

Teaching Method in Building Construction Programme and the Development of Students' Vocational Skills in Technical High Schools in Cameroon

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ABSTRACT

Technical High Schools in Cameroon are agencies that aim at empowering students with vocational skills that will enable them to be self-employed and boost socio-economic development. This study was to look at the influence of teaching method as a component of building construction programme on the development of students' vocational skills in technical high schools in Cameroon. The study used the cross-sectional descriptive survey research design in a concurrent triangulation mixed-method approach, and targeted five technical high schools in Fako Division and four in the Wouri division. The sample was made up of 83 teachers and 268 students. The data collection instruments were questionnaires for teachers and students and an observation guide for teachers in the flame of classroom activities. Quantitative data were entered using EpiData Version 3.1 and analysed using the Statistical Package for Social Sciences (SPSS) Standard version, Release 21.0. The questionnaire was made of categorical variables and data were analysed using counting techniques namely frequency and proportions while Multiple-Responses-Analysis was used to aggregate score within conceptual components. Spearman's Rho correlation test supported by Binary Logistic Regression was used to appraise the predictive power of teaching method on students' acquisition of vocational skills. The findings unfold that teachers and students had almost the same appreciation of teaching methods ($P=0.313$), though teachers to a very high extent (78.3%) perceived the adequacy of teaching method more than students (72.7%). Though in their majority they agreed of the proper implementation, this was below the critical cut point for strong lexicography for effective implementation of 80%. However, this deviation was not significant for teachers ($\chi^2=0.04$; $df=1$; $P=0.849$) unlike for students ($\chi^2=3.73$; $df=1$; $P=0.049$). This therefore implies that if teachers perceived an effective implementation of teaching methods, this was the case with the students. With respect to the acquisition of vocational skills, teachers and students had almost the same appreciation ($P=0.146$). In their majority, they agreed though below the critical cut point for strong lexicography for effective implementation of 80%. However, this deviation was not significant for teachers ($\chi^2=1.19$; $df=1$; $P=0.276$) and for students ($\chi^2=0.40$; $df=1$; $P=0.526$). This therefore implies that teachers and students perceived the acquisition of vocational skills to be effective. There was a significant positive correlation between the practiced of the recommended teaching methods and acquisition of vocational skills by students ($R=0.826$; $P=0.000$). This was supported by Binary Logistic Regression that depicted that the overall Explanatory Power for the Integrated Value Mapping (IVM) of the conceptual component 'teaching method' was 18.4% and was very significant ($P=0.000$). Among the four sub-components of teaching methods, namely explicit teaching, interactive demonstration method, cooperative learning and project method, only cooperative teaching had a non-significant contribution ($P=0.744$). It was recommended that industries should support technical vocational education institutions by providing industrial attachment programmes for students. Secondly, stakeholders, notably parents, industries, government and donors should contribute in providing modern adequate training equipment and teachers. Building construction teachers should use practically-oriented teaching methods like cooperative leaning, simulation and project-based teaching, integrating several teaching methods in a lesson in a conducive-

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sequential organization and parental collaborations in order to achieve the desired result of developing students' vocational skills necessary for the world of work.

KEYWORDS: *Technical, Education, Building, Construction, Programme, Teachers, Students, Vocational, Skills, Cameroon*

INTRODUCTION

The purpose of technical vocational education and training (TVET) is to provide the labour market with skilled manpower. According to Karmel (2007), TVET goals can be achieved by combination classroom activities and experiences gain at the workplace. Kamel opined that effective training of students in technical vocational high schools could enhance the development of the nation if students are provided with occupational skills as well as employability skills, entrepreneurial skills and industrial experiences. Afeti (2006) affirmed that technical vocational institutions are very important due to their orientation towards the world of work and their curriculum emphasizes on the acquisition of vocational skills. Anindo, Mugambi and Matula (2016) opined that TVET delivery systems are well placed to train skilled workforce that Africa needs to create wealth to emerge out of poverty. However, Audu et al. (2013) lament that the supply of graduates into the labour market does not match with anticipated skills from TVET institutions. In Cameroon, Law N0 98/004 of 14 April 1998 that lay down guidelines for education state that, the ultimate goal of TVET is for students to acquire knowledge, attitudes and skills for the world of work. Audu et al. (2013) point out that for such knowledge and skills to be acquired, TVET system must be effective and efficient in conducting pedagogic activities that promote these skills in the students including the quality of resources used during the process that guarantee quality teaching and learning.

According to Dasmani (2011), students should be able to acquire quality skills if TVET institutions are adequately funded with qualified staff to train the students. Dasmani indicated that, inadequate instructional materials, large class sizes, poor training facilities, weak linkages with industries among others would lead to poor skills acquisition by the students. Dasmani explained that, TVET institutions that emphasize on students passing final examination will consequently graduate students with inadequate skills for the 21st century work place. Udofia, Ekpo, Akpan and Nsa (2012) revealed that a significant relationship exist between teaching methods, instructional facilities and vocational skills especially in programmes like craft and constructions. Again, Utopia et al. (2012) opined that without adequate funds, qualified staff and quality equipment, the process of developing vocational skills in students

would not be possible. Fullan et al. (2015) confirmed that students learn what is directly taught to them and finally, teachers' teaching skills depend highly on knowledge and attributes acquired through continuous learning and practice.

Watson and Supovitz (2008) concluded that instructional supervision should therefore be made an essential tool during teaching and learning. However, Dawo (2011) regrets that most principals in public schools lack the ability to execute teamwork due to lack of expertise in most subject content and are always occupied with administrative duties in their offices. Musungu and Nasongo (2008) point out that principal's lack of supervision skills and busy schedules would promote teachers laziness and slow down students' development. Musungu and Nasongo (2008) conclude that the overall support system within the teaching learning process must constantly be check and evaluated if students are to develop skills.

According to the researcher's observation, technical high schools in Cameroon seems to be lacking in the training systems that guarantee skill development and the researcher feels that a study of this magnitude should be conducted in the building construction department to inform policy and educational stakeholders about the prevailing situations. This chapter is therefore organized under, background to the study, statement of the problem, objectives of the study, research questions, research hypothesis, justification of the study, significance of the study, scope of the study and operational definition of terms.

Background to the Study

The early history of education in Africa is linked to its tradition and customs indicating the existence of indigenous system of education before any contact with the Whiteman (Fonkeng, 2010). The purpose of traditional African education was for the immediate integration of the child into the society and the preparation for a responsible adult life. The process of learning was a simple process whereby children learnt by socialization, doing practical things around the homes and villages as well as participating in ceremonies, rituals, farming, fishing, hunting, cooking, carving, story-telling, proverbs, dancing, wrestling just to name these.

