EVALUATION OF INSTRUCTIONAL FACILITIES USED IN THE IMPLEMENTATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) CURRICULUM IN PUBLIC SECONDARY SCHOOLS IN THE SOUTH WEST REGION OF CAMEROON

Ndang Gilbert Farinkia[1i],
Agborbechem Peter Tambi[2]
[1]PhD Candidate,
University of Buea,
Cameroon
[2]Associate Professor,
Dean Faculty of Education,
University of Buea,
Cameroon

Abstract:
The purpose of this study is to evaluate the instructional facilities used in the implementation of Information and Communication Technology (ICT) curriculum in Public Secondary Schools in the South West Region of Cameroon. Nine schools provided data for this study mostly from Fako and Meme Division. The study, more specifically sought to provide answers to the research question: How adequate are the instructional facilities in the Teaching of ICT? The survey research design was employed and a sample of 186 students and 13 teachers and 5 RPI were selected nine schools and the Regional Pedagogic Inspectorate of Computer Science. A questionnaire and interview guide were employed to collect data which was analysed using SPSS version 17. The results revealed that the responding teachers have the required qualifications but there were inadequate instructional facilities in Public Secondary Schools in the South West Region of Cameroon. Interviews with the RPIs confirmed that most schools lack ICT required ICT facilities and this was worse with schools in rural areas. From the Findings, recommendations and conclusion that could assist in the improvement of instructional facilities and providing support for the successful implementation of ICT polices were suggested.

---

[1] Correspondence: email ndanggils@gmaill.com

Keywords: evaluation, instructional facilities, implementation, information and communication technology (ICT), curriculum, public secondary schools, South West Region of Cameroon.

1. Introduction

Information and Communication Technology (ICT) is indispensable in today's global economy. It is regarded as a critical means for national development. Almost every country has a great interest in ICT in education and many have developed and adopted national policies or plans for ICT in education (Butcher, 2010). ICT continues to revolutionized business, industry and entertainment and is increasingly dominating all sectors of the global economy. ICT plays a crucial role in the knowledge and information society by increasing economic productivity through digital economies, enhancing the delivery of public and private services and achieving broad socio-economic goals in education, health care, employment and social development (UNESCO-UIS, 2015).

The teaching of ICT has been and continues to be a daunting task to the Government, School Administrators, Teachers and stakeholders. In 2003, the policy to implement ICT in Primary, Secondary and Tertiary Institutions was enacted (Decree N[o:] 3475/d/63 of 17th June, 2003). The teaching of ICT in secondary schools started after seven years that is in 2010. During this time, there were no Higher Teachers Training College in the country with the Department of Computer Science to train Computer Science and ICT teachers. What was observed was the use of teachers of other subjects and some private partners to teach Computer Science and ICT. Teachers of other subjects were sponsored by their schools to be trained systematically to teach ICT and Computer Science. Then there were fewer schools which began the program. Today with the introduction of Computer Science department in most of the Higher Teachers Training colleges, many teachers are now available to teach ICT. Though this is not still enough as the importance of the subject is increasingly being recognized by both students and parents. With the ever-increasing population of the number of candidate, teaching, teaching and learning material continues to be a major concern. ICT that started in 2011 with 281 candidates and emerged 16 out of 17 subjects at the Advanced level, as of 2016 was 13 out of 20 subjects at the GCE Advanced level with a total number of registered student 3474 (GCE Advanced Level Examination by Subjects statistics booklet, 2011 & 2016).

Instructional facilities and infrastructure pose a major problem to the teaching of ICT especially as students are supposed to do practical which adds up to their final examination results. From observation majority of the schools do not have Multimedia centre, a few have computer laboratories while a relative small proportion has multimedia centres. Within South West Region less than 15 schools have Multimedia centres. The issue of availability of a stable source of energy (power) have serious implications on the implementation of ICT curriculum.

The Post-2015 Education Agenda emphasize quality education as its major priority. The frequently mentioned obstacles to good-quality education amongst others are the implementation process. This manifest itself in the form of narrow focus on assessment leading to a narrow curriculum goal, shortages of qualified teachers (and inadequate support or professional development for teachers), inadequate instructional facilities, inappropriate instructional methods, inappropriate assessment procedures, out-dated curricula, absence of linkages to employment, and gender-based violence in schools. All these facets have an implication to the way the curriculum is implemented. Hence there is a need for secondary schools to tailor their curriculum to meet the challenges of the present dispensation characterised by the digitization of all sectors as decried by Cameroon's President, Paul Biya while addressing the Youth on the eve of the Youth Day 2016 (www.prc.cm).

Table 1: GCE Advanced level Performance for ICT from 2011-2016

Years	Registered	Sat	Passed	% Pass
2011	281	269	92	34.20
2012	1188	1156	399	34.52
2013	1383	1343	760	56.59
2014	2456	2367	1153	48.71
2015	2647	2598	1257	48.38
2016	3474	3416	2265	66.31

Source: 2011-2016 GCE Advanced Level Examination by Subjects statistics booklet.

1.2. Statement of the Problem

Secondary Schools in Cameroon has been implementing ICT curriculum for more than a decade after the adoption in 2003 yet little or nothing is known about the adequacy of instructional facilities. Effective implementation depends on quality inputs which will be processed to attain desirable results. In a context which is not characterised by regular monitoring and evaluation little or nothing is known about how much access or exposure to practical skills is given to the learners. This put the implementation process of ICT in Public Secondary Schools into question. Meanwhile Secondary education is crucial for several reasons; provides leaners with knowledge and skills needed for economic growth in addition to the future training of professionals.

Cameroon Secondary education system continue to produce graduates without the requisite ICT competences to gain employment though the Government, Stakeholders, and parents are investing huge sums of money in training ICT teachers in the Higher Teachers Training Colleges and providing the technologies in Secondary Schools. Trained teachers may not be effective if the required materials are not in adequate quality and quantity. Instructional facilities in Public Grammar Secondary Schools in Cameroon could be partly responsible. Thus, the need for this study "*Evaluation of Instructional Facilities in Public Grammar Secondary Schools in Public Secondary Schools in the South West Region of Cameroon*".

1.3 Purpose of the Study

The purpose of this study is to evaluate ICT facilities in Public Secondary Schools in the South West Region of Cameroon.

The question used to provide answer to this objective was; "How adequate are the instructional facilities in the Teaching of ICT in Public Secondary Schools in the South West Region?

1.4 Significance of the Study

The researcher is of the opinion that this study is important for many reasons. The first is that it will create awareness since there is little or nothing known in the context of Evaluation of ICT Curriculum in Public Secondary Schools in the South West Region of Cameroon. It is hoped that the knowledge created or findings could be exploited to create and nurture more enabling conditions that will maximise the potential benefits of ICT within the context of educational organisations. It will inform policy makers and stakeholders of the progress of the implementation process.

