An Evaluation of Botswana Technical Colleges' Curriculum and Its Enhancement of Graduate Employability

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This study analysed technical colleges' curricula in Botswana. Specifically it investigated who are the designers of these curricula between the Ministry of Education, the tutors, and the industry. This was made in respect of graduate employability enhancement. The study adopted predominantly, a qualitative approach to research. Interview guides and semi-structured questions were used to gather data. The findings revealed an existing mismatch between what colleges produce (graduates) and what mastery skills industries need. A tripartite involvement in the area of curriculum design by the colleges, the Ministry of Education and the industry was therefore important as each partner can benefit from the strengths of each other in a symbiotic relationship that can result in relevant skills acquisition by college graduates. The involvement of the industry is curriculum design is important because the industry has specific knowledge on how colleges can incorporate certain skills in their programmes that can enhance graduate employability. Also, issues of currency and relevance of the curricula justify the inclusion of the industry in technical colleges' curricula design. The study further revealed that even if the curricula taught were relevant to the industry, colleges suffer shortages of equipment which forces tutors to resort to group demonstration and lecturing; methods which limit skills development.

BACKGROUND

The general aim of all the technical colleges, though they may teach different programmes, is the same. It is summed up by that contained in the 2014 prospectus of Gaborone Technical College as "to provide students with the opportunity to acquire specific job related skills at level which would allow them progress into industry in their chosen field", p. 6. The programmes are "to develop problem-solving skills of candidates by promoting a systematic and imaginative approach. The problem-solving approach is promoted across all units at both levels", p. 7.

Botswana, a developing economy, needs citizen skills that can grow and sustain its economic activities particularly in the technical and industrial areas. Currently such skills are in short supply hence a heavy reliance on imported skills in these areas. Coupled with this, the prospects of employment the world over have and continue to dwindle. "Botswana's unemployment rate currently hovers above 19 percent, a rate that is regarded as high compared to other countries of the same economic status as the mineral-rich liberal democracy" (Jefferies in Ramokopelwa, 2015). Unlike in the past, nowadays a university/college degree or diploma is no longer enough to secure one a job (Hawkins, 1999). Among

other reasons, this can be attributed to two main reasons as follows: firstly, the declining economies of many countries in both the public and private sectors. Secondly, a mismatch between the skills imparted to students at educational institutions (tertiary institutions in this context) and the skills required by the job market. Teaching methods vary according to subjects. Teaching techniques that are good for one subject or for one group of students may not in another (Clark & Starr, 1967) and this applies even for tertiary institutions. Some teaching techniques require the imparting of knowledge skills to learners; some emphasize learners' acquisition of practical skills while others combine and balance both knowledge acquisition and practical skills approaches to teaching. Courses on computer studies would, for example, adopt the latter approach. This study targeted government technical colleges in Botswana whose curricular ought to be production oriented.

The economic situation in relation to graduate unemployment in Botswana is not different. The economy has significantly slowed down to the extent that many graduates find it difficult to secure jobs both in the public and private sectors. As such, competition for jobs has become very stiff, and it is those who have the requisite qualifications and needed skills for the job who get employed (Idogho, 2006).The current unemployment rate in Botswana stands at about 17% (Ntshole, 2013).

STATEMENT OF THE PROBLEM

In an increasingly integrated global economy, the demands of the industry are constantly changing, therefore graduates need to possess a set of skills that enables them to flexibly adapt to these changes. The mismatch between what the training institutions produce and what the job market demands is a problem to the employment prospects of new graduates (Kanyongo, 2005). This state of affairs poses a challenge to tertiary institutions, most of which train for the job market; to "produce graduates who are fully equipped to achieve the highest personal and professional standards" www.employability.ed.ac.uk/What/ p.1. The implication of this challenge is not only in the nature of the curriculum, that is, its relevance to the economic needs and the skills it imparts to the graduates that prospective employers require, but in the need to maintain strong links with industry to ensure content of all programmes is relevant to the world of work. This is the way to go in this technological era of globalization. A curriculum designed by the Ministry of Education alone without the input of the industry and the colleges cannot guarantee employable skills acquisition to the graduate. A tripartite collaboration between the three parties is imperative. While curriculum relevance is one issue, the way it is delivered, that is, the didactics, is another issue that needs to be investigated in this study.

AIM

The aim of this study was to investigate from technical colleges and the industry, the relevance and impact of the curricula taught at colleges to the industry. The answer to this investigation was to be found out from participants' responses to the research questions that follow.

RESEARCH QUESTIONS

a. *How is 'employability' understood by the respondents?*
b. *Who designs the programme curriculum in technical colleges?*
c. *How often is the curriculum reviewed?*
d. *What teaching methods are used in technical colleges?*
e. *What is the relevance and impact of these teaching methods used?*
f. *Do students have an attachment to industry during their studies?*
g. *What skills are considered when graduates apply for employment?*
h. *How can relevant skills development among students be improved?*

JUSTIFICATION OF THE STUDY AND SIGNIFICANCE OF THE STUDY

Technical colleges produce graduates for the world of work. Industries and organizations on the other hand rely and tap on technical and technological skills and competencies from technical and vocational institutions' graduates. To this end, it becomes imperative that the recipient of the graduate employee should have an input in the type of education training institutions offer. The exclusion of prospective employers not only has cost implications to the sponsor (as a waste in offering education that is not relevant) but to the employer who will need to re-train the employee. In this respect, cooperation and collaboration between curriculum designers and would be employers in curriculum design is of paramount importance. The outcomes of this research should encourage technical colleges to begin to self-reflect on what they are not doing right, or what they are doing right, that does not enhance or enhances graduate employability respectively. The study comes at a time when tertiary education in Botswana is growing exponential and quantitatively and difficult for graduates to have a competitive edge when seeking employment particularly because of the lean job market.