The educational process extended a combination of physical skills, character building, manual labour and

intellectual training which was functional in its purpose through its relevance to the need of the society (Fonkeng, 2010). According to McOjong (2008), the boy child during the era of indigenous education was trained by the father with the main objective of taking care of his family. The fathers imparted skills in the domain of farming, fishing, hunting, weaving of basket, thatches and so on. On the other hand, girls were trained by their mothers to take care of the home and family, that is to cook, do laundry, fishing and trade. This process of education which started from childhood through adulthood was evaluated through the ability of the individual to achieve the physical and psychological development (Fonkeng, 2010). The traditional African education aspired to produce honest, respectable, skilled and cooperative individuals who would conform to the norms of the community as modern formal education would demand (Fonkeng, 2010). It was an education based on the community life with respect for "God", hierarchy, harmony and continuity. Respect was manifested through politeness and reverence (Fonkeng, 2010). In fact, traditional education was done through observation, imitation and participating for children to acquire intellectual growth and development.

McOjong (2008) points out that, before the arrival of the colonial masters, Africans were people conscious and concerned about their way of life and process of educating their young. This form of vocational training was handed down from one generation to another as educational policies were shaped by the cultural practices and customs of the community (McOjong, 2008). The only major challenge faced by the traditional education system was that no concrete evaluation toward certification or examination was administered by the adult. Children were tested and evaluated if they could demonstrate or reproduce the same items as taught to them. This traditional education was interrupted with the coming of the colonial masters.

The London Baptist Missionary Society (LBMS) laid the foundation of Western Education in Cameroon in the year 1844 (McOjong, 2008). Joseph Merrick and Alfred Saker were the first LBMS missionaries to usher in Western education in Cameroon in the year 1844. This was to compliment the indigenous education given at home by parents. They opened the first schools in Bimbia and Douala where the indigenous people were taught how to read and write. Emphasis was laid on elementary education based on the 3Rs: Reading, Writing and Arithmetic (Fonkeng, 2010). According to McOjong (2008), education was considered as an indispensable medium for the

Baptist missionaries to achieve their aim of evangelization. Between 1844 and 1880, the LBMS created about 18 schools in Cameroon. During this period Rev Alfred Saker introduced vocational education where young indigenous Cameroonians were trained in new technology like brick making, carpentry and tailoring amongst others. Hence, the foundation of formal vocational education in Cameroon was laid by the London Baptist Missionary Society. The Baptist reign in Cameroon came to an end in July 1884. This was when Cameroon was annexed by the Germans following the signing of the Germano-Duala Treaty. According to McOjong (2008), when the Germans were defeated after the First World War by the British and the French they both introduced an educational system related to their interest.

At independence, French Cameroon had about 71 technical schools with a student population of 5,740. These were actually vocational schools not technical schools. Thirty-one of these institutions were state-owned with 2691 students. On the other hand, the then West Cameroon (Southern Cameroons) could only boast of one single sex vocational school created in the year 1952 known as Ombe Trade Centre wherein the students obtained the London City and Guilds examination at various levels (Ndongko & Tambo, 2000). In 1963 the centre was transformed into Government Technical College Ombe under the financial support of the United States government. In 1991, government Technical College Ombe was updated into Government Technical High School Ombe. According to Ndongko and Tambo, in the 70s, the Francophone sub system of technical education and assessment was imposed in all technical schools in Cameroon. Curriculum of these technical schools followed the French shift to a model with less emphasis on vocational subjects (Fonkeng, 2010). Many more general education subjects were added into the curriculum. Vocational training and preparations in technical schools were greatly weakened and sacrificed to make more space for more academic subjects that were not meant for skills acquisitions (Besong, 2020).

Technical and vocational education in Cameroon is regulated by a series of legislation and strategic documents. These legislations have their roots in United Nations Educational, Scientific and Cultural Organization (UNESCO) and African Union visions. According to Bonn (2004) final reports, the first International Congress on the Development and improvement of technical and vocational education held in Berlin in 1987. It was reported that UNESCO established its international project on technical and

vocational education (UNEVOC) in 1992 with the goal of strengthening technical and vocational education and training (TVET) within member states. The Bonn international experts' meeting was part of a long series of initiatives undertaken by UNESCO to achieve this goal and focused on the theme "Learning for work, Citizenship and Sustainability".

Contextually, the training syllabus (2012) of technical high school in Cameroon focused on the training of qualified technician and craftsmen with leadership skills and managerial skills necessary for the organization of the work place in collaboration with the employers and the industries (Efande, 2015). These technicians are graduates with manipulative skills capable of producing quality products that should improve the livelihood of the community that they find themselves. Qualified technicians are those who are able to evolve in their field of studies within the context that they find themselves and easily integrate into the social-economic environment. This is in line with the Cameroon law No 98/004 of 14 April 1998 that Lay Down the Guidelines for Education in Cameroon in Part III - (3) which state that "in addition to general education, practical training shall be provided to students in vocational colleges and technical high schools on the basis of the courses that students choose. This should give the students the opportunity to create employment for themselves and others. Viewed from this perspective, Ibrahim et. al. (2013) point out that technical education goal in Cameroon is to provide trained manpower in the applied sciences, technologies and businesses particularly advanced craft whose fundamental aim is to develop and to impart the necessary technical skills into individuals in order to make them self-reliant economically. In order to achieve all of these, technical high schools in Cameroon have shifted from the old pedagogic paradigm of teaching by objective through the inferential thinking approach (New pedagogic approach) to Competency Based Approach (CBA). CBA facilitates the development of skills through the practice of project Based learning, cooperative learning, and integrated theme learning. The underlying philosophy of CBA requires that learning should be based on the potentials of the learners and the support system provided by the school. It is important for the teachers to determine the characteristics of their learners and prepare their lesson implicitly bearing in mind the types of learners in their classrooms.

Statement of the Problem

According to the law orienting education in Cameroon, technical education should train students

to confront the job market with skills acquired during theoretical and practical lessons. Research findings indicate that the inadequacy and inefficiency in the training system would affect students' skill development. The implication of poor training system in the building construction programme in technical high school is that, some students might graduate without the necessary skills and hence, contribute very little to the advancement of the economy. In spite of the effort made by the government of Cameroon in creating many technical high schools in all the divisions of the nation, student's enrolment and skills acquisition in building construction programme seem to be inadequate. Due to the researcher's own experience and observations, it has been noticed that several technical high schools in Cameroon are lacking in the present building construction training system and low registration of students at the end of course examination. Statistical analysis of end of course examination results in building construction programme for the past ten years show that students' enrolment in this very important field of study has been relatively very low compared to other discipline. This might be an indication that students and their parents are not interested or are disgruntled with the practices of this specialty. According to the pedagogic reports for the year 2020 in Cameroon, the teaching environment in the present technical high schools are facing a lot of challenges ranging from inadequate teachers both in quantity and quality.

