competencies within different contexts may require different bundles of skills, knowledge and attitudes. The challenge is to determine which competencies can be bundled together to provide the optimal grouping for performing tasks. Another challenge is designing learning experiences that support students as they practice using and applying these competencies in different contexts. Continual refinement of defined competencies is necessary so that enhanced performance in a variety of contexts can be assessed.

In essence, CBT is a process, not a product. CBT is more than an effort to describe or list educational and behavioral objectives. The early emphasis on behavioral learning objectives was on reliable observation and judgment. To this end, writers of behavioral objectives were encouraged to state outcomes in operational terms, which can be observed using consistent observational processes allowing for no

interpretation [5]. In an attempt to achieve this reliability, a behavioral verb from a list of behavioral verbs (eg. state, list, name, recognize, describe, calculate, describe, explain, synthesize, analyze) was required to begin the objective. It is this narrowness that led to the criticism of these approaches then and now; attainment of the multiple behavioral objectives did not equal students' workforce functionality.

In developing countries many higher education institutions experience a growing gap between their curricula and the demands from society, business and industry for a more flexible workforce with high skills (competencies) in problem solving, team work and project management. Competencies are constructs and are inferred from or expressed in behavior in a certain context. A competence-based curriculum is therefore dependent on the context of the institution offering the curriculum. The design and development of competence-based curricula in Masters programs in three African countries (Mozambique, Ghana and Ethiopia) as revealed by Kouwenhoven [6] is an illustration of this context dependency. It will be argued that the systematic premier route of competence-based curriculum development (sometimes called the 'royal road'); going from professional profile to graduate profile to curriculum profile means a long, but rewarding path. When this is done along a communicative design approach involving all stakeholders, aspiring curriculum designers will definitely acquire and develop competence in curriculum development.

CBE aims to make students more competent through the acquisition of competencies and the further development of the newly acquired or already held competencies. But what is competence or competency?

- **Competency** is the capability to choose and apply an integrated combination of knowledge, skills and attitudes with the intention to realize a task in a certain context, while personal characteristics such as motivation, self-confidence, and willpower are part of that context.

- **Competence** is the capacity to accomplish 'up to standard' the key occupational tasks that characterize a profession. A competent professional shows a satisfactory performance. Key occupational tasks are the tasks that are characteristic for a profession. A profession could be described by 20 - 30 key occupational tasks [7]. The broad, general, concept of competence can be understood through the concept of 'core competency'. Core competency is defined as: the set of appropriate competencies needed to accomplish a key occupational task at a satisfactory or superior level. Stated in another way: core competencies are directly linked to key occupational tasks and are integrated clusters of domain specific and generic competencies.

In a similar vein of argument CBE in Education ought to include more generic competencies (core skills, key competencies, essential skills, foundation skills). Emphasis should be put on teaching and learning activities and in assessment on the "...general ability to learn and apply competencies in many different aspects of a person's activities" [8]. Provided the acquisition and development of competence imply a growing ability to choose, develop and adapt abilities to address new situations in a creative, innovative research-like way, CBE will better respond to the demands of daily practice than knowledge-driven traditional models of professional training [9]. Best seems the broad holistic view (also called integrated or relational); competence is seen as a complex combination of knowledge, attitudes, skills and values displayed in the context of task performance. In this view there is no trained behavior, but thoughtful capabilities and a developmental process.

Statement of the problem

Education is an evolving process for the edification of mankind to make use and manage the environment at its best. Seeking to solve the paradox of unemployment, most governments are facing the glitch to involve every citizen especially youths to participate equally in the national economy. Formal education seems to have failed addressing the issue of cubing unemployment crisis world-wide. Much as this is the case of Rwanda, a country that is emerging from the fate of genocide of 1994. The population rate is growing rapidly teasing the existence of peace, tranquility and national unity due to insufficiency of job vacancies in the government. Hence, the introduction of CBT curriculum gearing towards solving the problem of unemployment by encouraging hands-on activity and promoting a sense of self-employment becomes a point of argument.

Purpose of the study

The study intended to assess the general trend of the application of Competency based training in Southern Rwanda province. Much on Competency based training has been discussed with a good number of empirical studies from different parts of the world yet less evidence from those studies as shown elsewhere in this study do not give a bigger picture of what impact CBT has on youths in improving their lives. The Southern province of Rwanda as a typical case has been studied to show how massively this program if well-handled can bring enormous positive contribution to the family and national level economy.