DELIMITATION

There are eight technical colleges in Botswana. Given that the investigators are full-time employees elsewhere, they decided to conduct the study on 62.5% of the colleges. The outcomes of the study would be represented since colleges teach a similar curriculum accredited by the same body.

LIMITATIONS

At the start of the study, there were no limitations envisaged. Limitations only surfaced at the time of doing the research:
   a. Difficulty in accessing some of the identified employers, for example the mines.
   b. Bureaucracy at the technical colleges
   c. Failure by some respondents to return the questionnaires. This affected the rate of return to some considerable extent.

CONCEPTUAL FRAMEWORK

This study is located within two concepts of employability and pedagogy. Employability, a term fairly new in everyday usage, is examined in the context of relevant skills acquisition as opposed to defining the term as simply meaning one becoming employed. Employability is not the same as getting a graduate job, rather it implies something about the capacity of a graduate to function in a job and be able to move between jobs, thus remaining employable throughout their life (Oliveira & Guimarães, 2010). Pegg, Waldock, Hardy-Isaac and Lawton (2012), Yorke and Knight (2006) define graduate employability as the possession of skills, knowledge and personal attributes that make a graduate more likely to gain employment and be successful in the chosen occupations, which benefits themselves, the workforce , the community and the economy. According to RMIT University Report (2014) and Lowden, Hall, Elliot and Lewin (2011), employability can be seen as the range of competencies, including technical competencies that a person develops through education, training, work experience and interests. Bloom and Kitagawa (1999) view employability skills as those generic skills, attitudes and behaviours that employers look for when they hire new employees, attributes which can be developed. The personal attributes referred to relate to such things as relations with others, good communication, work ethics, honesty, conduct, reliability can enhance the graduate's employability (Hawkins, 1999, Precession Consultancy 2007 & www.employability.ed.ac.uk/Why). Employability is therefore different from just being employed. For example students who all get employed upon graduation are not necessarily employable. At independence, in Botswana, all junior certificate holders were employed upon completion of their

programme and this did not mean that they were employable as per the definition of employability. Employability has connotations of quality as opposed to mass employment.

Pedagogy refers to the teaching methods and techniques used in the teaching and learning processes. Although some of these are better than others, no one of them can be regarded as the best. Their effectiveness is dependent on the particular subject. In fact, techniques that are effective for one subject or for one group of students may be quite unsatisfactory for another (Clark & Starr, 1987). At technical colleges, while the teaching of theory is important, the practical aspect that needs the teaching of mastery of skills is equally important to reinforce theory. Mastery of skills can only be possible provided there are adequate, functional and appropriate machines.

LITERATURE REVIEW

The literature review was discussed under four themes:

The Role of Technical Education to the Economy

Technical colleges play an important role as centre grounds for the economic development of country. Generally, in Botswana, there is a mismatch between the type of students produced and the expectations of the industry in terms of skills acquisition (Kanyongo, 2005). Vocational training looked down upon by students, parents, employers, policy makers (McGrath, 2005). Instead, investment is on sedentary workers. The root problem lies in the colonial education system which was considered the root to modernity (McGrath, 2005). In Botswana, there is general held belief that students who study courses generally called 'academic' reap substantial financial returns from their education than those in vocational studies (Kanyongo, 2005), that is white collar jobs are less strenuous and yet highly paying jobs. There is need in Botswana for educated multi-skilled technicians. This can be achieved by the technical vocational education curriculum to the industries or to the appropriate employer's needs (UNESCO/ILO, 2010). Technical vocational education can reduce employment by the skilled generating self-employment and employing others (In Botswana graduates – those with academic subjects, are walking the streets without jobs).

Technical education suggests hands-on skills. It is primarily work-centred where the focus is on enabling students to become operation by acquiring relevant skills and to be analytic in approach to problem solving. Technical education is identified as an important tool in addressing two main challenges namely; youth unemployment, skills geared towards projected economic opportunities (Crouch, Finegold & Sako, 1999). In German, technical education curriculum is determined by industrial sectors. There is no admission into German vocational training centres without a job offer (Dolgow, 2012). Educationists design and develop the curricula but the labour market has its own way of appraising qualification (Rojewski & Park, 2005). In Zimbabwe, for one to enrol for a one or more years programme such as building construction, auto mechanic etc. at a technical vocational college, one should have done at least one technical subject at advanced level (Ministry of Higher Education and Tertiary Education Science and Teaching, 2007).