The trouble here is that these teachers use conventional teaching methods in delivery practical lessons which might not enhance skills development. Furthermore, workshops have obsolete training equipment and students' internship periods seem to be grossly insufficient for students to develop vocational skills. This to a greater extent will culminate into low quality graduate and much more. In order to maintain and sustain Cameroon's course for emergence by 2035, the National Development Strategy 2030 (NDS30) aims to carry out structural transformation of the economy by making fundamental changes within the economy. The aim is to make the country a new industrialized nation by the year 2035. Therefore, building construction departments in should be able to train professional technicians that will take Cameroon to emergence. The inadequacy of skills in graduates of building construction implies imperatively that this vision of Cameroon may never be achieved in the construction industries if the state of things within building construction are not check and ameliorated. It is against this backdrop that this study seeks to evaluate the extent to which building construction programme

in technical high schools in Cameroon contribute to the development of students' vocational skills.

Research Objective

The study aimed at appraising the extent to which teaching methods in building construction programme affect the development of students' vocational skills in technical high schools.

Research Hypothesis

H01: There is no significant relationship between teaching methods in building construction programme and the development of students' vocational skills in technical high schools in Cameroon

Ha1: There is a significant relationship between teaching methods in building construction programme and the development of students' vocational skills in technical high schools.

Justification of the Study

Cameroon today and other Sub-Saharan African countries are in high need of skilled man power for sustainable economic development (AU, 2016). The need for skilled technicians and craftsmen within the economy necessitate this study. The Cameroon strategic plan has evolved from Poverty reduction strategy paper (PRSP, 2003) to growth and employment strategy paper (GESP, 2009) and now into the National Development Strategic Plan (2020-2030). To achieve this vision, the economy needs skilled technicians and craftsmen to develop the economy. Within the context of Cameroon, employers, industries and government expect graduates to begin work with developed generic, technical and early professional skills suited to diverse demands and needs of the industries. Hence, the proper implementation of the syllabus of building construction in technical high schools may facilitate the process of economic development. This is so because, technical education and training are the education for capacity building that strengthen the skills, instincts, abilities and the development of resources that citizens of a nation needs to survive and thrive in the fast-changing world of technology. Building the capacity of students is therefore seen as a necessary venture. The process ensures the production of quality man power that guarantee growth and development within Cameroon and beyond. This issue constituted one of the main reasons that this work seeks to address.

This study is relevant today as several studies conducted within the context of technical education have duel more on academic performance of students than vocational skills. In spite of the numerous studies carried out in technical education in Cameroon, there's seems to be inadequate research

that has exploited building construction programme and the development of student's vocational skills especially for the award of a degree in doctor of philosophy (PhD). Few studies of this nature have been carried out within technical education sector that cut across the Anglophone and Francophone subsystem of education in Cameroon. In this sphere, this study intends to contribute knowledge on how Cameroon as a nation could achieve her vision of becoming an industrialized nation by 2035 in the construction sector as elaborated in the NDS30 paper.

The third reason that prompted this study was the need to review the curriculum and pedagogic practices within the building construction programme in technical high schools in Cameroon. This is because the pedagogic practices within the department as observed by national inspectors may not build the capacity of students necessary for the global world due to its competitive nature. This study like others intends to elucidate the means through which students could acquire vocational skills for the world of work. Evaluating pedagogic activities within the context of building construction programme in technical high schools may enable teachers to improve on the needs of the students and the Cameroon economy as whole in the 21st century. Consequently, understanding implementation process in building construction courses for vocational skills development at the point in time justifies why this study should be carried out.

Significance of the Study

The findings of this study may have some significance to the following stakeholders concern with technical high schools in Cameroon. These include; the students, teachers, educational administrators, policy makers, employers and the society as a whole.

This study like others intends to elucidate the means through which students in building construction programme in technical high schools could improve upon their vocational skills before graduation. Technical high school students that would come across this work may come to understand that it is important for students to acquire vocational skills that will enable them to become productive in the construction industries. Secondly, the study intended to shed some light on how building construction programme like other courses enable students to have training and experiences that develop vocational skills needed for the 21st century work place. More importantly, it may enable students to understand the role they are expected to play during teaching and learning for them to develop cognitive, affective and psychomotor skills. The findings of this study would

enable students to see the place of affective skills in their career is not taught directly as a course during training. Some of these affective skills include leadership skills, collaborative skills, managerial skills, empathy, enthusiasm, judgmental skills just to name a few. These skills are much relevant to students because it enable them to be more engaging during their theoretical, practical and internship programme.

Secondly, this study could have more benefits to teachers. The study aim was to establish some ways through which teachers could improve their instructional strategy in order to equip students with vocational skills. Research findings and recommendations of this study could be very educative to teachers as it may inform them on the need to vary their teaching methods in the classroom and workshop to meet up with the diverse needs and aspiration of the student before graduation. Equally the study has shed more light on how teachers could develop training equipment and learning material during practical lessons especially those selected within Cameroon context. Again, this study may inform teachers on how to maximize the limited resources put at their disposal to meet the needs of students within the shortest time possible. Teachers after reading this work shall see the need for them to attend seminars and workshops in order to upgrade their pedagogic skills that confirmed with those of a 21st century teacher. The research finding could be of help to national inspectors and regional inspectors of technical education in Cameroon. This is because the study aims to evaluate the implementation process to determine the extent to which the concepts under study influence the development of students' vocational skills. The element discussed in this study would be of assistance to inspectors when seminars and workshops are organized to ameliorate the deficit of teacher skills in the building construction programme.

Thirdly, recommendations of this study may inform policy makers about the relevance of technical education in Cameroon and its contributions to nation building. This can only be possible if the industrial sector is efficient and effectively producing quality infrastructures within the country. For this vision to be realized within the context of Cameroon, technical high schools must be effective in training skills man power for the industrial sector. Due to the relevance of this study, the ministry of secondary education and others stakeholders after reading this work may channel more training facilities for building construction programme in technical schools especially for practical lessons and internship. If this

is effectively done the myth about technical education could be viewed differently by both the parents and students.