Theoretical Frame-work

One of the most important principles of educational psychology is recognizing the fact that knowledge can only be constructed through one's mind and transferred through social interactions. This study is grounded on Lev Vygotsky's theory of social interaction and learning, and constructivist theoretical

framework which advocates for learners being guided by the teachers in self-discovery experiences that yields effective learning. Social learning theory help us to understand how people learn in social contexts (learn from each other) and informs us on how teachers, construct active learning communities. Vygotsky [10] examined how our social environments influence the learning process. He suggested that learning takes place through the interactions students have with their peers, teachers, and other experts. Consequently, teachers can create a learning environment that maximizes the learner's ability to interact with each other through discussion, hands-on activity, and feedback.

Constructivism theory, on the other hand, believes on the ideas that learners must individually discover and transform complex information if they are to make it their own [1]. This view has profound implications for teaching because it suggests a far more active role for students in their own learning than is typical in many classrooms. Because of the emphasis on students as active participants, constructivist strategies are often called student-centered instructions. The role of the teacher in this view as observed to guide students to discover their own meaning instead of lecturing and controlling all classroom activities. A study by Geen and Gredler [12] comments further that when students are left alone with minimum supervision but with goal centered accomplishments, can generate knowledge by constructing their own models of learning appreciating their new skills and competences. Bruning, Schraw, Norby and Ronning [13], have developed a number of different perspectives to constructivism theory showing how better the approaches can help improve learning through self-innovation.

Review of Related Literature and Studies

Attention was first drawn to competency-based education in the late 1950s with the publication of Bloom's (1956) *Taxonomy of Educational Objectives—Handbook I, Cognitive Domain*; 8 years later, Krathwohl, Bloom, and Masia (1964) followed with a second volume, *Taxonomy of Educational Objectives—The Classification of Educational Goals, Handbook II: Affective Domain*. Response to Bloom's work was felt almost immediately in the academic arena where with the guidance of a growing number of resources, educators began translating their current curriculum into competence-based instruction. As one communication educator put it more than 35 years ago, "Teachers have an unfortunate tendency to assume that telling is teaching" Competency-based models, on the other hand, emphasize learner outcomes and suggest that regardless of how well planned the academic intervention, success can only be measured by the changes that take place in students' performances, whether demonstrating cognitive, affective, or skills-based learning.

The concept of competence-based curriculum or competency-based education (CBE) and training is interpreted in many ways in education systems all over the world, resulting at one end of a continuum into a tick list of skills and another as a set of generic abilities that transcends disciplinary knowledge and skills. Although CBE has secured its place in technical and vocational education, especially at secondary level, only in recent years has the competence-based approach been found as well in higher education. However, this is not without controversy.

A view on competence-based education

The characteristics of CBE are based on the application of recent findings of the cognitive sciences to the concept of competence. Below a list is given of characteristics that, together, form the 'archetype' of a competence-based curriculum [6].

CBE is oriented to the professional practice. CBE is based on the future occupational practice of the graduate. The curriculum has an integral set-up in which the profession is central. *CBE is learner-centred and the learning process is central.* The individual worker is central and, based on his 'competence status' (already acquired competencies), the competencies are defined that still have to be acquired and developed. Other aspects of a learner-centred approach in CBE are the use of individualized materials, flexible learning time and a continuous feedback to the learner.

CBE has a constructivist approach. It uses the metaphor of the network of steel in reinforced concrete to emphasise that the constructivist paradigm together with the concepts of competence forms the backbone of CBE. In a succinct way: "In brief, the main goal of constructivism is competence, not knowledge as in cognitivism, or achievement as in behaviourism." (p. 163). Statements aside, it is known that the quality of the acquired knowledge through active construction is better than passively gained knowledge. *In CBE the role of the teacher is that of a 'cognitive guide'.* Teachers encourage students to engage in active inquiry and make explicit their tacit assumptions. "A constructivist teacher is more interested in uncovering meanings than in covering prescribed material."

CBE has learning environments focuses on the development of competencies. Disciplinary content is not any more the criterion for arranging the curriculum, but the competencies that should have been acquired and developed by the end of the education programme. In this sense one could speak of designing and developing the curriculum 'backwards', because the knowledge and skills are determined by the competencies that are needed by a competent professional and not by the disciplinary 'body of knowledge'.

CBE includes the development of generic competencies. Aspects are: generic competencies are integrated throughout the whole curriculum; CBE stimulates the transfer capacity; focus on innovations and problem solving and the explication (definition) of problems; self-reflection and

Self-assessment plays a fundamental role. *In CBE assessment focuses on competencies.* Aspects are: mainly assessment of competencies, rather than knowledge and skills; assessment is both formative and summative and forms an integral part of the process of the development of competencies. *In CBE curriculum development is based on the elaboration of profiles and identification of competencies.* Domain-specific knowledge and skills are determined by the competencies that are needed by a competent professional and not by the disciplinary 'body of knowledge'.