Employability as a Curriculum Embodiment

Periodic review of technical courses curricula is vital for maintaining the quality and currency of programmes (Carew & Cooper, 2006). Currency means that the programme has to keep pace with the needs of the industry, the rapid changes of technology; shifting social expectations; shifts in legislation and regulation of different fields; the changing expectations of the regulators and participants in higher education (students, academics, government and accrediting bodies). The other element of currency is the need for technical college curriculum to remain up-to-date with emerging social and political pressures which increasingly influence the daily work of graduates (Carew & Cooper, 2006). Mitchell, Carew, and Clift (2004), suggest that, the social environment within which graduates work holds them accountable through a range of codes, legislation and regulation such as professional codes and standards, emissions

standards, occupational health and safety and suitability strategies. Therefore, today's curriculum should seek to build such complementary skills.

Biggs (2003), observes other factors that underline the need for technical colleges to undertake periodic curriculum review as the shifting student demographics, changes in preparedness and motivation of incoming students; greater or lesser numbers of mature-age students with industry experience; changes in representation of international and overseas students, the substantial proportion of technical college graduates now taking jobs in other fields like teaching after graduation, greater attention to quality assurance and accountability within the higher education sector; and the needs of a globalised workforce for international benchmarking or parity to aid recognition of courses and qualifications across national borders. Further, Biggs (2003) suggests that the philosophical shift toward a student-centred teaching is another major driver of curriculum review. This shift in attention to outputs means accrediting bodies and government regulators are seeking evidence that the approach to teaching utilised has resulted in demonstrable student learning. It is no longer sufficient to merely report on the content to which students have been exposed with no tangible evidence of learning.

There has been growing attention to the importance of making curricula more responsive to the needs of industry and to be more focused on promoting the employability of graduates. Skills should go beyond the direct requirements of labour so that there is a skilled pool from which to draw the future needs (Republic of Botswana, 1997, NDP 8). Smith and Calvert (2008) observed that, employers are not prepared to fund training to help people develop the skills that they see as a basic requirement for employment. The provision of such skills, they argue, is the responsibility of the tertiary education training institutions to embed them in the higher education curriculum in order to prepare the graduates for the industry. Tertiary education institutions should have employability skills integrated into the curriculum they provide (Yorke, 2004). He suggests that, tertiary education institutions can use the curriculum to ensure graduate employability through embedding employability in the core curriculum, through work-based or work-related learning incorporated as one or more components within the curriculum, through designing and delivering employability-related module(s) within the curriculum or through work-based or work-related learning parallel with the curriculum. The University of Aberdeen in its 2011/15 Strategic Plan presents a framework for developing employability skills with four facets, which are: curriculum planning, employer engagement, core curriculum activities and career planning (Fantom & Perkins, 2011).

Employers are prepared to provide funds to help training institutions develop more sophisticated job-related skills which strengthen the relationship between higher education and the economy which for a long time has been a topic of debate in many countries (Yorke & Knight, 2006). Engagement of the employers in curriculum development is an essential component of the employability framework. Institutions ought to engage employers by forging strategic partnerships with local, national and international employers through documented coherent approaches to employer engagement (Fantom & Perkins, 2011).

Further, whilst it is essential that the people who deliver the curriculum (lecturers /instructors) have a major contribution in how, why and what changes should be made, Garvin and Roberto (2001) suggest that, fairness can be achieved through ongoing participation by all those who have a stake in the outcomes of the decision. Employers and professional bodies have an interest that graduates be work-ready and ethical, respectively. Industry partners influence accreditation processes and criteria through engagement with the professional bodies. Technical college students benefit from industry placement or internship, therefore, the role of industry in commenting on technical college curriculum is important in view of industry needs and student capability on joining the workforce.

Pedagogy as Enhancing Skills Production

Graduate employability can also be enhanced through adoption of relevant pedagogical approaches by tertiary education institutions. According to Yorke (2004) various pedagogical approaches for effective employability development can be encompassed in the core curricular activities. Yorke and

Knight (2006); suggest that the following pedagogical approaches may be used by institutions to develop employability skills and practices:

- Encouraging students to undertake independent, active learning and engagement with tasks;
- Ensuring that programme learning outcomes and assessment practices refer to employability skills;
- Core curriculum activities should reflect employment practices including problem-based learning and collaborative working in order to build team working skills;
- Emphasizing on employability-related skills development throughout the curriculum which students should be regularly reminded of;
- Inclusion of reflective formative, peer and self-assessment in the core curriculum activities;
- Reflection on both curricular and non-curricular activities as important parts of student learning and
- Focus on preparing students for building careers including recognizing and articulating their abilities effectively.

Effective teaching and learning takes place when the teacher or trainer knows which method or technique to use in a particular situation to meet specific goals. Teaching methods are the ways and means which a teacher or trainer adopts to guide the students through learning activities in order to accomplish the desired goal (Faraday, Overton & Cooper, 2011). There is need for vocational and technical educators to utilise diverse teaching methods in order to motivate the learners and achieve the desired results. Teaching methods used in tertiary education include some discussed below.

Group investigation is a teaching method through which learners are put in charge of the learning process. It allows them to investigate a problem brought to them by the instructor. According to Abordo and Gaikwad, (2005) vocational and technical education teachers can use group investigations by giving learners in a group a problem to solve; they discuss ways to solve it; they plan how to carry out the investigation in a group and assign roles; they work together and independently; they analyse progress and report findings, and the process is evaluated. This is similar to collaborative learning where learners are given opportunities to solve problems, discuss, negotiate, and think with their peers. Collaborative learning opportunities ensure that learners practice and apply their learning while interacting with their peers (Allen & Davies, 2009).