It is further significant in that it aligns with national, regional and international strategies to improve the quality of education. For example, it is in line with the Post-2015 Education Agenda which emphasize quality education as its major priority and the Cameroon's Sector Wide Approach to Education (2005) priority areas – improvement of the quality of education at all levels and the improvement of management and control, and global initiatives for Education for All and Sustainable Development Goal. This is very important because Cameroon is experiencing a shortage of quality teachers at all levels (Cameroon's Sector Wide Approach to Education, 2005 p. 58-59). This shortage is further worsening by the instructional facilities made available to the limited teachers on the field.

2. Literature Review

2.1 Conceptual Framework
2.1.1 Meaning of Evaluation

The word 'evaluation' is often confused with testing and measurement. Therefore, many times teachers who give a test to students, think that they are evaluating the achievement of the students. Testing is only a technique to collect evidence regarding pupil behaviour. Measurement on the other hand, is limited to quantitative description of the pupil behaviour. Evaluation is a comprehensive term which includes testing and measurement and also qualitative description of the pupil behaviour. It also includes value judgment regarding the worth or desirability of the behaviour measured or assessed. Therefore, Gronlund (1981) has indicated this relationship in the following equation:

Evaluation = quantitative description of pupils (measurement) + value judgement
Evaluation = qualitative description of pupils (non-measurement) + value judgment

Thus, evaluation may not be based on measurement alone but it goes beyond simple quantitative score. For example, if a child gets 60 marks in an English language test alone does not tell us whether his/her achievement is satisfactory or not. It is only when we compare this mark of 60 percent with the marks obtained by other children in the class or with certain criteria laid down in advance, or with the child's own marks in previous tests, we are able to judge or evaluate whether his/her achievement in ICT is satisfactory or not. Thus, a students' achievement may be viewed at three different levels:

1. Self-referenced: how the student is progressing with reference to his/her.
2. Criterion-referenced: how the student is progressing with reference to the criteria set by the teacher.
3. Norm-referenced: how the student is progressing with reference to his/her peer group.

Evaluation has been defined by various educationists in different ways. According to Okpala (as cited in Nkechi, 2002), educational evaluation is the collection of data and the use of such data to assess the quality of students' performance and the effectiveness of a programme. Evaluation is also deciding about the quality or goodness of performance or a course of action (Airasian, 1997). According to Houghton (2011), evaluation refers to procedures used to determine whether the subject (student) meets pre-set criteria. Evaluation uses assessment such as tests to make a determination of qualification in accordance with the predetermined criteria. Evaluation is the interpretation of test scores produced by the assessment process. That is, making judgment about the performance of a student from the information obtained from assessment (Tambo, 2003).

Harbor-Peters (1999) went further to say that, evaluation includes both quantitative and qualitative descriptions of pupils' behaviour in addition to value judgement concerning the desirability of that behaviour. For instance, at the end of the course on evaluation, the students would be tested to determine the extent of their change in behaviour. The quantitative description of their qualitative grades will be in letter grades thus:

Table 2: Quantitative and qualitative evaluation

70% and above	A- Excellent
60-69	B- Very Good
50-59	C- Good
45-49	D- Average
40-44	E- Low Pass
Below 40%	F- Fail

At the end of the programme of study, a summary of student's grade is taken and the Grade Point Average (GPA) computed. Then, their level of grade will be determined. For Stufflebeam in Idoko (2001), evaluation is the process of delineating, obtaining and providing useful information for judging alternatives; though the author has been reported to include information for accountability.

According to Idoko:

- Evaluation is performed in the service of decision-making and accountability; hence, it should provide information, which is useful to decision-making as well as being accountable for the public money invested in programme.
- Evaluation is a cyclic, continuous process and therefore must be implemented through a systematic programme.
- Evaluation process includes the three main steps of delineating, obtaining and providing
- The delineation and providing steps in the evaluation process are interface activities requiring collaboration between evaluator and decision-maker while the obtaining step is largely a technical activity which is executed mainly by the evaluator.

2.1.2 The Meaning and History of Curriculum

Etymologically, the word "curriculum" began as a Latin word which means "a race" or "*the course of a race*" (which in turn derives from the verb *currere* meaning "*to run/to proceed")* (Bobbitt, 1918; Onwuka, 1981; Tambo, 2003; Oxford English Dictionary). According to the original Latin usage for curriculum it meant a "*runway*" or a course which one runs to reach a goal; which could be "*the school certificate a diploma or degree"* (Mkpa, p. 9). Till date, the task of defining the concept of curriculum is perhaps the most difficult of all, for the term curriculum has been used with quite different meanings ever since the field took form. Curriculum, however, can be defined as prescriptive, descriptive, or both. Prescriptive definitions provide us with what "*ought*" to happen, and they more often than not take the form of a plan, an intended program, or some kind of expert opinion about what needs to take place in the course of study. (Ellis, 2004, p. 4) while the descriptive definitions of curriculum go beyond the prescriptive terms as they first thought about the curriculum "*not merely in terms of how things ought to be but how things are in real classrooms*" (Ellis, 2004, p. 5).

The first known use of the word curriculum in an educational context is in the Professio Regia, a work by University of Paris professor Petrus Ramus published posthumously in 1576 (Hamilton, 2014). The term's next appearance was in University of Leiden (Netherland) records in 1582. The word's origin appears closely linked to the Calvinist desire to bring greater order to education (www.pt.scridb.com); by the seventeenth century, the University of Glasgow also referred to its "course" of study as a "curriculum", producing the first known use of the term in English in 1633. By the nineteenth century, European universities routinely referred to their curriculum to describe both the complete course of study (as for a degree in surgery) and particular

courses and their content. The definition of curriculum had defied consensus among educators. It has never had a precise definition. Though used in the 19ᵗʰ century, it did not amount to more than a collection of syllabuses or a collection of subjects (Owen, 1973).

2.1.3 ICT Curriculum in Secondary Schools in Cameroon

Many scholars hold that the project for introducing ICTs in schools in Cameroon was given an impetus by two presidential statements, which brought ICTs into the realm of education at all levels of schooling in 2001 (Mbangwana, 2008; Tchinda, 2007, République du Cameroun, 2007c, Farinkia, 2011). In the president's message to the youth in 2001, the President of Cameroon called for an embrace of the knowledge of ICT. This statement made it clear that imported computers and their accessories were to be duty free for schools. Moreover, the World Bank in its ICT task force policy has raised the concept of cyber education in the global school system to promote the development of computer technology, to improve the accessibility of learners to information technology, and to encourage digital inclusion in developing countries. The implementation of ICT in Cameroon aligns with the World Bank task force policy though plagues with challenges that have an implication on the digital inclusion. Consolidating the presidential statement and the World Bank initiative, MINEDUC authorised the Inspectorate General of Pedagogy in charge of teaching Computer Sciences at all levels to design and develop a project on cyber education in Cameroon. This project was implemented in April 2001. By the year 2004, key strategies on using ICTs in education were highlighted in the first official draft of the Cameroon National Information and Communication Infrastructure (NICI) policy and plan prepared by the government with support from the United Nations Development Program (UNDP) and the United Nations Economic Commission for Africa (UNECA). In this document, the Cameroonian government recognises ICTs as a national priority along with education, health, forestry, and governance.