Experiences in different Regions: Progress made and Obstacles encountered

In this section I discuss how experiences have been made in different Regions and obstacles encountered. By comparing and contrasting experiences from different regions of the world, we can notice that there are common concerns related to the understanding and respect for diversity by means of inclusive policies and student-centred curricular frameworks, pedagogic practices which respond to students' expectations and needs, and teachers' professional development and support school-based. There are several key lessons learned from on-going processes of implementing competency-based approaches, principally linked to Basic and Youth Education. They could provide useful inputs to address a comprehensive curricular reform as a key component to effectively democratize Basic Education in Africa, especially in Rwanda.

Canada

This experience took place in Quebec, Canada, where research was done by ORE Institute, led by Philippe Jonnaert. The goal was to reduce the existing gap between what is prescribed in programs of study and what really happens in the classroom. By introducing the notion of "competent action", researchers show how a competency-based approach can be applied to identify the contents of programs of study, highlighting the idea of contextualization. Working on general basic adult education, they analyzed the actions of students in context as well as the resources they used to perform such actions. Researchers call it "competent action in situation".

As a first step, they built a bank of situations by means of a survey of the target population (those who would be affected by the reform), who had to identify real-life situations. As a result, "the situations identified revealed a significant gap between the learning content traditionally specified in the programs

of study and the situations for which the target population wishes to develop competency" [14]. People identified relevant situations that are not included in traditional programs of studies. Researchers came to the conclusion that the resources needed by people to address everyday problems were not those traditionally associated with school subjects.

Teachers were restricted to what was written in the programs, working on virtual competencies. Consequently, as a second step, researchers grouped situations into classes and then identified pertinent activities which allowed to work on such situations and on resources to be developed. Finally, they identified the competencies involved. From them on, students have been expected to develop competent actions in different classes of situations.

China

Curricular transformations based on competencies have taken place in China. To work on a competency-based approach implies to overcome the vision of curriculum as a prescriptive top down reference, mainly based on closed disciplinary identities and obsolete organization of areas of knowledge. In line with this, we refer to the Chinese experience introduced by Muju Zhu.

The reform was aimed at cultivating student competencies in practical situations in primary and secondary education. As explained by Muju Zhu, the Ministry of Education issued the "*Programme on Reform of Basic Education Curriculum (Experimental)*". The curriculum proposed a nine-year compulsory education focused on fostering students' motivation and ability in lifelong learning in order to achieve all-round and balanced moral, intellectual, physical and aesthetic student development and advanced character building, through the cultivation of competencies. It tried to overcome the traditional subject-centred curriculum. In this sense, the new curriculum implies a new idea of education dynamically adapted to the demands of a Chinese society influenced by the advent of the knowledge explosion and new technologies.

Before the reform, there were few experience-building courses. Cultural tradition is now considered in the new curriculum as well as compulsory experience-building courses based on integrated practice activity. The aim is for students to gain personal experience in the fieldwork, effectively exercise a responsible citizenship, solve real-life problems and cultivate personal qualities.

A subject-centred curriculum was seen as an effective obstacle for students to find their learning meaningful and to put knowledge into practice. One of the innovations introduced by the reform was the organization of elective courses and cross-disciplinary

studies. The senior middle school was organized by fields of study - language and literature, mathematics, humanities and social science, science, technology, physical culture and health, arts, and integrated practice activity. Each subject consists of a series of module courses, which are independent but logically linked to each other.

Muju Zhu uses the example of a science lesson for junior secondary students (grade 7) to illustrate the situation. In studying the phenomenon of earthquakes, the teacher divided students into three groups to collect information during after-school hours, on three relevant topics. In a week's time, each group was asked to finish its assignment, compile detailed text and illustrations, and prepare a presentation that was to last three to five minutes. Some obstacles were nevertheless encountered when working on this new curriculum. First of all, China's huge population impels middle and primary schools to put far more students in a class than, for example, their European counterparts would. Another issue was encountered within Chinese culture and tradition regarding the role of teachers who are considered moral and intellectual authorities. This situation sometimes affects the teacher-learner relationship. These difficulties are however being progressively overcome, principally regarding the attainment of more equal and just relationships between students and teachers.

Latin America

From the nineties onwards the Latin American region has been undertaking relevant curricular transformations, principally in Primary and Secondary Education, in a vigorous and dynamic process of educational reforms intended to address the complex and interdependent issues of equity and quality [15]. This wave of reforms is not an expression of the latest fashion or a mechanical replication of models imported from outside the region. It is rather the reflection of a profound will to change the role of the education system as a critical factor in fostering national development, achieving equal access to and fair distribution of opportunities, and establishing the conditions for a decent international integration based on solid competitiveness.

The various reform processes have been carried out according to very diverse ideas, frameworks, strategies, and partnerships. While in overall terms, the reforms share common concerns and challenges, they differ in their agendas, their policy frameworks and decisions as well as their implementation strategies. Diversity and specificity are two distinctive features of these reforms.