This study could be of much beneficial to the construction sectors. The goal of technical education is to produce skilled manpower which are consumed directly or indirectly by the industrial sector. When once the entrepreneur in this sector understand that they schools are facing difficulties in training students, they may assist the school with equipment and materials through the parent teacher association. Furthermore, this study may enable the industrial sector to see the need to partner with the government to finance technical high schools in Cameroon and equally open their doors for students' internship and training. Entrepreneurs as part of the business community could use the findings of this study to measure the quality of students graduating from technical high schools and report feedback to the school authorities during parent teachers' association meetings for improvement.

If policy makers provide an enabling environment for teaching/learning in technical schools, the graduates of the educational system would become efficient and effective at their job sites. This could lead to effective use of natural resources in the production of quality infrastructures. That is, quality houses, good road network and general beauty of the society. This study shall serve as a yard still for policy improvement for the general good of the society as it shall enable parents to change their negative perception of technical education in Cameroon and enrol their more intelligent children into technical schools than what obtain at presence.

Scope of the Study

Geographically, this study was limited to government technical high schools in two Regions of Cameroon. These Regions include; South West Region and Littoral Regions of Cameroon. The study concentrated particularly in the building construction programme in the technical high schools in these two regions under study. The content of this study focused on building construction programme and was operationalized with particular focus on teaching methods while vocational skills were operationalized as academic skills, occupational skills/employability skills and technical skills.

Theoretically, the concept of teaching methods and the development of students' vocational skills were explained using the following theories; Condition of Learning by Robert Gagne (1985) for teaching methods, Multiple Intelligence theory by Howard Gardner (1983), Ryan's Theory of teacher behaviour

(1970), Blooms taxonomy (1956) and Cognitive apprentice theory (1989).

Operational Definition of Terms

The following terms have been defined as used in the study.

Building

Randy (2012) defined building as a kind of structure which is built with materials that constitutes the foundation, plinth, walls, floors, roofs, chimneys, plumbing and building services. It includes fixed platforms like veranda, balcony, projection and outdoor display structures. Examples of building are houses, factories, shopping malls, hospitals just to name these.

Building Construction Programme

Ater and Tyoku (2017) defined building construction programme as one of the courses offered in technical high schools which is designed to equip students with skills for building industry.

In this study building construction is a specialty or a course in technical high school with all the pedagogic activities that leads to the graduation of skilled technician and craftsmen for the construction industries.

The following concepts linked to building construction programme have been defined.

Teaching Methods

Teaching methods are patterns of teachers' behaviour that are recurrent and applicable to various subject matters (Tchombe, 2009). Tambo (2003) defines teaching method as a standard procedure for presenting subject matter and organizing teacher-student's interaction during a lesson. Tambo explains that teaching methods can be general or specific. General teaching methods are the procedures that are common in the teaching of different subjects that is use in teaching more than one subject while specific teaching methods are applicable to specific teaching subjects. The study shall make use of the definition of teaching methods postulated by Tambo (2003).

Vocational Skills

Adeyemo (2009) define skill as a quality of performance which does not depend solely upon a person's fundamental, innate capacities but must be developed through training, practice and experience. Although skill depends essentially on learning, it also includes the concepts of efficiency and economy in performance. Vocational skills are those skills that allow a person to master a particular subject or procedure that are applicable to a specific career (Ahmad, et al., 2017). According to teacher's guide (2015), students in vocational programme like

building construction should be exposed to methods that develop the cognitive, affective and psychomotor domain of the students that builds their capacity to integrate into the society.

Skill Development

Skill development is the acquisition of competences, know-how and attitudes necessary to perform a trade or occupation in the labour market (European Union Commission, 2012). It is the process through which learners and workers are systematically provided with learning required as qualifications for a job or range of jobs in a given occupation area (TESDA, 2010).

This study shall look at skill development as an ability and capacity acquired through deliberate, systematic and sustained efforts to smoothly and adaptively carryout complex activities or job functions involving ideas (cognitive skills) and (technical skills) to enhance students 'productive activities and employment opportunities.

Technical High Schools

Technical high schools are educational institutions established with the aims of training and producing technicians for industries. It is an integral part of the total education programme that contributes towards the development of good citizens by developing their physical, social, civic, cultural and economic competencies (Odu, 2011). Sherry and Yesueneagbe (2013) defined technical high school as a place where practical knowledge and hands-on experiences in addition to the basic theory in the chosen field of specialization is acquired.

Technical Education

Technical education refers to "aspects of the educational process that involve the study of general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupation in various sectors of economy (UNESCO & ILO, 2001). Technical education by its mission is an educational programme designed to equip youths, adults, employed and unemployed with the required knowledge and saleable practical competences, attitudes and habits for effective participation in the work environment (Okarafor & Ike, 2013). According to Uwaifo (2009), technical education is the training of technically oriented personnel who are to be the initiators, facilitators the development of a nation. In this study technical education was seen as that educational system through which academic and demonstrable skills are acquired and transfer into the economy for sustainable livelihood.

Vocational Education

Vocational education is a process of acquiring competences (knowledge, and skills) with the results of that process evaluated and confirmed in a procedure carried out by TVE institutions. Within the context of this study, Vocational education is the type of education that aim at equipping students with

knowledge, know-how, skills and/or competences required in particular occupations or more broadly on the labour market (Cedefop, 2014).

This study shall consider vocational skills in three forms; academic skills, occupational skills and technical skills necessary for building construction career.