Another method that can be used is role playing which enables learners to understand an issue from different points of view by acting it out, either taking different roles or observing (Faraday, et al., 2011). It allows learners to look at a situation through someone else's eyes, to take a different perspective and empathise. Role play offers an effective way of exploring feelings, attitudes, values and solving problems. It actively involves learners' and draws on their experiences.

Tertiary education teachers can also use Action Learning method through which theoretic concepts are put to test by practice in a relevant environment. Action learning builds a combination of knowledge, practical and social skills, and positive attitudes, as well as the ability to think and act independently, creatively and responsibly. Action learning provides a tried and true method of accelerating learning that enables learners to handle difficult situations more effectively. It increases the chances for employability of the graduates (Faraday, et al., 2011).

Direct teaching is another method available, it is a structured approach involving a high level of interaction between the teacher and the learner, the teacher directly communicates with the whole class, although it might be undertaken with an individual or small group of learners (Petty, 2009). This model involves direct input from the teacher together with a strategy of modelling or demonstration and clear instructions to the learners. The teacher then checks the learners' skills or understanding, provides guided practice and ultimately the learners undertake independent practice (Petty, 2009).

For learning new skills which are repetitive in nature, programmed learning can be used. Programmed learning is a self-paced, self-administered programme (computer based in some cases) presented in a logical sequence and with much repetition of concepts or skills. The conventional method of teaching

which convey a formal, abstract process, are often far removed from the specificities of real world practice. Such methods are commonly used in other tertiary institutions but may not be effective for the teaching of vocational and technical subjects.

METHODOLOGY

Research Design

A research design outlines how and where an investigation will take place and typically describes how data are to be collected, with what instruments, how these will be used and describes how data will be analysed (Ary, Jacobs & Sorensen, 2010; Creswell, Ebersohn, Elloff, Ferreira, Ivankova, Jansen, Nieuwenhuis, Pietersen, Clark & Westhuizen, 2007). It is a detailed examination of something, for example, an organization or a specific event. This study used a case study design. Using a case study one gathers information to inform a specific practice (Creswell, et al., 2007) by reviewing documents, interviewing participants and making observations (Ary, *et al.*,2010; Wiersma & Jurs, 2009; Bogdan & Biklen, 2003). Further, a case study observes characteristics of something in order to probe deeply and to analyse intensively the factors that influence an organization or a unit to be what it is with a view to establish generalization about the wider population to which the organization or unit belongs (Cohen & Marion, 1989). There are several approaches that can be used to implement a research design. The most commonly used are the quantitative, qualitative and mixed methods. In this study, the mixed method which combines and draws the strength of the qualitative and the quantitative approaches to enhance the quality of the research outcomes (Bogdan & Biklen, 2003) was used. However, the qualitative approach dominated the quantitative use.

The Qualitative Method

It is a systematic subjective approach used to describe and give meaning about the life experiences of a people in a particular setup such as an educational institution (Cohen & Marion, 1989). It is applied in natural settings of the participants. This approach to data collection allows participants to express their views, opinions, beliefs, and experiences in a non-threatening, and from their own frame of reference without being restricted by an already arranged short-answer structure (Bogdan & Biklen, 2003; Ary, Jacobs & Sorensen, 2010). Since a case study is less structured, more flexible, and probes deeply factors that influence phenomenon, (Wiersma & Jurs, 2009; Cohen & Marion, 1989), the qualitative method is a more appropriate method to use in this study than the quantitative research method.

The Quantitative Method

The quantitative approach, the positivistic paradigm, mostly deals in manipulating and analysing the relationships between selected variables (Cohen & Marion, 1989). It deals with descriptive statistics which may be percentages, proportions or means (Wiersma & Jurs, 2009; Ary, et al., 2010). The quantitative aspect in this study arose from the use of the closed questionnaire in the form of the Likert scale.

Data Collection Means

The nature of the study, a case study which uses mainly the qualitative approach to research and partly the quantitative method, lends itself to collect data using tools that will provide data that is typical of the nature of the research design. Qualitative approaches to data collection, it was observed, are most suitable for case studies although quantitative approaches can also be applied (Jacobs & Sorensen, 2010). Qualitative approaches are able to interrogate participants deeply to establish the truth about situations. To this end interviews and open-ended questions were the dominant data collecting instruments. The students responded to a 20 question items mainly in the form of semi-structured questions and to a few one response questions. The 22, 21 and 15 questions items for the tutors, heads of programmes and principals respectively, were also dominated by semi-structured questions. Prospective employers responded to semi-structured 15 question items only.

Analysis of Data

The analysis was based on a 96% response rate of the students; 70% of the tutors; 53% of the Heads of Departments; 80% of the principals and 77 % of the prospective employers. The data were analysed descriptively. From the participants' views, salient themes that were related to the objectives of the study emerged and these formed the basis on which the discussion and conclusions were made. Direct quotes and field note excerpts when used illustrate and buttress the outcomes of the study and help the reader understand how conclusions were reached (Ary, et al., 2010). Although this can be viewed as subjective, researchers looking at the relevance, significance, and quality of the data, had flexibility to decide what to include and what to leave out in their report.