2.1.4 Factors Affecting Implementation

As stated by Fullan and Pomfret (1977); "*effective implementation of innovations requires time, personal interaction and contacts, in-service training and other forms of people-based support*" (p.391). Curriculum implementation requires winning people over and it takes time. Teachers need to feel appreciated and their efforts recognised. Some may argue that they should be given financial rewards but there is evidence to suggest that external motivation contributes minimally to the venture. Individuals contribute their best talents when they are internally motivated and derive a good feeling from being involved. This opinion is held by scholars like Hilda Taba in her Grass Root Rationale (1962). Unlike Tyler, she advocated that teachers should participate in developing curricula – a recommendation that was contrary to the top-down approach where administrators gave teachers ideas from curriculum experts and supervise teachers to

ensure that the ideas were implemented. Taba, (1962) felt that the curriculum should be design by the users, that is, teachers, hence the name Grassroots approach.

Fullan (1982) holds that implementation is the big hurdle at the level of practice, but the question of the continuation of initiated reforms should be considered in its own right. Berman and McLauglin (1978), cited in Fullan, (1982) found that projects which were not implemented effectively were discontinued (as would be expected), but they also found that only a minority of those which were implemented were continued beyond the period of federal or government funding. The reasons for lack of continuation were in the main the same ones which influenced implementation, except that their role became more sharply defined. Lack of interest or inability to fund "special projects" out of district funds, and lack of money for staff development and staff support for both continuing and new teachers, signalled the end of many implemented programs. This is directly linked to the implementation of ICT in schools. Hence, there is serious need to pay attention to factors related to continuation such as sustained structures for teacher development.

2.1.5 Meaning of ICT

It is difficult to find a clear definition of the term ICT. However, there seems to be a misconception where many educators think that ICT generally refers to the use of computers and computing related activities (Olakulehin, 2007). However, UNESCO (2008a) defines ICT as, "...*the tools and the process to access, retrieve, store, organise, manipulate, produce, present and exchange information by electronic and other automated means. These include hardware, software and telecommunications in the forms of personal computers, scanners, digital cameras, phones, faxes, modems, CD and DVD players and recorders, digitised video, radio and TV programmes, database programmes and multimedia programmes.*"

Another useful definition of ICT is that it: "…*generally relates to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware (e.g. computers and other devices); software applications; and connectivity (e.g. access to the Internet, local networking infrastructure, and videoconferencing). What are most significant about ICT are the increasing convergence of computer-based, multimedia and communications technologies and the rapid rate of change that characterises both the technologies and their use.*" (Toomey, 2001, p. 4).

ICT in the context of this study is seem as both a course of study where the ability of being able to make best use of ICT tools is taught in to high school students.

The American Library Association (1983) defined ICT as the application of computers and other technologies to the acquisition, organization, storage, retrieval and dissemination of information. According to Adeyemo (2010), ICT in education is the application of digital equipment to all aspects of teaching and learning; the use of ICT in education falls into four (4) major categories, which are: 1) knowledge construction and problem solving (through the internet, e-mail, CD-ROM, databases, video

conferencing); 2) process skills; 3) aiding explanation of concepts; and 4) communication of ideas through power points, desktop publishing etc.

2.1.6 Importance of ICT

Literature abounds with the benefits of ICT in education, Tella et. al (2007) highlighted the followings as the benefits of ICT to student learning: it improves learners motivation, facilitates the recall of previous learning, provides new instructional stimuli, activates the learners' response, provide systematic and steady feedback, facilitates appropriate practices, provide a viable source of information to enhance learning, development of desirable attitude towards learning in learners particularly lifelong learning, enables students to gain deeper understanding of complex topics and concepts to develop higher order thinking, facilitates creativity and research skills. It also serves as rich sources of information for student looking for ideas for project and assignment as well as enhances quality learning and better academic achievement for students when they are exposed to video-based instruction.

Information and Communication Technologies are not a panacea or magic formula… but they can improve the life of everyone on the planet (Kofi Annan, 2005). Although computers are seen as essential in the world today, the significance of computers in schools needs to be examined very closely. As noted by Hokanson and Hooper (2000, p. 537) "*Despite a history of achieving only marginal benefits from using technology in education, many schools and other educational organisations are investing heavily in computer technology*".

2.1.7 Concept of Curriculum Implementation

Curriculum implementation entails putting into practice the officially prescribed courses of study, syllabus and subjects (Chikumbi & Makamure, 2005).

Mkpa (2007) defined curriculum implementation as the task of translating the curriculum document into the operating curriculum by the combined efforts of the students, teachers and others concerned. That is, curriculum implementation demands concerted efforts of end-users of the curriculum for its effective implementation at all levels in order to achieve the desired goals.

2.1.8 Factors Influencing Curriculum Implementation

There are several factors that could influence curriculum implementation. According to Chaudhary (2015), some of the factors influencing Curriculum Implementation may include:
- Curriculum Implementation Influence on Teachers;
- Curriculum Implementation Influence on Learners;
- Curriculum Implementation Influence by Resource Materials and Facilities;
- Curriculum Implementation Influence on Interest of Groups;
- Curriculum Implementation Influence on the School Environment;
- Curriculum Implementation Influence due to Culture and Ideology;

- Curriculum Implementation Influence through Instructional Supervision;
- Curriculum Implementation Influence by Assessment.

2.3 Theoretical Framework

The model and theory used in this section of the literature review are in line with the general objective of this study which is to evaluation the implementation of ICT curriculum in Secondary Schools in the South West Region of Cameroon. Stufflebeam (1971) Evaluation Model addresses the evaluation aspect of the objective while for the implementation of ICT curriculum which has to do with educational change, educational change theory specifically Michael Fullan's (1982) framework of managing educational change will be elaborated.

2.2 Empirical Framework

2.2.1 Implementation of ICT in Cameroon

According to Tetang, (2007) in his Country report on ICT in Education recounted the Policy implementation of ICT in Cameroon. To him, the projects were implemented in collaboration with external partners and with support from the President of the country. The implementation phase started in 2001 and, since then, the government has signed a number of decrees to pave the way for the introduction of ICTs in education (Mbangwana, 2008; Tetang, 2007). In 2002 a ministerial decision defining the condition for the creation of Multimedia Resource Centres (MRCs) in government secondary schools was published. Then in 2003 a decree introducing ICTs in education was published by the Ministry of National Education (presently MINESEC, the Ministry of Secondary Education). The decree made it clear that ICTs would become an obligatory discipline beginning in September 2003. The use of the word obligatory could be seen to be very weak as ICT did not became a compulsory subject as students are not compelled to write it at the end as the policy prescribed.