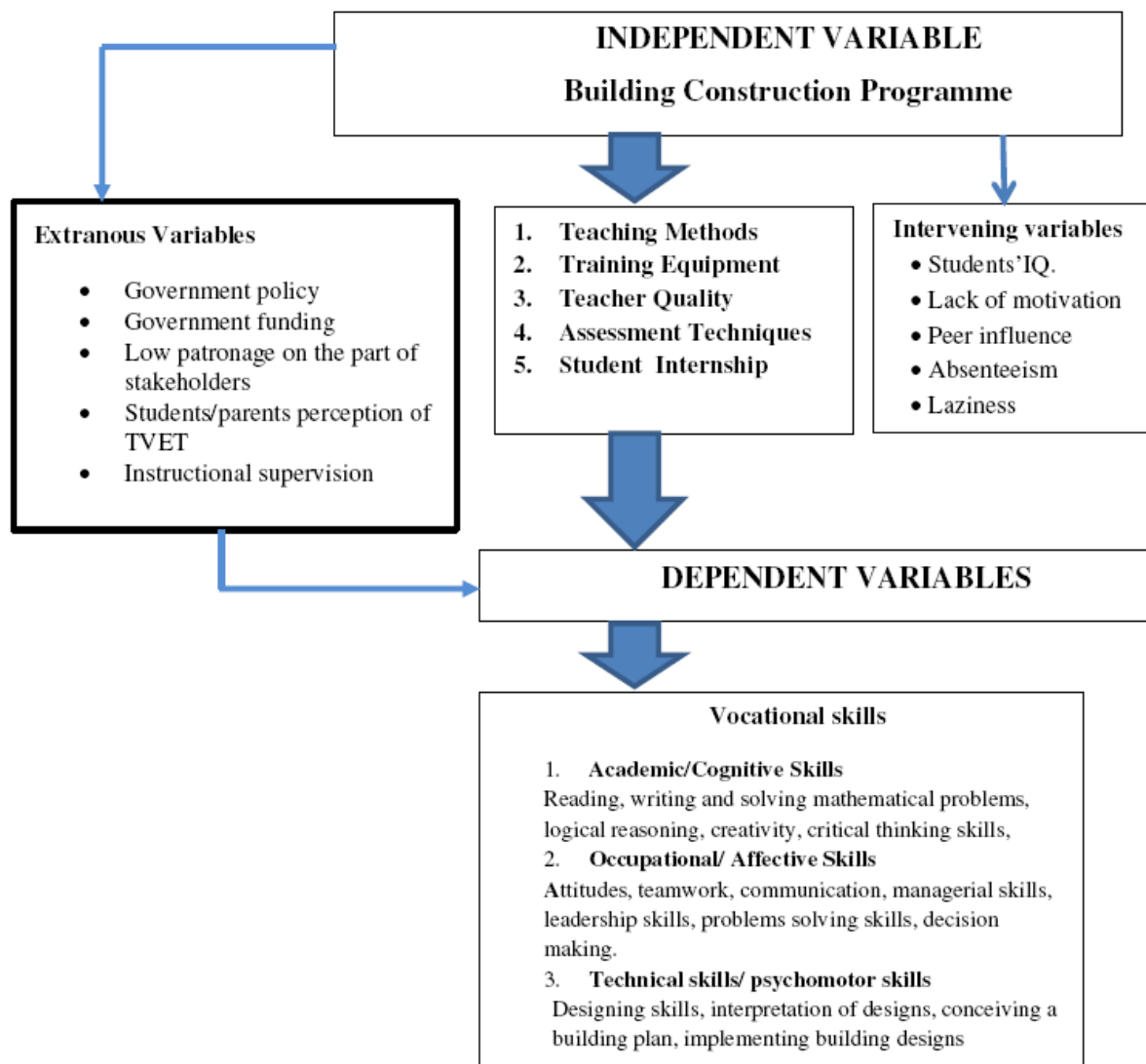


Figure 1: Conceptual framework depicting building construction programme as predictor of the development of students’ vocational skills in technical high schools in Cameroon

Methodology

Research Design

The study is backed by a cross-sectional descriptive survey design. The dominant approach is quantitative employing a structured questionnaire. This quantitative approach, in a concurrent triangulation mixed-method perspective, is substantiated by observations.

Area of Study

This study is carried out in Cameroon found West of Africa with a mixture of desert plains in the North, mountains in the Central regions and tropical rain forest in the South. Along its Western border with Nigeria are mountains which include the volcanic Cameroon Mountain, the highest point in West Africa at 4100meters. Cameroon is triangular in shape and is bordered by Nigeria to the North West, Chad to the North East, Gabon and Equatorial Guinea to the South and the Atlantic Ocean to the South West. To cover the national linguistic diversity, the Anglophone Cameroon was represented by the Southwest region while Francophone Cameroon was represented by the Littoral region.

Population of the study

The population of study for this work constitutes all the teachers and students in government technical high schools in the South West Region and Littoral Region of Cameroon as presented in table 1 & 2.

Sample

The sample was made of 83 teachers and 268 students.

Sampling Techniques

Schools were sampled following simple random sampling stratifying between Southwest and Littoral regions. As for students and teachers, they were sampled conveniently.

Table 1: Population of Teachers and Students in the South West Region of Cameroon

s/n	Government Technical High Schools	Number of Teachers	Number of Students
1	Government Technical High School Molyko, Buea	175	3084
2	Government Technical High School Ombe	136	1660
3	Government Technical High School Tiko	92	1332
4	Government Bilingual Technical High School Limbe	104	2743
5	Government Technical High School Muyuka	Non functional	
6	Government Technical High School Bombe Bakundu	Non functional	
7	Government Technical High School Kumba	67	249
8	Government Technical High School Kang Barombi	86	1585
9	Government Technical High School Bangem	41	262
10	Government Technical High School Tombe	67	256
11	Government Technical High School Mamfe	85	1519
12	Government Technical High School Ekondo Titi	43	253
13	Government Technical High School Alou	26	29
14	Government Technical High School Mundemba	67	281
TOTAL		989	13253

Table 2: Population of Teachers and Students in the Littoral Region of Cameroon

S/n	Government Technical High Schools	Number of teachers	Number of students
1	Government Bilingual Technical High School Akwa	112	3176
2	Government Bilingual Technical High School Bonaberi	154	2283
3	Government Bilingual Technical High School Bonandoumbe	89	1487
4	Government Bilingual Technical High School Sodiko	132	2341
5	Government Technical High School Koumassi	117	3017
6	Government Technical High School Mouanko	56	1420
7	Government Technical High School Nilong	59	1387
8	Government Technical High School Ndom	34	484
9	Government Technical High School Nkongsamba I	67	1900
10	Government Technical High School Nkongsamba II	56	1324
11	Government Technical High School Manengole	34	879
12	Government Technical High School Mbanga	87	2345
13	Government Technical High School Loum	73	1456
14	Government Technical High School Souza	67	1346
15	Government High School Mounko	27	674
16	Government Technical High School Ndom	53	456
17	Government Technical High School Ngambe	23	498
18	Government Technical High School Pouma	45	786
19	Government Technical High School Dizangue	23	345
20	Government Technical High School Bassa	58	780
21	Government Technical High School Yabassi	65	1122
22	Government High School Edea	56	1011
TOTAL		1487	31648

Source: Service of school maps, Regional Delegation for the Littoral Region and South West Region of Cameroon for the 2022/2023 school year.

Data Collection Instrument

The instruments used were a structured questionnaire and an observation guide.

Validity and Reliability of Instrument

Construct validity was checked by ensuring that the measures under investigation relate with one another in a way that is consistent with theoretically derived hypothesis.