Population

Ary, et al. (2010:148), define population "as the larger group of all members of any well-defined class of people or objects about which the generalization is made". In order to pursue the research, specific institutions that are populated by people that will be involved in the study must be identified. There are eight government tertiary institutions (technical colleges) that offer technical education at both the certificate and diploma levels. The population that was involved in the investigation were the students of the technical education tertiary institutions, their tutors, heads of programmes, heads of these institutions and prospective employers of the graduates of these institutions.

Population Sampling

The smaller group of the population that is observed in called a sample (Anderson, Herr, & Nihlen, 1994). Five technical colleges were selected on a probability basis at random from the total number making the study multi-case for comparative reasons (Wiersma & Jurs, 2009), so that the results of the five cases can be compared and contrasted. The technical colleges have similar characteristics. Programmes which are practical skills-oriented were selected such as hair dressing, building construction; auto-trade, metalwork, clothing and design, woodwork and so on. At each college, three programmes of any combination were studied. The institutions studied were; Jwaneng Technical College, Francistown Technical College, Gaborone Technical College, Faculty of Engineering and Technology- University of Botswana, and Palapye Technical College. The colleges currently offer more certificate than diploma programmes. The investigation therefore focussed on both the certificate and diploma programmes. The composition of the study participants were as follows:

A total of 75 students selected on a random basis from each programme (3 programmes per institution); two tutors randomly selected from each programme from each of the five colleges (30); head of programme from each college (15); the institution's principal (5). The sample was purposefully restricted to the final year students and their tutors as they are more likely to provide a wider perspective of the issue under investigation because of their longer experience at the institutions. A total sample population of 125 participants was envisaged from the technical institutions. Five prospective employers of the graduates from the technical colleges; two from government and three from the private institutions were randomly chosen. Altogether, the study targets 130 participants. From this total all participants were to answer a semi-structured questionnaire.

Summary of Sampling

5 x colleges x 5 students per college x 3 programmes per college   = 75 students
5 x colleges x 2 tutors per college x 3 programmes per college   = 30 tutors
5 x colleges x 1 head of departments (HOD) per college x 3 programmes = 15 HODs
5 x colleges x 1 principals per college   = 5 principals
2 x public institutions (employers) x 1 head   = 2 heads
3 x private institutions (employers) x 1 head   = 3 heads
Total number of participants   = 130

Ethical Considerations

The study sought to find out how, what, and why the informants thought about a particular issue. People generally would cooperate and feel free to express themselves provided they have the trust and assurance that the information they volunteer is for the consumption of and confidential to the data collector only and nobody else. Such protection was expressed to them in the letters. Written permission prior to the commencement of the study were sought and obtained from the relevant Ministries and from the heads of the institutions. The reasons and how data was intended to be used was given in the letters of request to conduct the study. A similar letter was made to the participants soliciting their cooperation and that their involvement was optional.

FINDINGS AND DISCUSSION

In this section, the findings of the investigation were presented, analysed, and discussed under the study's research questions. A total of five (5) colleges participated in the study. The focus of the investigation was on nine (9) programmes offered at the different colleges. In some cases, the colleges offered identical programmes. The difference lied in the logistics each college approached the teaching and learning process. Seventy two (72) out of the initially envisaged 75 (96%) students and twenty one (21) out of the initial sample of 30 (70%) tutors participated respectively. A rather small return rate of only 8 out of 15 (53%) heads of programmes and four (4) of the five (5) principals of institutions participated respectively. Heads of employing institutions delegated senior officers to respond to the semi-structured questions.

Participants' Understanding of the Term 'Employability'

This question was directed to all the different groups of participants. Most respondents except a few were able to distinguish between 'being employed' and 'employability'. Although some respondents could not clearly articulate the difference in meaning between 'employability' and 'being employed', nevertheless they understood that the two do not convey the same meaning despite their everyday general loose usage. Respondents understand employability in the same sense as Oliveira and Guimaraes (2010), the Centre for Developing an Evaluating Lifelong Learning (2007), Lowden, *et al.* (2011), Bloom and Kitagawa (1999) and Rwigema and Venter (2004) as candidates' possession of potential ability, skills and competencies that would make them to be employed and retain the employment. Typical definitions of employability were: "The possession of skills and the ability to quickly learn new skills as opposed to just having a job regardless of skills acquisition". "Ability to be employed and the candidate possession of personal attributes/skills and expertise to remain employed over a period of time". "One may be employed but not employable due to lack of personal skills but if an organization has a pool from which to choose, it looks for employable skills". "Employability is the ability or chances that one stands to be employed. Being employed refers to one having job with or without competencies" The students' findings on the nine programmes are reported below according to each academic programme.