A good number of them view the competency-based approach as a way of conceptualizing and implementing significant changes in educational policy, curriculum vision and content, as well as teachers'

education and professional development. Although much of the discussion and debate surrounding competencies have been intense, more political than pedagogical, replete with biased conceptions and weak in theoretical support and empirical evidence, they have opened the door to an overall questioning of the education system. A central issues is that traditional ways of viewing the curriculum and the teacher's role, which are very much embedded in conservative disciplinary identities mixed with corporate interests, tend to exclude more than include potential and real learners.

Curriculum change and competence-based approaches in Guatemala

Guatemala has been implementing a competency-based curriculum in Pre-school and Primary Education (levels 4 and 5, and grades 1 to 6) since 2005, and is currently developing a new competency-based curriculum for the basic cycle of Secondary Education (grades 7 to 9). This process of curriculum reform is embedded in the on-going expansion and democratization of learning conditions and opportunities. These elements are seen as crucial factors in fostering a peaceful society, attaining decent levels of cultural and social integration, and overcoming high levels of marginality and poverty. Guatemala is a Central American country covering an area of 108,889 km² with a population of over 11.2 million people. This population is made up of 25 linguistic communities: 22 different Maya plus Xinka, Garífuna and Spanish-speaking communities. The Mayan population, which is of pre-Hispanic Central American origin, accounts for more than 40% of the country's total population.

In the 1960s, an internal armed conflict began, which lasted more than 30 years. Negotiations were started between the Government and the Guatemalan National Revolutionary Unit (UNRG) in the middle of the 1980s and culminated in 1996 with the signing of the Agreement on a Firm and Lasting Peace. The various agreements signed in the 1990s laid the foundations for a new national agenda for development, recognized the rights of indigenous peoples and established commitments to build a multicultural, multi-ethnic and multilingual country. As a result of this new policy, the monolingual and mono-cultural State gave way to multi-cultural, multilingual State favouring inter-ethnic relations on an equal footing.

The agreements that serve as reference for educational reform are the Agreement on the Identity and Rights of Indigenous Peoples (1995) and the Agreement on Socio-Economic Aspects and the Agrarian Situation (1996). In the first agreements, the Government initiated a reform of the education system, with a series of declared aims including:

- Decentralization and regionalization;

- Community participation in the definition of curricula and school timetables on the basis of proposals by teachers;
- Integration of the educational concepts of indigenous peoples;
- Expansion of intercultural bilingual education;
- Reinforcement of national unity, subject to the recognition of cultural diversity;
- An increased budget for education.

The Guatemalan government has concentrated efforts on expanding its school system. After the signing of the Peace Agreements in 1996, the total enrolment in the education system has grown by 74%. This growth in enrolment resulted in a significant increase in the net rates of schooling in all education levels. It is important to highlight the growth observed in the net rates of schooling of the two first education levels (pre-school and primary), where there was an increase of 18.2 and 21.7 points respectively between 1996 and 2006.

Critics on Competence Based Education

Competence-based in professional education is not undisputed. One of the dangers that critics often mention is the minor role of disciplinary knowledge, together with a haphazard taking in of pieces of disciplinary knowledge by students. How competency-based training locks the working class out of powerful knowledge she has used a modified Bernsteinian analysis to explore the way in which competency-based training (CBT) in vocational education and training (VET) in Australia excludes the working class and other disadvantaged social groups from access to powerful knowledge, because it denies students access to structuring principles of disciplinary knowledge.

Bernstein's insights allow us to see that CBT fundamentally transforms the nature of knowledge by relocating it from the vertical discourse in which it is classified and relocating it closer (if not completely) towards horizontal discourse, this changes the nature of knowledge and the process through which it is acquired. Rather than integration of meanings we have integration within a context. Consequently, students are provided with access to specific content, and not the systems of meaning in disciplinary knowledge. However, the content of a discipline is the product of the discipline (and each discipline has lots of products).

Critical realism on the other hand, extends these Bernsteinian insights, because of focus on the specific content of disciplines denies students access to the collective representations that provide access into the stratified and emergent nature of the real. This absence arises from the broader ontology and epistemology of CBT, which is a form of empirical realism. By focusing on the knowledge and skills that

people need to 'do' their job, and by insisting that assessment be directly aligned with these outcomes, CBT collapses the domain of the real (of generative mechanisms) and the domain of the actual (where events take place) into the domain of the empirical (that which is observable). It does so because CBT assumes that outcomes can be achieved by directly teaching to the outcomes, and in doing so ignores the complexity that is needed to create capacity, and this goes beyond the level of experience in the contextual and situated.