To ensure content validity, the questionnaire was checked by the researcher, his supervisor, a colleague and the statistician to make sure the indicators were adequately labelled and could appropriately measure the characters under study. Generally, above 0.75, CVI is satisfactory (Nana, 2018) and in the context of this study, the judges validated the final instrument making a CVI of 1.

To ensure face validity which is the kind ascertained when little or nothing is known about the research variables, the questionnaire was checked by judges listed earlier, and students and teachers during the trial testing of the instrument for clarity and visibility.

The reliability of the questionnaire was measured using the estimate of internal consistency or internal reliability. The internal consistency assumption was verified with the support of Cronbach's Coefficient Alpha (α). As for the teachers, the internal consistency assumption was not violated for all the conceptual components including the Integrated Value Mapping (IVM). The reliability coefficients ranged from 0.657 to 0.976, all very satisfactory. This therefore implies that the items on the questionnaire were understood and answered to a satisfactory level of objectivity. The variances were generally close to 0, thus implying that we are more likely to be faced with skewed distributions, with participants' responses tilting more toward positive or negative views or perceptions. In the other sense, teachers are more likely to be homogenous in their perceptions (table 3). Concerning the students, the reliability coefficients ranged from 0.511 to 0.932, all satisfactory as well. The variances were generally close to 0, thus implying that we are more likely to be faced with skewed distributions as well (table 4).

Table 3: Reliability analysis for teachers

Conceptual components	Cronbach's Alpha reliability coefficient	Variance	N _{items}	N _{cases}
Teaching Methods				
Explicit Teaching	0.825	0.042	8	83
Interactive Demonstration Method	0.782	0.018	8	83
Cooperative Learning	0.767	0.037	8	83
Project Method	0.816	0.017	8	83
Integrated Value Mapping (IVM)	0.938	0.029	32	83

Table 4: Reliability analysis for students

Conceptual components	Cronbach's Alpha reliability coefficient	Variance	N _{items}	N _{cases}
Teaching Methods				
Explicit Teaching	0.572	0.032	268	8
Interactive Demonstration Method	0.667	0.004	268	8
Cooperative Learning	0.557	0.013	268	8
Project Method	0.690	0.015	268	8
Integrated Value Mapping (IVM)	0.849	0.017	268	32

Data collection process

An authorization to carry out the study was obtained from the Faculty of Education of the University of Buea. This authorization was presented to the heads of institution for administrative clearance. Student and teachers were then briefed on the objective of the study, their consent sought, and they were then given the questionnaire for response.

Method of data processing and analysis

Quantitative data was entered using EpiData Version 3.1 (EpiData Association, Odense Denmark, 2008) and analyzed using the Statistical Package for Social

Sciences (SPSS) Standard version, Release 21.0 (IBM Inc. 2012). The questionnaire was made of categorical variables and data were analyzed using counting techniques namely frequency and proportions while Multiple-Responses- Analysis was used to calculate the aggregate score for conceptual components (Nana, 2018). Correlation test cross-validated with Binary Logistic Regression was used to assess the predictive effect of the implementation of building construction programmes on students' acquisition of vocational skills. But we had to choose

between a parametric correlation test and a non-parametric correlation test following the statistical data assumption requirements. All the composite variables violated the normality assumption from both Kolmogorov – Smirnov and Shapiro Wilk perspectives ($P < 0.05$) in all instances. The non-parametric Spearman's Rho correlation test was then used.

Findings

Students' acquisition of vocational skills

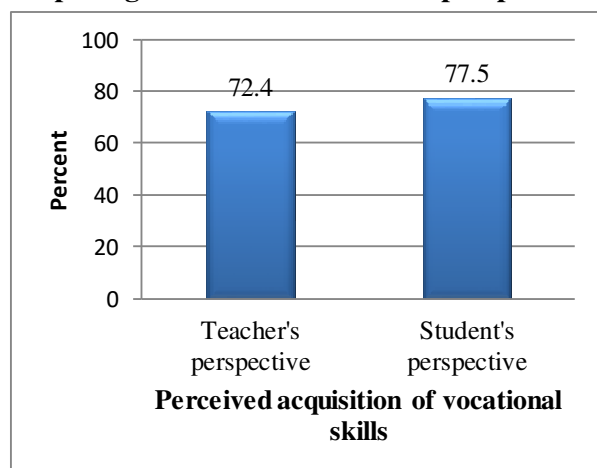
Teachers' perspectives

With respect to students' acquisition of vocational skills, in overall, teachers in a majority weight acknowledged that they used adequate assessment techniques (72.4%). They mostly perceived technical hard skills (78.9%), followed by technical skills (soft skills), occupational skills / employability skills, academic / cognitive skills, while the least acknowledged was academic / cognitive skills (68.5%). Students' acquisition of vocational skills was significantly associated with location of school whereby they significantly agree more in the Southwest region with proportion weight of 83.3%, as compared to 51.1% for the Littoral region ($P = 0.001$).

Students' perspectives

In overall, students in a majority weight acknowledged the acquisition of vocational skills (77.5%). They mostly perceived technical skills (soft skills) with weight of 85.6%, technical skills (hard skills) with weight of 78.5%, occupational skills / employability skills (76.6%), while the least acknowledged was academic / cognitive skills (74.1%). Students' description of students' vocational skills was not significantly dependent of demographic information ($P > 0.05$).

Comparing students and teachers' perspectives



χ^2 -test: $\chi^2 = 2.12$; $df = 1$; $P = 0.146$

Figure 2: Comparing perceived acquisition of vocational skills between students and teachers

Though students were more confident with their acquisition of vocational skills, with weight of 77.5% as compared to 72.4% for the teachers, the difference was not statistically significant ($P = 0.146$), thus implying that both students and teachers to a high extent were satisfied with the acquisition of vocational skills by the students (figure 2).

Teaching methods in building construction programme

Teachers' perspectives

In overall, teachers generally practiced the recommended teaching methods with a very strong weight of 78.3%. The most practiced teaching method was as perceived by the teachers was project method with weight of 81.8%, followed by interactive demonstration method, explicit method, while the least was cooperative learning but with a strong majority weight as well of 74.7%.

Teachers practiced of the recommended teaching methods was significantly ($P = 0.001$) dependent of location whereby it was more practiced in Southwest region with weight of 88.9%, significantly higher than the 57.5% recorded in the Littoral region.

Teachers practiced of the recommended teaching methods was significantly ($P = 0.048$) dependent of their higher professional qualification whereby it increased significantly with professional qualification, ranging from 65.9% for holder of A/L technical to 92.7% and 91.2% for holders of DIPLET II and Engineer respectively.