2.2.2 Uses of ICT in Cameroon Secondary Schools

According to Shaibou, Moluayonge & Park (2017) many different types of technology are used to support and enhance the teaching and learning process. This includes everything from surfing the internet to collecting information for lessons preparation and using applications to prepare presentations, creating digital learning materials for students. Also, using ICT to provide feedback, assess students' learning, communicating online with parents, download and upload material from the school's portals or learning management system to looking for online professional development opportunities (Farinkia 2011, & Shaibou et al. 2017). To Shaibou et al. (2017), Teachers' use of ICT in Cameroon has been less than optimal, and in spite of its potential educational benefits of ICT in Education, teachers may not have benefits, for various reasons (for example lack of training, resistance to change, among others). Like Mbangwana 2008 and Farinkia 2011, they blamed it to have been due to the lack of focus on ICT in Cameroon. Mbangwana (2008), expressed surprise that in 1995 when

educational experts met in Yaoundé (National Forum,1995) to discuss how the Cameroon educational system could be improved upon, nothing was mentioned about the use of ICT in school. In addition, Law No 98/004 of 14 April 1998 which lays down guidelines for basic and secondary education in Cameroon, does not make mention of the use of ICT in the school system. Farinkia (2018), highlighted many barriers to successful implementation of ICT in Cameroon Secondary Schools and concluded that one of the ways of ensuring that documented and other problems are solved and quality secondary education provided is to adopt and implement ICT policies. He recommended that schools could create and nurture partnerships with other members/groups/organisations within the community to support the implementation of ICT policies.

A study by Shaibou et al. (2017), was on the Use of ICT in Education on the basis of intensive case studies conducted in Cameroon secondary schools. The purpose of the study was to investigate Teachers Use of ICTs in Cameroon Secondary Schools. Research questions were:

1) What are teachers' levels of ICT use in secondary schools?
2) What are teachers' perceived ICT access, competence, training and ICT support?
3) Are there differences in perceptions of teachers' ICT use, access, competence, and support with regards to school location (Urban and Rural)?
4) Are there differences in perceptions of teachers' ICT use, access, competence, and ICT support with regards to school type (Public, Denominational, and Lay Private)?

A total of 320 teachers from 16 public, denominational and lay private schools from two regions in Cameroon participated in the study. The survey was employed for data collection. Descriptive statistics and independent sample t-tests and ANOVA were used to analyse the data. From the study it could be seen that the use of ICT in teaching and learning is still a call for concern. Findings revealed the following;

- That teachers' use of ICT in teaching and learning process is low (m=2.24, SD=.33). Among the 10 items that they designed to measure teachers' use of ICT, none of the elements had a mean of 3 which was the cut-off mean. To them, it implies that ICT integration in Cameroon secondary schools is low partly due to poor or no proper ICT infrastructure.
- They equally found out that the overall teachers' perceived ICT access is low (M=1.92, SD=.41).
- Also, that teachers' ICT Competence is low (M=2.49, SD=.50). this to them could partly be due to little or no support (M=1.95, SD=.53
- On ICT training and Support, it was found that the teacher received very low support (M=1.95, SD=.53) Findings equally revealed that receiving other professional development opportunities related to ICT (M= 2.64SD=1.26) have average means showing that teachers in Cameroon secondary schools try to learn and use ICT on their own.

- that teachers receive some types of ICT supports. Though the received support level is very low as only 17.4% of the teachers received both technical and pedagogical support from school ICT coordinator, 9.2% received from an online helpdesk, community or website.
- Furthermore, the analysis showed that teachers in an urban area perceived the use of ICT and perceived access to ICT was higher than teachers in the rural area. Finally, the study discovered that there was no significant difference in public, private and denominational school teachers' use of ICT, access to ICT, competencies and training support. The results provide insights into factors that teachers perceived as obstacles to the use of ICT in their teaching, particularly in developing nations. These factors have been detailly discussed by Farinkia 2011.

Shaibou et al. (2017) concluded that the use of information and communication technologies in teaching and learning in Cameroon Secondary Schools has been clearly low due to: low confidence and low competencies of the teachers, formal opposition by teachers to use pedagogical tools that they were not initially trained to utilised in a professional way. Also, schools are unevenly equipped with ICT: in some schools, computers are concentrated in computer laboratories or school libraries, in others computers are only found in the staffrooms and administrative offices. That teachers in rural area have less opportunity in using ICT in their teaching compare to their colleague in the urban areas. This is partly due no electrical connectivity in the countryside. Low teachers' support: both pedagogical and technical other forms have dramatically led to low teachers' use of ICTs in the teaching and learning process.

2.3 Empirical Framework
2.3.1 Evaluation of Curriculum in some African countries
2.3.1.1 Evaluating the Entrepreneurship Education Programme in Nigerian Universities for Sustainable Development

A related study by Nwambam, A. S., Nnennaya, O.O. & Igwe Silas Nwankpu, I.S. (2018) was to assess the entrepreneurship education programme in Nigerian Universities as a means for guaranteeing sustainable development in Nigeria. The primary purpose to find out the adequacy of educational resources for entrepreneurship education and the suitability of its curricula content in inculcating the necessary enterprise skills required by university graduates for sustainable development in Nigeria. The study set to achieve its purpose by answering the following research questions:
- What is the adequacy of trained teachers for entrepreneurship education in Nigeria universities?
- What is the adequacy of facilities/equipment for entrepreneurship education in Nigeria universities?
- What is the adequacy of instructional materials for entrepreneurship education in Nigeria universities?

- How is the curriculum content of universities' entrepreneurship education relevant for sustainable development in Nigeria?

The study was a survey research designed guided by the four research questions. All the students in Ebonyi State University, (EBSU) Abakaliki and Federal University, Ndufu Alike Ikwo (FUNAI) were used for the study. Simple random sampling technique was used to select twenty (20) students each from the eight faculties in EBSU and same from five faculties in FUNAI giving a total of 260 respondents as the sample size.

Researcher-structured questionnaire was used for data collection. The instrument has two parts (1 and 2). Part one contained the personal data of the respondents while part two contained a twenty-item questionnaire patterned on a 4-point rating scale to elicit responses from respondents. The response options are rated thus: Strongly Agree (SA)-4 points, Agree (A)-3 points, Disagree (D)-2 points and Strongly Disagree (SD)-1 point. Decision rule was achieved using the mean of the points thus: 4+3+2+1 ÷ 4=2.5, which therefore was the criterion reference point at which to accept or reject an item as agrees or disagrees. The data collected were analysed using mean scores. The findings of the study revealed the following,

- That there are inadequate trained lecturers/instructors. It implies that teachers with requisite training are not adequate for the teaching of entrepreneurial studies in universities. However, the available ones perform their official duties by going to entrepreneurial education/studies classes.
- That there is in adequacy of facilities/equipment for entrepreneurship education. This implies that the facilities/equipment available in universities is grossly inadequate for the teaching of entrepreneurial studies as shown by the grand mean score of 2.07.
- That there are inadequate instructional facilities/materials for teaching entrepreneurship education. This implies that instructional materials available in the universities are not adequate for teaching and learning of entrepreneurial studies rather, students resort to internet for access to instructional materials which may be expensive and time consuming for an average student.
- That the entrepreneurship curricular contents are relevant for sustainable development in Nigeria but does not fully equip students with adequate knowledge, resources and skills to establish on their own.