Towards competence based curriculum: the experience of Rwanda

Rwanda is a landlocked country situated in central Africa. Also known as 'the land of a thousand hills', Rwanda has five volcanoes, twenty-three lakes and numerous rivers, some forming the source of the River Nile. The country lies 75 miles south of the equator in the Tropic of Capricorn, 880 miles 'as the crow flies' west of the Indian Ocean and 1,250 miles east of the Atlantic Ocean - literally in the heart of Africa. Rwanda is bordered by Uganda to the north, Tanzania to the east, Burundi to the south and the democratic republic of Congo to the west. The population of Rwanda is approx. 12 million with the land area of 26,338 square Kilometers.

After the 1994 genocide, the education sector, as well as other sectors of national life, passed through an emergency situation during which the main objective was to reshape and try to restart the education system which had broken down. It was in this context that the 1998 Sector Policy was adopted. That policy mainly focused on how to bring a solution to the real exigencies of the prevailing situation, in order to achieve a significant change in the education system after the terrible events that shattered the country in 1994.

The Government of Rwanda is committed to investing in the development of human resources in order to meet the major objective of Vision 2020 which is to create a knowledge-based and technology-led economy. Comprehensive human resources development is considered to be one of the necessary pillars to reach the status of a middle income country (US\$220 Gross Domestic Product-GDP/capita in 2003 to US\$900 GDP/capita) by 2020 (Rwanda vision 2020, 2004).

Rwanda's economy is characterized by a serious lack of qualified people in the workforce, particularly in the technical sectors. The goal of education and TVET is therefore to fight ignorance and illiteracy so as to produce competent human resources for economic and social development. To address the critical shortage of qualified technical and vocational manpower in the labour market, there is a need to link TVET policy with employment and other sectors'

development policies. Being a landlocked country, Rwanda has a shortage of natural resources therefore human resources is the only factor to rely on. Therefore, Rwanda has no other option but to develop its technically oriented human resources (Rwanda Education Sector Policy Strategic Plan, 2006-2010).

Law n° 03/2009 of 27/03/2009 establishing the Workforce Development Authority (WDA) and determining its missions, organization and functioning

The main mission of WDA shall be to implement the national policy guidelines for improving the practical skills of Rwandan residents for their employability and competitiveness on the labour market through an appropriate technical and vocational education and training system.

WDA shall be particularly responsible for the following:

- To coordinate activities related to technical, vocational and practical education and training in Rwanda;
- To develop curricula and standards for technical, vocational and practical education and training in Rwanda;
- To carry out inspections to ensure that technical, vocational and practical education and training schools comply with applicable standards;
- To train teachers engaged in technical, vocational and practical education and training and monitor their teaching methods;
- To train vocational and technical workers in their respective jobs to upgrade their knowledge and practical skills;
- To determine technical and vocational education and training levels and related certificates;
- To sensitize facilitate and advise investors with regard to investing in technical and vocational education and training in Rwanda;
- To promote employment through entrepreneurship development in collaboration with relevant organs;
- To set up an appropriate system for preparation and conduct of technical, vocational and practical education and training examinations, certification and accreditation of technical, vocational and
- Practical education and training centers meeting requirements;
- To collaborate with regional or international institutions entrusted with the same mission (Official Gazette n° Special of 15/11/201)

TVET

TVET is concerned with the acquisition of knowledge and skills for the world of work. In the past

various terms have been used to describe elements of the field that are now conceived as comprising TVET. The Second International Congress on Technical and Vocational Education held in Seoul in 1999 decided that the best, most comprehensive term to use is Technical and Vocational Education and Training [16]. Echoing on this same programme, the State Minister in charge of Primary and Secondary Education Dr Mathias Harebamungu on Friday June 15, 2012 officially launched the Rwanda TVET Qualification Framework (RTQF) and 21 competence-based curricula, all developed by WDA and its development partners. In his keynote address Dr. Harebamungu said that the launch of the RTQF is milestone as Rwanda gets international validation standards which will help in horizontal and vertical labour mobility in TVET training. He also revealed that as the government looks forward to enrolling 60% in technical schools by 2017, the system needs to be strengthened through better quality training.

RTQF will help in linking together the qualifications in the quality-assured national system of educational recognition that promotes lifelong learning. The state minister further said that in promoting TVET, each province will have an IPRC and at least 3 technical secondary schools in each district. Competency based curricula developed by WDA and development partners like NUFFIC and BTC focus on priority sectors as sited by the Rwandan government which include ICT, Agriculture, renewable energy, Hospitality and tourism and construction. The Director General of WDA Jerome Gasana noted the RTQF will anchor the transformation of TVET delivery in Rwanda as graduates will have capacity to offer industry readily usable skills, generate technical solutions and applications to the identified needs of industry and the nation at large. He appreciated joint efforts by WDA staff and development partners who have supported the growth of the RTQF from an idea three years ago.