Students' perspectives

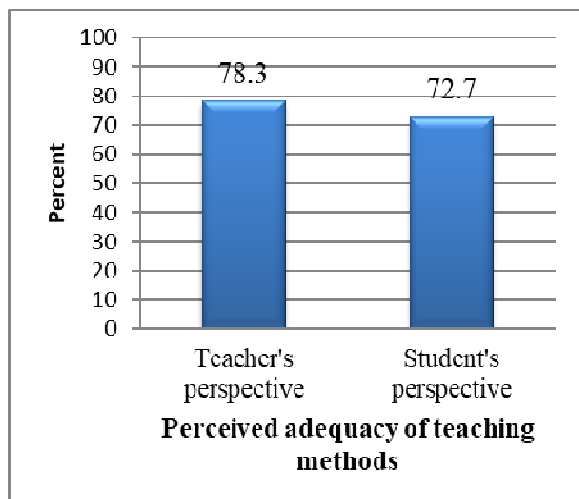
In overall, students in a majority weight acknowledged the practice of the various teaching methods by their teachers (72.7%). They mostly perceived explicit teaching (76.0%), followed by interactive demonstration method (75.2%), cooperative learning (70.5%) while the least acknowledged was project method (68.9%).

Students' description of teaching method was not significantly dependent of demographic information ($P > 0.05$), thus implying that they generally shared the same opinion.

Comparing teachers and students' perspectives

Teachers and students had almost the same appreciation of teaching methods ($P = 0.313$), though teachers to a higher extent (78.3%) perceived the adequacy of teaching method as compared to students (72.7%). Though in their majority they agreed of the proper implementation, this was below the critical cut point for strong lexicography for effective implementation of 80%. However, this deviation was not significant for teachers ($\chi^2 = 0.04$; $df = 1$; $P = 0.849$) unlike for students ($\chi^2 = 3.73$; $df = 1$; $P = 0.049$). This

therefore implies that if teachers perceived an effective implementation of teaching methods, this was the case with the students (figure 4).



χ^2 -test: $\chi^2=1.02$; $df=1$; $P=0.313$

Figure 4: Comparing teachers and students' perceptions of teaching methods

Research Hypothesis: There is no significant relationship between teaching methods in building construction programme and the development of

students' vocational skills in technical high schools in Cameroon

Table 5: Influence of teaching method on student's vocational skills

Spearman's Rho		Teaching method	Student vocational skills
Teaching method	R	1	.826**
	P-value		.000
	N	83	83
Student vocational skills	R	.826**	1
	P-value	.000	
	N	83	83

** . Correlation is significant at the 0.01 level (2-tailed).

There was a significant positive correlation between the practiced of the recommended teaching methods and acquisition of vocational skills by students ($R=0.826$; $P=0.000$). The hypothesis here stated is then rejected. The hypothesis was further verified with Binary Logistic Regression test as presented on table 5.

Table 6: Binary logistic regression depicting the contribution of teaching method to the acquisition of vocational skills by students

Conceptual component	Omnibus Tests of Model Coefficients	Explanatory Power (Cox & Snell R Square)	N
Explicit teaching	$\chi^2=22.354$ $P=0.004$	8.0%	268
Interactive demonstration method	$\chi^2=22.477$ $P=0.004$	8.0%	268
Cooperative learning	$\chi^2=5.128$ $P=0.744$	1.9%	268
Project method	$\chi^2=35.722$ $P=0.000$	12.5	268
IVM (Overall teaching method)	$\chi^2=39.746$ $P=0.000$	18.4%	268

There was a significant positive correlation between the practiced of the recommended teaching methods and acquisition of vocational skills by students ($P=0.000$) (table 5). The hypothesis was equally rejected by Binary Logistic Regression ($P=0.000$), thus corroborating with Spearman's Rho correlation test (table 6). The overall explanatory power for the conceptual component 'teaching method' was 18.4%. Among the four sub-components of teaching methods, namely explicit teaching, interactive demonstration method, cooperative learning and project method, only cooperative had a non-significant contribution ($P=0.744$).

Four indicators surfaced as critical predictors of students' acquisition of vocational skills ($P<0.005$,

$OR>1$ and LB of $OR >1$), namely 'My teachers prepare lesson notes and plan the steps involve in interactive demonstration lesson', 'My teachers guide students during each project for them to acquire creativity skills and higher order thinking skills', 'My teachers ensure that safety precautions are put in place before the project begins', 'My teachers assign students to small groups to carry out the group tasks' and 'My teachers hold regular sessions at the end of each day to discuss students' progress and provide clarifications where needed'.

Discussion

Teachers and students had almost the same appreciation of teaching methods ($P=0.313$), though teachers to a higher extent (78.3%) perceived the

adequacy of teaching method as compared to students (72.7%). Though in their majority they agreed of the proper implementation, this was below the critical cut point for strong lexicography for effective implementation of 80%. However, this deviation was not significant for teachers ($\chi^2=0.04$; $df=1$; $P=0.849$) unlike for students ($\chi^2=3.73$; $df=1$; $P=0.049$). This therefore implies that if teachers perceived an effective implementation of teaching methods, this was the case with the students.

Teachers and students also equally had almost the same appreciation of students' acquisition of vocational skills ($P=0.146$), though students to a higher extent (77.5%) perceived the acquisition of vocational skills as compared to teachers (72.4%) for teachers. Though in their majority they agreed of the proper acquisition of vocational skills by students, this was below the critical cut point for strong lexicography for effective implementation of 80%. However, this deviation was not significant for teachers ($\chi^2=1.19$; $df=1$; $P=0.276$) and for students ($\chi^2=0.40$; $df=1$; $P=0.526$). This therefore implies that teachers and students perceived the acquisition of vocational skills to be effective.

The findings later revealed that the practice of the recommended teaching method significantly determine the acquisition of vocational skills by students whereby the better the teaching method the higher the acquisition of vocational skills by students.

In overall, students in a majority weight acknowledged the practice of the various teaching methods by their teachers (72.7%). They mostly perceived explicit teaching (76.0%), followed by interactive demonstration method (75.2%), cooperative learning (70.5%), then project method (68.9%). It then appears that all the four approaches of teaching methods were well considered by the teacher thus supporting the idea of combining several methods in integration to boost skill acquisition by students as earlier stressed by Ahmad, et al. (2017). Ahmad, et al. (2017) found in their study context that teachers exhibit preference in using demonstration and questioning techniques during introduction session and group monitoring and problem-solving during teaching, re-explaining and report writing in the post teaching session. Based on all investigated factor, the researcher recommended that teachers should avoid the use of a single approach in teaching rather they should employ multiple methods since it make students to pay more attention and are motivated from the beginning of the teaching session to the end. The vacuum with this study as compared to that of Ahmad, et al. (2017) is that observations portrayed the various teaching methods employed by

the teachers but failed to depict the sequences at which they were used.