Based on the findings, it was recommended that regular training and retraining of lecturers/instructors by the institutions authorities for competence in the teaching of entrepreneurship education, provision of requisite facilities and materials by the universities, government and individuals for instructional efficiency and effectiveness as this is critical to national development. Also, government and private individuals and organisations should collaborate to provide necessary resources to university graduates in order to put the basic entrepreneurial skills they have acquired into practice.

Evaluation of the National Curriculum for Senior Secondary School Biology in Anambra states Nigerian Ngozi (2014), in her PhD thesis titled Evaluation of the National Curriculum for Senior Secondary School Biology in Anambra states Nigerian completed in March 2014, adopted the evaluation research design. The aimed was to determine the value, worth, and relevance of the National Curriculum for Senior Secondary School Biology in Anambra. The evaluation model used was Context, Input, Process Product and Constraints (CIPPC) model, which is a modified Stufflebeam's Context, Input, Process and Product (CIPP) model. This study was carried in Anambra state one of the 36 states in Nigeria. The population was made up of all Biology teachers and students in all the 179 senior secondary schools in Anambra State. The study was limited only to Public secondary schools on the grounds that they have a uniform curriculum and are more accessible.

The sample was made of 300 Biology teachers and 2287 Biology students drawn from the population. A multistage sampling technique was employed, initially, a census sampling technique was used to draw all the 300 Biology teachers, then the stratified sampling technique was adopted to draw only 5% of senior secondary school Biology students from each of the six education zones in the state. Lastly a random sampling procedure was carried in each stratum to select the sample.

Two instruments were used for collecting the data of the study. The instruments were: Secondary School Biology Implementation Evaluation Questionnaire for Teachers (SSBIEQT) and Secondary School Biology Implementation Evaluation Questionnaire for Students (SSBIEQS). The questionnaire was face validated by two experts in Educational Measurement and Evaluation three experts in Science Education from the University of Nigeria Nsukka. The method of data collection involved a combination of extensive direct observation with interview as well as use of questionnaire. 244 copies out of the 300 copies of the questionnaire from the Biology teacher's questionnaire were returned.

To carry out the investigation of the problem of this study, the following research questions guided the work.

- To what extent have the aims and objectives of the national curriculum for secondary school Biology been achieved in the opinion of teachers and students?
- In the view of teachers and students, to what extent do the contents of the Biology curriculum for senior secondary schools adequate for achieving the objectives of the curriculum?
- What is the extent of utilization of the available instructional materials for teaching and learning of Biology?
- What is the teachers' level of compliance with the appropriate teaching methods recommended for use in the Biology curriculum?
- What evaluation techniques are used by Biology teachers in assessing their students?

Data generated for the study was analysed using mean and standard deviation. The results revealed that:

- The composite mean of 2.90 indicates that both teachers and students accepted that the aims and objectives of the national curriculum for secondary school Biology have been achieved to a moderate extent
- The composite mean score of 2.84 shows that both teachers and students agreed that the topical contents of the Biology curriculum were capable of achieving the objectives of the national Biology curriculum for secondary schools to a moderate extent.
- The composite mean of 2.44 shows that the prescribed instructional materials were available and utilized to a less extent.
- The composite mean of 2.58 shows that both teachers and students summarize that the appropriate teaching methods recommended for use in the Biology curriculum were used to a moderate extent.
- The composite mean score of 2.93 shows that the recommended evaluation techniques for assessing secondary school Biology students by teachers were used to a moderate extent.
- The composite mean of 2.61 rated the identified problems as militating against the implementation of national curriculum for secondary school Biology to a moderate extent.

2.3.1.2 On Problems Militating against the Implementation of National Curriculum for Biology Teaching in Anambra State

The result of this study showed that the teachers indicated that students' poor background from basic science; under funding of education; forty minute Biology lesson period; inadequate coverage of Biology syllabus; lack of laboratory facilities and inadequate number of trained Biology teachers were the identified problems militating against the implementation of the national curriculum for Biology teaching in Anambra State to a moderate extent, while the students indicated that such problems militated against the implementation only to a less extent. A reasonable explanation of the funding could come from the fact that students always crowd together to receive lessons. The problems militating against the implementation of national curriculum would be seen to be major ones when there are inadequate trained Biology teachers with only forty minutes given to Biology lessons, regardless of the need for practical after the theory. Too many assignments and tests are given without adequate supervision of students' activities because of limited number of quality Biology teachers. Unskilled and unqualified Biology teachers in the schools create a big problem. The resultant effect is that Biology teaching continues to be traditional, concentrating on "rote-learning" rather than on encouraging students to develop an understanding of basic principles of Biology. When teaching is more by rote-learning, there would be all kinds of misconceptions and eventually poor performance in the subject.

Based on the findings of the study and their educational implications, the following recommendations are made:

1. The aims and objectives of the national curriculum for secondary school Biology have been achieved only to a moderate extent but not to a great extent. Therefore, emphasis should be placed on achieving the aims and objectives to a greater extent by reducing the problems militating against the implementation of the curriculum. It is believed that when the problems of overcrowding to receive lessons, too many tests and assignments, insecurity, coping with task of continuous assessment, inadequate texts and knowledge of subject matter are not considered as major problems of Biology curriculum implementation in the schools, both male and female teachers would teach Biology better than is the case now.

2. The national curriculum for secondary school Biology should be reviewed periodically to make sure it meets the needs of the society. To achieve this, topical contents of the Biology curriculum for senior secondary school should be strengthened to meet the needs of the society.

3. The number, variety and quality of teaching equipment, materials, chemicals, specimens and other teaching support facilities for teaching the contents of the national curriculum for secondary school Biology should be provided to a greater extent than is the case now, as found in this study.

4. The Biology teachers should very often utilize the available instructional materials for teaching and learning Biology.

5. The number and quality of Biology teachers available in schools for implementing the national curriculum for secondary school Biology should be increased. Incentives such as improved scheme of service should be provided to encourage interest in training to teach Biology. The human resource management practices should be improved to motivate the Biology teachers to put in their best.

6. Supervision of Biology teaching should be carried out on Biology teaching regularly so as to encourage them to comply with the appropriate teaching method recommended for use in the Biology curriculum. They should be engaged in in-service training programmes such as workshops and seminars to equip them with the current practices in teaching.

7. Teachers should be encouraged to use the recommended evaluation techniques very often in assessing the students. The Biology teacher should give continuous assessment tests as when due. This should involve practical examinations wherever they are required.