Vocational training and Technical Education

Vocational training is a system which aims at providing recipients with the necessary knowledge and skills to exercise a profession in order to be integrated in the labour market. Vocational training includes initial Vocational Training and continuing Vocational Training [16]. Technical Education is a structured system aimed at providing recipients with the necessary knowledge and skills to continue their studies at tertiary education level or to exercise a profession in order to be integrated into the labour market. Technical Education, on the other hand puts more emphasis on theoretical education (*ibid*).

The Vision 2020 Umurenge, aims to help the country achieve the growth rates of 8% to eradicate poverty and make Rwanda a middle income country by the year 2020 and emphasizes skills development as an essential pre-condition for sustainable economic growth and a comprehensive human resources development is

considered to be necessary for achieving middle income status while the Rwanda's Economic Development and Poverty Reduction Strategy II (EDPRS II) aims to generate sustained economic growth rate of at least 11.5% per annum over the duration of the EDPRS, and to reduce the rate of poverty below 30% of the population by 2017/18 .

According to 2010 National Skills Audit, Rwanda ranked 167th out of 186 countries in the Human Development Index, Rwanda skills base is at the bottom comprising only 7.7% technicians in the entire workforce Skills Gap, 60% skills deficit for the private sector and 40% skills deficit for the public sector. Therefore, TVET reform is aimed at developing skills for a knowledge-based society if Rwanda is to achieve the structural economic change implied in the targets of Vision 2020 and also stipulate that major emphasis will be placed on vocational and technical training fields, TVET Reform/Update Policy (2013-2017)

TVET public awareness campaigns have been strongly emphasized to change the mindset of the Rwanda citizenry where many had a prior belief that joining vocational training was a sure spell to poverty. The Ministry of Education targets increasing enrolment into TVET from 38% to 60% by 2017. (Workforce Development Authority year book 2013/2014). WDA has developed various activities whose main intention is raising awareness of its key activities. A case in point is through participating the TVET Expo, which is an annual event.

The establishment of Workforce Development Authority (WDA) in the last six years by the Government of Rwanda has been a strategic response to the skills development challenges facing the country across all sectors of the economy. Since its inception in 2009, WDA has vividly worked towards realizing its mandate of being the leading driving force of development in Rwanda through the provision of Technical Vocational and Education Training (TVET). Through WDA, the local personnel are provided with hands-on skills for competitiveness and employability at local, regional and international labour market.

This study has been conducted at IPRC South and Mpanda Vocational Training Center.

IPRC (Integrated Polytechnic Regional Center) SOUTH is a legally established Government institution mandated to empower Rwandan People with right technical skills for sustainable economic and social development. It acts as WDA (Workforce Development Authority) base for implementation of Technical and Vocational Education and Training (TVET), programs, supervision and coordination of all TVET institutions in the southern Province.

Therefore the main objectives of IPRC-South include:

- To implement TVET training courses focusing on skills for the unskilled and unemployed population as well as students who have completed nine years of basic education;
- To supervise and coordinate with private education providers, NGO-run technical and vocational schools and industry-run training centers on the delivery of technical and vocational training in Southern Province;
- To supervise and coordinate with all public TVET institutions on the delivery of technical and vocational training in Southern Province;
- To provide Competent-Based Training (CBT) curriculum developed by WDA HQ to all TVET institutions centers delivering training in southern Province;
- To provide quality assurance on all TVET training delivery by ensuring that all curricula are CBT, the integrity of examinations is protected and that all TVET lecturers and instructors are adequately trained;
- To organize technical train-the-trainer programs for all TVET institutions and centers located in Southern Province
- To organize pedagogic train-the-trainer programs for all TVET institutions and centers located in Southern Province.

In 2008, the Government of Rwanda (GoR) under the Ministry of Education started the process of integrating technical education into the national curriculum. This led to the establishment of the first IPRC (IPRC Kigali) which kicked off the beginning of a system in TVET that provides professional technical education up to the level of diploma (A1). IPRC Kigali currently exists among four other Integrated Polytechnic Regional Centers in the country; IPRC-North (in Musanze district), IPRC-South (Huye district), IPRC-West (Karongi district) and IPRC-East (Ngoma district). All IPRCs act as WDA base for supervision, implementation and coordination of TVET activities in their respective locations.

This is the former ESO (Ecole des Sous-Officiers) which is now the head quarter of IPRC-South/ Huye Campus. Prior to a massive development of the campus planned in the near future with help of concessional loan from Chinese government, some refurbishment works were carried out to allow the center to perform its new functions of a TVET facility. Presently it offers diploma and vocational courses in Construction and Hospitality sectors. Rehabilitation works consisted of renovating and remodeling of workshops (carpentry, masonry, plumbing, welding and hospitality), classrooms, office building and staff quarters as well as equipping the above mentioned facility.