Programmes Duration of Offer, Reasons for Enrolment, and Attachment

Technical colleges in Botswana offer an array of programmes at both the certificate and diploma levels. The certificate programmes are dominant in all the colleges. The programmes offered include but not limited to Beauty Therapy; Hairdressing; Refrigeration and Air Conditioning; Electrical and Mechanical Engineering; Building Construction; Advanced Certificate (BTEP); National Craft Certificate (NCC); C & J Certificate and Diploma in Construction. The different colleges do not uniformly offer the same programmes although the same programme can be offered in more than one institution. The duration of the programmes varies according to level and some programmes of the same level vary in duration. Certificate in beauty therapy for example takes four years to complete; certificate in building construction takes only 15 months and the advanced certificate BTEP which was first introduced some 10 years ago is a 15 months programme. The programmes offered and their duration is consistent with what

is offered elsewhere within the region, for example in Zimbabwe and outside the region, for example in German.

All colleges attach their students to industries for practicals. The attachments vary from one month, three months (e.g. building construction), nine months, 15-18 months (electrical and mechanical engineering BTEP advanced certificate), 24 months (city and guilds) to 36 months for four (4) years depending on the programme and on the level of the programme. The placement of students for attachment to industries is coordinated between the institutions and the industry. Common places of students' attachment are but not limited to the mines across the country, Botswana Power Cooperation, building constructions, councils, and well established hair salons. Whereas most institutions help students find places for attachment, graduates fend for themselves for employment. "Those who impressed during attachment stand a better chance of getting employed where they did attachment", said one tutor. The Principal of one college stated that; "It is difficult for institutions to know where their graduates were and what they were doing because there is no data they can use to follow them. Attachment arrangements specific to the colleges and programmes offerings are discussed in the sections that follow.

Technician Diploma in Construction (City and Guilds)

The course is offered at Gaborone Technical College (GTC) and Francistown Technical College (FTC). Its duration is two years at GTC and three years at FTC. Six students participated from GTC and eight participated from FTC. At both colleges, the course combines both theory and a practical assessment component. However, the weighting of the theory and practical aspects varies between the two colleges. At one college, the assessment is 40% practical and 60% written examination whilst at another the assessment is 50% written examination and 50% practical. The programme is examined by City and Guilds. At the Gaborone Technical College, students go for three months attachment between the first and the second year and the Francistown technical college students go for attachment in the second year only for six months. The latter feel that the attachment period is adequate whereas the former feel the period is too short even though it is spread over three months a year. At both colleges students find attachment placement for themselves in government and private organizations. Students have indicated that they have enrolled in order to develop their skills so that they get jobs after completing the course. In German, the problem of attachment is not an issue as students are admitted to technical colleges from their work places (Dolgow, 2012).

Diploma in Automotive Electrical Engineering – University of Botswana

This programme is offered by the Faculty of Engineering and Technology- University of Botswana and it takes four (4) years to complete. Unlike in most technical colleges where students have had no work experience, students of this institution are workers from different companies sent by the companies to acquire specific skills that are relevant to the industry. They then return to their work places for practical work attachment.

Carpentry and Joinery – National Craftsman Certificate – NCC

This is a four year programme offered at Palapye Technical College. A total of ten students from this course participated in the research. Students go for attachment to the construction industries and to places that offer carpentry. The attachment period is scheduled for each of the four years of their study; hence the attachment period is deemed adequate to provide the students with needed industrial exposure. The programme provides diverse skills that learners can apply in different work scenarios. Assessment is done by the college together with the National Training and Testing Centre through a written examination of weighting 80% and the practical component that weighs 20%, a ratio they think is reasonable.

Motor Mechanics- National Craftsman Certificate –NCC

The programme is a four year duration programme offered at Palapye Technical College. A total of five students participated in the research. Attachment is done in government and private organizations for nine months out of the four years of study. Students deem this period adequate enough to provide them

with needed industrial exposure. Learners are confident of getting employment in related organizations. Some are looking forward to create their own companies as they believe and are confident "that the technical, communication, analytical, and problem solving skills they acquired are sufficient enough for them to stand on their own" said one student.

Auto Mechanics - National Craftsman Certificate –NCC

A total of 9 students in this programme participated in the research at Jwaneng Technical College. It is a four year programme and attachment is done in government and private organizations for nine months of the four years of study.

Electrical Installation - National Craftsman Certificate –NCC

This four year duration programme is offered at Gaborone Technical College. A total of six students taking this course participated in the research. The students indicated that they enrolled in the course so that they get jobs, meet their life needs, and improve their talent. Students indicated that the programme builds their technical, communication, team, analytical, and problem solving skills. The programme has an attachment component. The attachment period is scheduled for each of the four years of their study. The attachment period is deemed adequate for students to acquire sufficient skills that can enable them to fit into industry. Students are supposed to find attachment places for themselves but if they fail to find places, they stay at home. This suggests that the college by failing to place students to industries or organizations, attachment is not an important component of assessment.

Certificate in Hairdressing - Botswana Technical Education Programme (BTEP)

A total of 13 students taking the (BTEP) Certificate in Hairdressing at Gaborone Technical College participated in the research. The duration of this course is one year four months. Students enrol to develop their talent and hope to get employment after graduating. Students go for one month attachment in professional hair salons and they feel the attachment period is not enough. Despite the short period of practical exposure, students feel that this programme enhances their technical, communication, problems solving, and analytical skills. They are confident of getting jobs after completing the course. Further, students have indicated that the skills they have acquired can be applied in diverse work situations.