8. A very great level of students' achievement should be targeted in their NECOSSCE and WASSCE examinations which are normally based on the senior secondary school Biology curriculum.

9. Emphasis should be placed on carefully and vigorously reducing the problems militating against the implementation of national curriculum for secondary school Biology in Anambra State by the State Ministry of Education and related agencies.

2.4 Instructional Facilities

Ayeni (2013), conducted a study among secondary schools in Ondo State in Nigeria on *"Effective utilization and maintenance of ICT facilities for quality teaching and learning outcome in secondary schools in Ondo State.* The purpose was to assessed the level of availability and utilization of Information and Communication Technology (ICT) facilities for the attainment of quality learning outcome in secondary schools in Ondo State, Nigeria. It also investigated teachers' and students' opinions on the constraints, and strategies which could enhance effective utilization and maintenance of ICT facilities. The following research questions guided the study:

- How adequate are ICT facilities available for instructional process in secondary schools in Ondo State?
- What is the extent of utilization of ICT facilities in instructional process in secondary schools in Ondo State?
- What are the problems that hinder effective utilization of ICT facilities in instructional process in secondary schools in Ondo State?
- What are the strategies for enhancing the effective utilization of ICT facilities in instructional process in secondary schools in Ondo State?

The study adopted a survey research design and made used of quantitative technique for data collection and analysis. A total of 404 participants comprised 60 teachers and 344 students completed the questionnaire titled "ICT Facilities Utilization and Maintenance Survey Questionnaire (ICTFUMSQ)" in 7 randomly sampled public secondary schools. The reliability coefficient of 0.72 was obtained, using Cronbach alpha. Four research questions and one hypothesis were formulated. The simple percentage was used to answer the research questions while Pearson correlation statistics was employed to test the hypothesis at $p < 0.05$.

The study revealed major constraints identified included; shortage of ICT facilities and low capacity of teachers, irregular power supply, inadequate technical support, poor funding and maintenance. Findings indicated that the provision of ICT facilities is still very low in Ondo State public secondary schools. Also, the data on utilization of ICT facilities revealed low usage in teaching and learning processes in Ondo State Secondary Schools. The study identified the major constraints perceived by teachers against effective utilization of ICT facilities for teaching-learning process at secondary school level included inadequate supply of computer hardware and software; irregular power supply; limited training opportunities for teachers; low level of institutional partnership with professional and corporate bodies for technical support; poor funding and maintenance. This is in agreement with the findings of Farinkia 2011 found that seven factors were found to hinder the implementation of ICT in secondary schools in Cameroon.

From the constraints, Ayengi (2013), suggested strategies such as provision of alternative sources of power supply, capacity building for teachers, and adequate provision of ICT facilities and better management of available ICT facilities were identified as means to improve ICT facilities utilization in secondary schools. This is

supported by Ezegwu (2009), and Ugwoke (2011) who found the same strategies as means to ensure effective utilization of ICT in teaching and learning processes.

The study concluded that ICT is an indispensable tool in fostering curriculum instruction; the inadequacy in the provision of ICT facilities inhibits students' educational opportunities and academic performance. The stakeholders in education sector should be proactive in carrying out periodic needs assessment to determine the gaps in ICT facilities. The strong commitment and collaboration among stakeholders, driven by the unwavering political will of the government and anchored by the Ministry of Education would no doubt strengthen the institutional capacity in the provision and maintenance of ICT facilities, and building teachers' and students' capabilities for effective utilization of ICT facilities in linking teaching to global research networks by sharing ideas with experts in other disciplines; widening their knowledge, skills and experience beyond the scope, structures and limitations of conventional methods that are used in traditional disciplines in curriculum planning and delivery; and achieving better learning outcome in secondary schools.

A related study by Farinkia (2011) was to investigate the experiences of secondary schools that are in the process of implementing Information and Communication Technology (ICT) in Fako division. The study was limited to Fako Division, South West Region of Cameroon. The study, more specifically sought to provide answers to the following research questions: What are the factors that hinder the successful implementation of ICT in secondary schools? What are the enabling factors? What are the various ways in which teachers and students use ICTs in their schools? The survey research design was employed and a sample of 350 students and 18 teachers were used. A questionnaire was used to collect data which was analysed using SPSS version 17. Table, frequencies and percentages were the main tools used for the analyses.

The results of the data analysis revealed that factors that hinder the implementation process include, inadequate number of computers, lack of reliable internet connectivity, lack of skilled human resources, unreliable electrical supply, frequent disruption of electricity power, lack of uninterrupted power supply units (UPS), and inadequate teacher training. The findings also revealed that the same factors could enable the implementation of ICT if addressed. It was found that ICT (computer/internet services) are used for searching for information to improve teaching and learning, sending and receiving emails, chatting, entertainment, and keeping students' records.

The study concluded that adoption is not enough. Schools, as Fullan advises must pay attention to the details of implementation. That the challenge is for all stakeholders to address these problems. Based on the findings, it was recommended that schools could create and nurture partnerships with other members/groups/organisations within the community to support the implementation of ICT policies. Parents, through the Parents Teachers Association (PTA), could work in partnership with the school to provide computers and related accessories as well as

other forms of assistance. It was equally recommended that principal officers in the schools from which data were collected, working in collaboration with hierarchical superiors, could take appropriate actions to address the problems identified.

Another study conducted by Ayeni (2010) on Ondo state secondary schools revealed that 54.2% of the schools' lack well equipped computer laboratory. Consequently, many schools could not meet the ICT facilities required for effective curriculum delivery. This implied that only few secondary schools could achieve quality assurance in teaching and learning processes. This situation would no doubt cause students' low academic performance. Hence, the need to further examines the adequacy, utilization and maintenance of ICT facilities with a view to advising stakeholders in education sector to improve on the provision, capacity utilization and sustenance of ICT facilities in secondary schools.

In a similar study conducted by the Federal Ministry of Education in Nigeria in 2003, only 37.67% of public and private secondary schools sampled had access to computer facilities while there was acute shortage of qualified teachers for computer studies. Further investigation in 2008 revealed that less than 60% of public schools have access to ICT facilities and constrained by low capacity of teachers for ICT utilization and poor electricity supply (Federal Ministry of Education, 2009). This situation constitutes a serious gap in the teaching-learning process and perhaps been responsible for students' low academic achievement in secondary schools. Based on the findings, the following recommendations are made:-

- There is need for concerted efforts by stakeholders in education to providing instructional facilities. It is evident that government alone cannot saddle responsibilities of education.
- Teachers are advised to make use of improvisation where there are no instructional materials. Of course, government could help in providing both visual and audio-visual materials in all secondary schools.
- The importance of teacher involvement in decision-making and curriculum planning cannot be over emphasized. Therefore, government should involve teachers' curriculum planning and development to give them sense of recognition.
- Governments should employ adequate number of qualified subject teachers in order to teach all the subjects meant for secondary education.
- Enough funds should be allotted for secondary education so that payment of teachers' salaries, allowances and other entitlements could be made with ease. This will as well make purchase of instructional materials and provision of facilities possible.
- Government should ensure that ICT facilities are used in all secondary schools. This can be done by providing computers and computer accessories to all secondary schools. Awareness should be made by informing the parents on the need of ICT during PTA meetings so that everyone can contribute to successful running of ICT programs.