Mpanda Vocational Training Center

Mpanda Vocational Training Center is located in Byimana sector (Ruhango district)/ Southern province. The school has a student population of about 480 and is also considered one of the best training centers in carpentry. Other trades offered are welding, construction, catering services, electrical installation and tailoring. The center was awarded Rwf 53 million to increase capacity of training advanced carpentry. According to the Director of Mpanda VTC Gilbert Ndangamira, the prices of products made by students are a clear indication that graduates are assured of better standards of living. Among them, a sofa set costs between Rwf 400,000 and Rwf 650,000 while a wooden door costs between Rwf 80,000 and Rwf 240,000. The role played by Mpanda VTC in improving the lives of the local community is also worth noting. According to Innocent Bizimana a local Official from Byimana sector, students have been engaged in the construction of houses for vulnerable families and classrooms used in both the 9 and 12 year Basic Education programs.

Research Methodology

The study used descriptive research approach. Research questions and hypotheses guided the study; questionnaire was the major instrument from which information was obtained. The research was conducted in Rwanda, Southern province where the CBT program has been in practice for over three years. The research used a total population of 140 CBT candidates with an acceptable sample of 36% respondents. In order to obtain the sample size (n) of the target population, the researchers employed random sampling procedures making appointments through telephone calls. A total number of 56 candidates were obtained and appointments were made for them to answer questionnaires.

Research questions

The study was set out to answer three questions which acted as a roadmap to guide the research:

1. What opinions do candidates have towards CBT program in terms of attitudes, competence, accessibility in the market, and future prospects
2. What is the level of candidates' competence in the market through CBT program categorized by gender and experience in the field?
3. What is the level of candidates' competence in the market through CBT program categorized by gender and experience in the field?

Research Hypothesis

We established four null-hypotheses to test if there were any significant differences among different variables in the study; hence, the following null-hypotheses were proposed.

There is no significant difference in candidates' competence categorized according to gender

There is no significant difference in candidates' competence categorized according to experience in the field.

There is no significant difference in future prospects of CBT program categorized according to gender

There is no significant difference in future prospects of CBT program categorized according to age.

Questionnaires

Four-interval scaled items appeared in the questionnaires using the improved Likert scale at 4-points in the following order:

1. Strongly disagree
2. Disagree
3. Agree
4. Strongly Agree.

The researchers coded the information and quantified it into descriptive units using the Statistical Package for Social Sciences (SPSS).

Validity and Reliability of instruments

To obtain content-related evidence of validity, the researcher, through his research experiences and their research supervisors enriched the content and framed the questionnaires to suit the objectives of the study. For reliability's sake, the researcher employed Cronbach's alpha to determine the internal- consistency of the questionnaire items. Candidates who were not involved in the questionnaires were piloted to test reliability of the study. The analysis was done using Statistical Package for Social Sciences (version 16), and a Cronbach's alpha coefficient of (.723) was established signifying that the results obtained were reliable.

Statistical treatment of data

The information collected from the field through the questionnaire was analyzed using the Statistical Package for Social Sciences (version 16). Both descriptive and inferential statistics were employed in analyzing data. Descriptive statistics was used to analyze demographic information of respondents while t-test and Analysis of Variance (ANOVA) were used to analyze research questions that sought to determine differences among various variables in the study.

Discussion of findings

The study was guided by three questions which were designed to test levels of understanding and significant differences of variables in terms of attitude, competence, and accessibility to the market, and future prospects of candidates graduated from CBT curriculum. Mean score of respondents were ranged and interpreted as strongly disagree (1.0 -1.49), Disagree

(1.50-2.49), Agree (2.50-3.49) and strongly agree (3.50-4.00).

1. What opinions do candidates have towards CBT program in terms of attitudes, competence accessibility in the market and future prospects?

Defining general opinions of candidates about CBT program in Rwanda, the following results as indicated in table1 were observed. General attitude, competence

and future prospects mean scores were found to be (3.4357, 3.4357 and 3.4554 respectively) under the agreement zone while accessibility in the market was rated at 3.6464 under the strongly agreement zone. These results may give the impression that even if candidates are easily accessing the internal market, they have little doubt whether the knowledge and skills they have acquired are competent enough to guarantee them with future prospects such as further studies etc.

Table 1. Descriptive Statistics for candidates’ opinions about CBT program in terms of attitude, competence, accessibility and future prospects

	N	Minimum	Maximum	Mean	Std. Deviation
candidates' general attitude	56	2.60	4.00	3.4357	.30056
candidates' competence	56	2.60	4.00	3.4357	.30056
candidates' accessibility in the market	56	2.80	4.00	3.6464	.32134
candidates' future prospects	56	2.75	4.00	3.4554	.34081
Valid N (listwise)	56				

2. What is the level of candidates’ competence in the market through CBT program categorized by gender and experience in the field?