Certificate in Beauty Therapy – Botswana Technical Education Programme

This programme is offered at Gaborone Technical College and it lasts for one year four months. A total of eight students enrolled in the programme participated in the research. They indicated that they enrolled for the course in order to satisfy their life needs; some for interest sake, whilst others want to get jobs at the end of their study. Students go for one month attachment in professional hair salons and beauty spars. Students feel that the attachment period is not enough for them to gain industrial exposure. However, they felt that the programme provides them with useful and diverse skills they can apply in their future vocations.

Certificate in construction - Botswana Technical Education Programme (BTEP)

A total of seven students enrolled in the programme at Jwaneng Technical College participated in the research. The duration of this course is one year three months. Some of them felt that the attachment period is adequate whilst others feel that it is not. Students enrolled in the programme for the same reasons indicated in the certificate in Beauty and therapy above.

Views on Who Develops the Programme Curricula

The findings suggest that the Ministry of Education and Skills Development through its structures-The Department of Technical and Vocational Education and Training (DTVET) and Madirelo Training and Testing Centre is the dominant developer of the curricula. There is little and direct involvement of the industry or prospective employers of the graduates and the colleges. On this note one principal remarked "The curriculum is developed by the Development Unit at DTVET Head Office, and somewhat the

industry representatives and college staff are involved. The extent of involvement and the level at which the latter two stakeholders is not clear. What is clear, however, is that "there is no specific policy for engaging prospective employers of the graduates in developing the curricula". This practice is against international trends that incorporate the views and experiences of the industry and the implementer for purposes of relevance. The cases of German (Dolgow, 2012) and Zimbabwe (Ministry of Higher Education and Tertiary Education Science and Teaching. 2007) are examples of such good practice. The need to integrate employability skills has been underscored by Yorke (2004). The problem for the industry and the colleges to cooperate in this regard is that colleges have no advance knowledge of the market their graduates are going into after completing, unlike in education where teacher training institutions produce for an already known market. Upon completion technical college graduates hunt for jobs and as one observed: "they are often deployed in areas they did not specialize in". However, they are specific specialization which can easily lend graduates into relevant jobs to their training, such as hair dressing.

Frequency of Curricula Review and Their Relevance

The different curricula are reviewed at different frequencies and times. Hairdressing, for example, which has been running for ten years now, has been reviewed after every five years and is still relevant because as one lecturer puts it: "it has a lot of valid things that are done in the industry". While one lecturer admits that the hairdressing programme is still relevant, she/he complains about the curriculum being "too long and involving too much paper work" and being unhappy about the assessment criteria. The review for the advanced certificate BTEP which has been taught for 10 years is said to be on going.

The certificate in refrigeration and air conditioning, a four year long programme which has been taught for some fifteen years now has not been reviewed. "Its review has been pending for 10 years", lamented one respondent. All the three lecturers in the area said the curriculum is now obsolete and no longer relevant to the industry. One said "the way it is structured in terms of subject combination and some content is no longer in concert with technological changes". Also, the weighting of the theory and practical components is not balanced. There is 70% theory and only 30% practical work examination respectively. The national craft certificate (electrical installation trade B) a four year duration programme, designed by the Ministry of Education has been taught for about fifteen years. Respondents felt that the curriculum is ancient more so that it has not been reviewed since 1997. However, there is a nice balance between the theory and the practical components of the curriculum.

Relevance and Impact of Teaching Methods to Skills Development

Students' and tutors' views: Both the students and their tutors hold the general view that the methods employed in the teaching and learning process are effective enough to produce graduates that are employable and who can go into self-employment. The comment that: "The programme provides enough industrial exposure through attachment", represents the above participants' views. The most used teaching methods are lecture, demonstrations, group work, and question and answer sessions. Demonstration and question and answer dominant because of the inadequate resources for group experiments. However, demonstrations and question and answer, are structured approaches that are student-centred (Biggs, 2003) and that facilitates direct interaction and communication between the learner and the tutor (Petty, 2009). This however, limits practical or hands-on skills development (Faraday, et al. 2011; Abordo & Gaikwad, 2005, and Allen & Davies, 2009). Students revealed that they gain most practical skills during attachment to industry because there are adequate resources for few students on attachment as opposed to the colleges where resources are out-numbered by the students. An average class has between 18 and 22 students. Lack of adequate resources at colleges for students to be exposed to more hands-on activities may be the reason why the employers complained that students come to their organizations ill-equipped in terms of skills.

Employers' views: The colleges gave a list of organizations where their graduates were most likely to be employed. Based on this information the researchers confirmed with the organizations whether they employed graduates from technical colleges. A total of five organizations were randomly selected from

the given list. These were the Gaborone City Council, the Botswana Power Corporation, Beauty Spars, a garage, hair salons. The questionnaires targeted the employers, i.e. the human resource office in the different organizations. This office would identify senior supervisors to the graduates. On average, two questionnaires were distributed to each of the participating organization. The questions sought the views and experiences of employers on the quality of graduates produced by technical colleges in Botswana and their involvement in the drawing of the colleges' curricula. Regarding curricula design, all employers were of the common view that if invited they would make a contribution in the design of the different curricula of technical colleges. Typical comments were; "we can add value to their programmes", "we know better what is needed in the industry", "given the opportunity we can have useful input but how possible is it in terms of logistics", "who are they training for, if they can't involve us", asking us to host students' attachments is not enough".