- Teachers' salaries allowances, entitlements and other remunerations should be given to them on time. Government should listen to the teachers' cry concerning Teachers Salary Structure (TSS). This will definitely motivate teachers to do their best in implementing new curriculum effectively.

This study concluded that from the foregoing, it is observable that numerous challenges characterized 21st century education such as tension between global and the local (becoming a world citizen without losing your root); tension between universal and individual (maintaining one's culture yet blend with the progressive global world to choose one's future); and tension between tradition and modernity (adopting to change without compromising one's past, maintain one's authority yet allow the development of others). This has therefore necessitated the review of our educational curriculum especially at secondary school level. The paper submits that government alone cannot provide all required facilities if the new curriculum will be effectively implemented. To this end, all stakeholders in education sector should live up to expectation by contributing towards achievement of secondary education objectives.

3. Material and Methods

In this study, the evaluation research approach will be employed. The research approach will vary with the research questions. Evaluation design is the structure that provides the information needed to answer each of the evaluation questions. There are three different type of evaluation design at different points in your program cycle, you may need to use different types of evaluation designs. You can think of evaluation designs in three main categories: Exploratory evaluation study, descriptive evaluation study design, and Experimental and quasi-experimental study designs (Project star, 2006 available at http://www.nationalserviceresources.org/). This study will follow more of a Descriptive evaluation designs since it will help to show whether the implementation of ICT curriculum in Secondary Schools in South West Region of Cameroon is operating as planned, provide feedback about the input, describe the how the inputs are being used, determine whether the Curriculum is producing the types of outputs and outcomes as desired from the aims.

The purpose of a descriptive study is to provide an in-depth description of a phenomenon or the relationships between two or more phenomena. Here are three common goals of a descriptive study:

1. Describe service recipient or program characteristics and how they relate to one another (study of correlation).
2. Describe the use of community resources (service utilization).
3. Solicit views of a group of people on an issue, as in an opinion survey, satisfaction survey or poll.
4. Document program processes, outputs and outcomes.

The research area is where the study was carried out. The area of study for this research was the South West Region of the Republic of Cameroon. The Republic of

Cameroon is located between latitudes 8^0 East to 17^0 East of the Greenwich meridian and latitudes 2^0 North to 14^0 North of the equator. Cameroon is bound to the West by the Federal Republic of Nigeria, to the North by the Republic of Chad, to the East by the Central African Republic and to the South by Equatorial Guinea, Congo and the Atlantic Ocean. The Republic of Cameroon covers 472. 710 square kilometres of land and 2.730 square kilometer of water making it the 54th largest nation in the world with a total area of 475,440 square kilometres. www.worldatlas.com/af/cm/ where-is-cameroon.html.

The South West region plays host to many tertiary educational institutions amongst which are public secondary schools that offer ICT as a subject. One of the oldest and biggest Anglo-saxon University, University of Buea along with many privately and Mission own Universities like the Catholic University Institute of Buea (CUIB), Cameroon Protestant University Kumba, St Monica University, Landmark University, JSF Polytechnique, among others are found in South West Region. It has the following number of Teachers Training Colleges; 9 State owned, 6 Lay Private, and 1 Mission. It equally accommodates many secondary schools; 252 Government, 95 Lay Private and, 35 Mission Secondary schools spanning across all the Divisions.

There are six divisions and 32 sub divisions in the South West Region as shown on the table below:

Table 3: Distribution of Sub Divisions

S/N	Division	Sub Division
1	Fako	7
2	Kupe Maneguba	3
3	Lebialem	3
4	Meme	6
5	Manyu	4
7	Ndian	9
Total		**32**

Source: School Map of Public Secondary Schools in the South West Region 2017/2018.
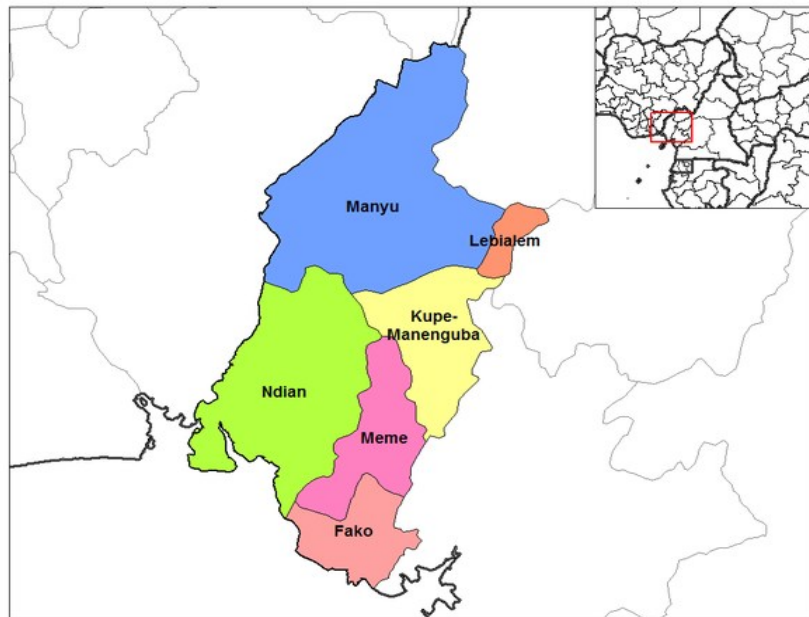
Figure 1: Map of South West Region

Source: Atlas of Cameroon on www.wikimedia.org.

The population of the study is made up of ICT students, ICT teachers of all Public Secondary schools in the South West Region with Computer Laboratories and Multimedia centres, and Sub Division Delegates of Computer Science. The target population is made up of all the Sub Divisional Delegations and Public Secondary schools of Fako, Kupe Maneguba, Lebialem, Manyu, Meme, Ndian implementing ICT with computer laboratories and students who have registered ICT at the GCE A/L for the 2017/2018 session.

A multistage approach will be used to select the sample. In the first stage, the researcher will purposively select the schools from the two divisions, thereafter, ICT teachers and ICT students will be selected from the accessible population of, teachers, and students respectively. The second stage will be to come out with the number of respondents in this study 267 (22 teachers and 245 students). In the first stage, the researcher will use the purposive sampling technique to select the 12 Public High Schools. This is based on the strength that, the selected schools possess all the necessary information, in other words they all use ICT, have a Multimedia centre and have students who registered the GCE 2017/2018 session.

The third stage had to do with selecting the respondents. The researcher used 13 ICT teachers and 186 ICT students, and 5 Regional Pedagogic Inspectors. A questionnaire and interview were the instruments for data collection; the data collected was analysed using descriptive analysis, with tables, means, standard deviation.