This question intended to find out whether gender, and experience in the field play a significant difference in applying CBT program in the market. Hence, throws light in testing the null-hypotheses as follows:

- (i) *There is no significant difference in candidates’ competence categorized according to gender.*

To obtain results from this inquiry, an independent sample T-test was run to establish the fact on the ground. Group statistics mean score for male (3.51) and female (3.23) in table 2 indicate that male candidates are more competent than their counterpart female. Results in table 3 however, indicated further that the sig was found to be .008 which is less than .05 (alpha). Therefore, in this case we reject the null-hypothesis. Thus, male candidates appear to be more competent in the market as compared to female.

Table2. Group Statistics for candidates’ competence categorized by gender

	what is your gender	N	Mean	Std. Deviation	Std. Error Mean
candidates' competence	1.00 male	40	3.5150	.24343	.03849
	2.00 female	16	3.2375	.34424	.08606

Table 3. Independent Samples T-test for candidates’ competence categorized by gender

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
candidates' competence	Equal variances assumed	4.468	.039	3.409	54	.001	.27750	.08139	.11432	.44068
	Equal variances not assumed			2.944	21.273	.008	.27750	.09427	.08160	.47340

(ii) *There is no significant difference in candidates' competence categorized according to experience in the field.*

To obtain this information the Analysis of Variance (ANOVA) was run to establish the inquiry. The results

found in table 4 where the sig was found to be .006 which is less than the alpha, have confirmed that experience of candidates in the field plays a significant difference in competence. That means the longer the duration one spends practicing in the field becomes more competent in doing work.

Table 4. ANOVA for candidate's competence categorized according to experience in the field.

candidates' competence					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.042	3	.347	4.602	.006
Within Groups	3.926	52	.076		
Total	4.969	55			

3. What hopes for the future do candidates have in CBT program categorized according to gender and age?

The aim of this question was to investigate the views of candidates about how CBT program have in store for them in the future and therefore two null hypotheses were established to test the inquiry in terms of their gender and age.

(i) *There is no significant difference in future prospects of CBT program categorized according to gender*

To obtain the facts of this scenario an independent Sample T-test was employed to help achieve the intended results. Table 5 indicates the mean score for female (3.23) as being less confidence about CBT program in the future while their counterparts' males (3.53) strongly agree to face the future through knowledge and skills they have acquired in this program. Results from table 6 conclude by rejecting the null hypothesis with a p-value of .003 which is less than .05. Therefore, the future for CBT program has received different views from the two observed groups.

Table 5. Group Statistics for candidates future prospects categorized according to gender

	what is your gender	N	Mean	Std. Deviation	Std. Error Mean
candidates' future prospect	1.00 male	40	3.5375	.29716	.04698
	2.00 female	16	3.2500	.36515	.09129

Table 6. Independent Samples T-test for candidates' future prospects categorized according to gender

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
candidates' future prospect	Equal variances assumed	2.116	.152	3.061	54	.003	.28750	.09392	.09920	.47580
	Equal variances not assumed			2.800	23.369	.010	.28750	.10267	.07530	.49970

(ii) *There is no significant difference in future prospects of CBT program categorized according to age.*

We used one-way ANOVA to validate results of this hypothesis. Table 7 indicates the sig to be .516

which is greater than the critical value hence accepting the null-hypothesis that hope for the future of CBT program cuts across all candidates irrespective of their ages. In other words, every individual who participated in this study has equal concern about what CBT program can sustain them in the future.

Table 7. ANOVA for future prospects of CBT program categorized according to age

candidates' future prospect					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.158	2	.079	.670	.516
Within Groups	6.231	53	.118		
Total	6.388	55			

Conclusion and Recommendations

The competence-based approach is probably one of the most relevant issues discussed concerning curricular reforms. As stated above, this approach has some controversial edges and consequently, it can be visualized from different theoretical perspectives. Certainly, the discussion around this approach is a solid starting point to rethink educational systems in different regions of the world. We indeed find it necessary to resort to innovative proposals so as to address the universal challenge of attaining a high-quality equitable education. By this document, we wish to show how well-diverse competence-based experiences can provide us with significant lessons to take into consideration, mainly based on the progress made and the difficulties encountered. This piece is particularly intended to contribute to orientate African countries towards positive changes with respect to curricular reforms and help them design and implement sustainable and effective processes of democratization of the learning opportunities.

In overall terms, we can assert that competence-based approaches have contributed to enlarging the aims and objectives of education systems and to democratizing learning opportunities as the case of Latin America.

Finally, we recommend a further investigation to be conducted across the country to get more insight of the larger picture of what CBT program has affected the lives of youths in other parts of Rwanda. A study on why females have less confidence in the future of CBT program as observed in this study needs to be investigated too.

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