Quite a number of employers were of the view that the graduates possessed latent skills which add value to their organizations and that the organizations needed only to develop these skills. To this, a respondent from a hair salon said: "They have requisite basics in hair dressing and with more exposure and experience in the industry, the theory they bring with them should add value to the organization". A supervisor from the Gaborone City Council wrote: "Although they still need more exposure they are in the right direction". Comments such as: "They communicate well; they have good working relations; they have good theory which can be applied to the job"; "good work ethics"; "they have fitted nicely in the organization", all support the view by those who said that graduates of technical colleges bring with them some strength that can be developed. These comments confirm the concern of lack of adequate resources at colleges where practical work is limited to demonstrations. Those who held different views on the quality of the graduates say that: "They lack the basics of the trade"; "they have poor work ethics"; "they fail to finish tasks on time". These comments came from a security company. This is perhaps the case because of a comment by a respondent from a different organization that "they are posted to places they have no skills in".

How the Courses Can Be Improved
The general feeling among respondents about all the technical courses is that there can be more effective and relevant if the development of the curricula could be a joint effort between the institutions and the prospective employers (industry). This view resonates well with the perspective by Garvin and Roberto (2001) that fairness and quality can be achieved by ongoing cooperation between other stakeholders. A principal remarked: "Stakeholders need to be roped in the curricula design and development". Another suggested strategy to improve the impact of the courses is to put more emphasis on engaging students on real practical work. Regarding the refrigeration and air conditioning programme, electronics as subject and electronics mathematics must be introduced. The following excerpts from different respondents in the different programmes summarise suggestions on how technical education curricula can be improved. "There is need for programme review every five years to keep abreast with challenges in technological advancement in the world of work" and "to match technological changes in the industry". "Curricula need review to match the latest technology". The views above get support from Carew and Cooper (2006), Mitchell, Carew and Clift (2004) and Biggs (2003) who all hold that regular course reviews promotes course alignment with the rapid changing technology. A principal commented that the curriculum content of the different programmes addresses most of the market needs. But assessment methods need to be changed particularly the City and Guilds curriculum that allocates 75% to theory and only 25% to practice. Generally, suggestions on how technical colleges can improve, corroborate views of the different authors in the literature who persistently hold that cooperation and collaboration between colleges and the industrial sectors is the way to go (Dolgow, 212; UNESCO/ILO, 2010), and for the introduction of elementary vocational courses at the lower levels of education. In Botswana, lack of employment among the youth is blamed by the different stakeholders on a poor education system that does not offer students vocational skills at the lower levels of education.

CONCLUSION

The focus of this study was to find out if the curricula offered at technical college enhanced graduate employability. Many factors were identified as crucial in this respect. This conclusion draws from participants' responses to the study's research questions. Respondents generally showed a fair understanding of the concept 'employability' as meaning the possession by graduates, of relevant skills and competencies that can help them secure sustainable employment. These attributes can be enhanced by the collaboration between the colleges and the industry in curricula matters such as curricula design and their review. This is important because each stakeholder has certain knowledge, information and skills the other stakeholder may not have. Three key issues have been identified as impediments to effective skills acquisition by graduates, namely; the exclusion of the prospective employer in curricula design; insufficient resources that force tutors to strict their teaching methods to only a few which are not effective enough to enable the transfer of skills to students. The argument for a broader and more encompassing outlook in curricula design and review by the Ministry of Education and Skills Development and colleges to include the industry is premised on the realization that skills development among graduates can be the cornerstone of any economy.

Most tutors, because of this, resort to group demonstration and lecture methods. It can also be added that not all colleges support students during attachment. Students are not helped in finding places where they can do industrial attachment. However, participants generally are satisfied with the quality of the product from colleges. Although most graduates have never worked before and therefore lack experience, employers are satisfied that they are trainable and that with time they will get experience and develop needed skills. The study ends by emphasizing that the involvement of key stakeholders such as the industry in college curricula should not be ignored since issues of currency and relevance are critical in graduate employability. Compared to German, an industrialized country, and Zimbabwe, a developing country, Botswana still has to improve its technical colleges' curricula in order to enhance the employability of the graduates.

IMPLICATIONS AND RECOMMENDATIONS

Implications at Practical and Theoretical Levels

There is a give-and-take relationship between theoretical knowledge and practical skills. Practice without theory is blind and theory without practice is not meaningful. The two complement one another. To realize benefits from this relationship, technical colleges need help and support from government in terms of resources and from the world of trade and industry in terms of relevant hands on skills acquisition.

Specific Recommendations

- The Ministry of Education and Skills Development (MoESD) should include both the college staff and prospective employers in the design of the curricula because colleges produce graduates for the industry and the economy.
- MoESD should enforce a regular joint review by both the colleges and the industry of the curricula of technical colleges.
- It is recommended that the MoESD review technical colleges' budgets with a view to increase them so that colleges can purchase adequate equipment for students to work are smaller groups instead of reliance of demonstrations and lectures only.
- Students' attachment to the industry should contribute to the final mark and not be left as an option.
- Technical colleges should deploy attachment coordinators who should oversee student support during the attachment period.

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