Interactive demonstration method was to a very high extent practiced in the study context thus aligning with Daluba (2013) who earlier proved the importance of demonstration methods of teaching on student's achievement and recommended that efforts should be made by teachers to thoroughly integrate demonstration method in the teaching of agricultural science in secondary schools, as well as to aggressively adopt demonstration method in teaching agricultural science in all classes at the secondary school level were proffered. The high implementation of interactive teaching method and project method indicates the high consideration of constructivist teaching method in the study context. The effectiveness of constructivist teaching method was earlier recommended by Kim (2005) who recommended that teachers should employ the usage of the constructivist teaching methods in the classroom more than the traditional teaching methods.

Among the four sub-components of teaching methods, namely explicit teaching, interactive demonstration method, cooperative learning and project method, only cooperative had a non-significant contribution. Observation deplored the inadequacy of equipment for practical and this could make group learning much more inappropriate.

Considering the Explanatory Power of the various sub-components as compared to the Integrated Value Mapping (IVM) integrating the Predictive Power of all the components in integration, the IVM had the highest Explanatory Power, thus supporting the findings of Ahmad, et al. (2017) who recommended the integration of various teaching methods. If we look at the four indicators surfaced as critical predictors of students' acquisition of vocational skills, namely 'My teachers prepare lesson notes and plan the steps involve in interactive demonstration lesson', 'My teachers guide students during each project for them to acquire creativity skills and higher order thinking skills', 'My teachers ensure that safety precautions are put in place before the project begins', 'My teachers assign students to small groups to carry out the group tasks' and 'My teachers hold regular sessions at the end of each day to discuss students' progress and provide clarifications where needed' we can realize they cut across the various teaching methods thus supporting the recommendations for the integration of the various teaching methods.

Conclusion

The study aimed at investigating the extent to which building construction programme influence the

development of students' vocational skills in technical high schools in Cameroon. This was in recognition of poor training system in the building construction programme in technical high school, making many to graduate without the necessary skills and hence, contributing very little to the advancement of the economy. The low enrolment in the field could be blamed to the poor output of graduates thus hindering the attractiveness of this speciality. Though teachers and students highly perceived the adequacy of teaching methods, they blamed the poor quality of equipment, the overshadowing of practical by theories, the amount of support provided by the school administration during internship, large class sizes that could be explained by the on-going socio-political crisis in the region that had led to a huge number of displaced people to safer zones. The need to rehearse the organization of internship was a major concern in this study. Conducting planning sessions, with the objective of developing long-term plans and strategic plans concerning the school workshops, collaboration between schools and enterprises as to contextualized and make learning more practical and operational will go along to enhance the employability and more specifically the self-employment potential of learners. Above all, government should actually support technical vocational institutions with modern equipment. This deficiency in internship hurts the Benjamin Bloom's Taxonomy of Educational Objective (1956) whereby it believed that education should focus on 'mastery' of subject matter and the promotion of higher forms of thinking rather than a utilitarian approach to simply transferring facts. The paramount role played by internship and practical in the acquisition of vocational skills in technical school is equally supported by the Cognitive apprenticeship which is a theory of the manner by which a master instructor teaches an apprentice learner how to think about solving a complex problem (Collins, Brown, & Newman, 1987). This theory is rooted in the constructivist paradigm (Larson, 2015) and emphasizes the need to make available all what is necessary to impart practical skills in learners if our vision of socio-economic development should be achieved in the short and long term. The scarcity of teachers gives room to holders of Baccalaureate, CAPIET to teach building construction courses in the high school. There is therefore need to recruit more technical teachers that will impart vocational skills in the learners and make them ready for the job market and for contributing to the socio-economic development of their communities and the country at large. However, as they are constantly faced with common, sporadic and unpredictable challenges,

while expecting the authorities to play their role, teachers need to be more resilient, constantly regulate their intrinsic motivation and locus of control and develop ways of coping with the constant demands and challenges of their work. This is so important because effective teaching does not only include cognitive challenge but it is also socially and emotionally demanding as stressed by Jennings and Greenberg (2009). This also aligns with Multiple Intelligence (MI) Theory by Howard Gardner (1983), though applying mostly to learners can also apply to teachers because learning is a continuous and lifetime process. Ryan's Theory of Teacher Behaviour (1970) also supports this assertion as it argues that teacher should be able to perform a variety of task in different situations in a given context like the classroom, thus emphasizing the adaptability potential of a good teacher. The theory opined that, three types of skills are developed in the student-teachers that is; linguistic skills, teaching skills and social skills, which social skills and in overall constructivist approach of teaching will help adapt to changing social, political and cultural context as to serve education and save the future of the youth for sustainability. The very high increase in the Predictive Power of the IVM indicates the high complementarity among the various conceptual components, which corroborates the significant relationships in the inter-item correlations thus supporting these theories dwelling on the diversification of skills. Though continuous learning did not surface as drawback to the achievement of educational objectives in the context of this study, it is important to stress that teachers should be self-motivated and motivated to participate actively in in-service training programmes and workshops organized by the government and Civil Society Organization either physically or on-line to update their knowledge and pedagogical skills. Teachers should upgrade their skills in ICTs as to optimize their ability to benefit from the advantages they offer for the teaching and learning process and for their personal development.

The study recommends that more internship programmes should be organized considering the fact that academic programmes incorporate internship opportunities particularly those that promote overall students' success and future gainful employment, the problem now being the implementation. They should be supported by school administrations in this direction. Teachers should always make sure they combine two or more teaching methods in a single class. Teachers should develop their adaptability potentials to cope with challenges as to better serve teaching and learning process. Students and teachers

were highly dissatisfied with the amount of support provided by the school administration during internship. This aspect should be improved upon and policy-makers or government should step in need be. Enhancing school- industry collaboration, such that schools and industries could jointly engage to enhance students' capacity building in technical education in order to foster the employability of graduates. More supervisions and in-service training to ensure improvement in teaching-learning process and so far the acquisition of vocational skills by the students. Government and non-governmental agencies should adequately provide technical colleges with train personnel and equipment so that graduates will acquire skills, knowledge, and attitude required for productive and satisfying employment.

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