4. Results and Discussion

The question asked was "*How adequate are the instructional facilities in the Teaching of ICT in Public Secondary Schools in the South West Region*"?

To provide answer to this research question, Section B with 10 items on a 4-point Likert-type scale on the Questionnaire for Teachers was designed, a checklist was equally provided to teachers to indicate the various instructional facilities available in their Multimedia Resource Centre and or Computer Laboratories. These 10 items were to get Teachers opinion on the adequacy of instructional facilities while the checklist was to physically examine the various instructional facilities available.

In addition, an interview conducted. Item three (3) on the interview was tailored towards instructional facilities. The question posed was "*How adequate are the instructional facilities in the Teaching of ICT in Public Secondary Schools in the South West Region?"*

Table 4: Teacher's Opinion on adequacy of Instructional Facilities

Items	N	Mean	SD
Computers are not fast enough to use for instructional activities.	13	2.08	.86
I can use Internet on campus whenever I want.	13	2.31	.86
Classrooms conditions are not suitable for instruction.	13	2.31	.86
Tables and chairs, we use are not suitable to be used with computers	13	2.31	.86
Classrooms arrangements are suitable for instruction.	13	2.62	.77
Internet speed is sufficient in our campus.	13	2.62	1.04
Sufficient technology training is provided	13	2.69	.48
Computer laboratory is available whenever needed	13	2.77	.83
There are insufficient licensed software programs.	13	3.15	.69
There are insufficient computers for all the students.	13	3.31	.751

Decision Table

Number of items	10
Mean	26.17
Critical mean	25
Maximum mean	40
Decision	Agree (Since Mean>Critical Mean)

Benchmark: If Mean ≤30 =>inadequate, If Mean ≥30 =>Adequate
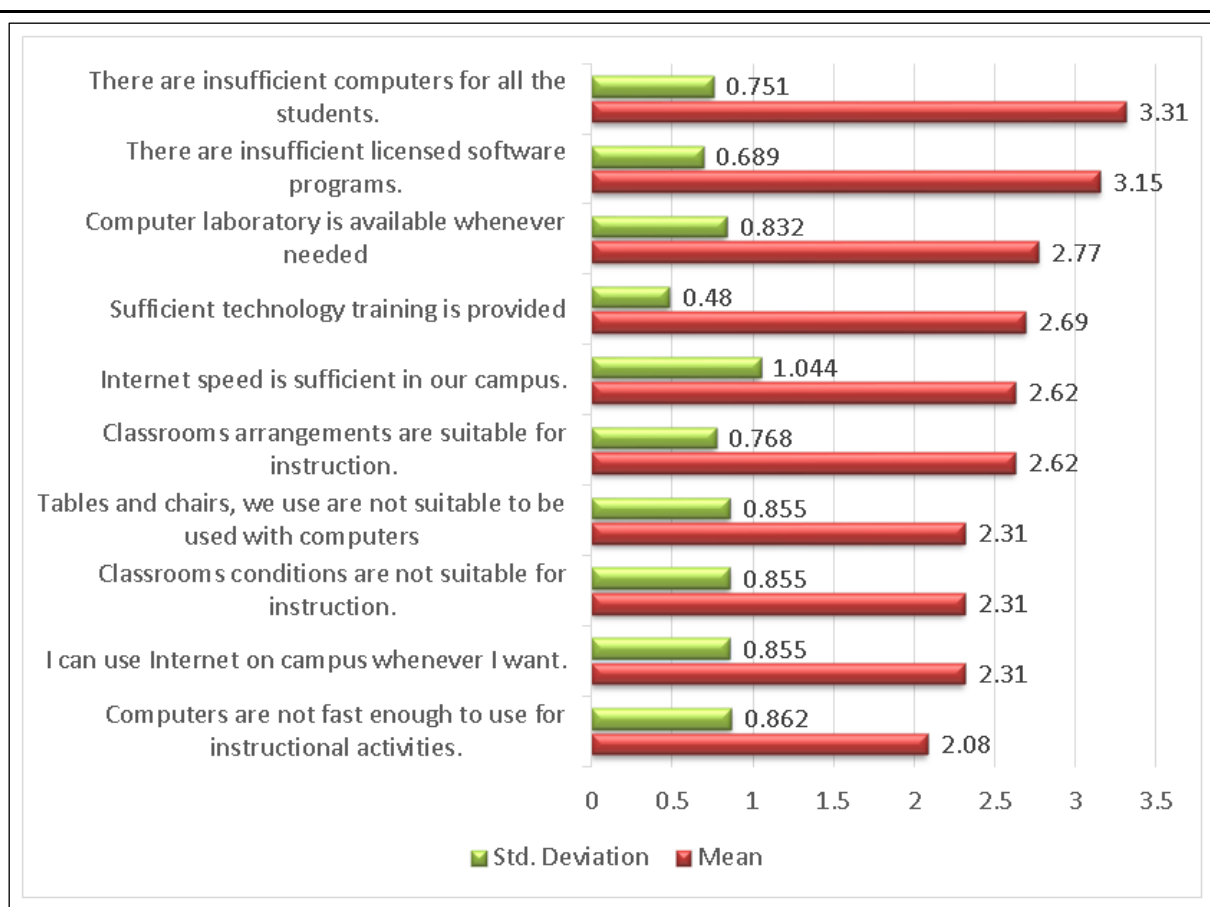
Figure 2: Teacher's Opinion on adequacy of Instructional Facilities

From Table 16 and Figure 15, there was a generally agreement that there is insufficient computer for all the students with a mean of 3.31, this is closely followed by a mean of 3.15 indicates that there are insufficient licensed software programs. The teachers equally agreed that the Computer Laboratory is available whenever needed, they are given sufficient technology training, the internet speed is sufficient in their campus and the classroom arrangements are suitable for instruction with means of 2.77, 2.69, 2.62 and 2.62 respectively. They disagreed that the tables and chairs they used are not suitable to be used with computers, that classrooms conditions are not suitable for instruction, that they can use internet on campus whenever they want and lastly that the computers are not fast enough to use for instructional activities with means of 2.31, 2.31, 2.31 and 2.08 respectively.

Judging from the decision table with mean of 26.17 greater than the critical mean 25.00, it evident that there is a weak agreement by teachers that the instructional facilities are adequate. With the mean of 1.17 away from the critical mean and less than the maximum mean by up to 13.83, therefore it could be concluded that the instructional facilities are inadequate in Public secondary Schools of the South West Region of Cameroon (since 26.17<30).

A Checklist was also use to present the situation of instructional facilities within the schools. Among the items considered where; desktop computers, printers, (Inkjet

and laser), projectors, photocopies, scanner, stand-by-generator, uninterrupted power supply unit (UPS), internet modem, and markerboard.

From the interview it was revealed that the RPIs tend to have divergent opinion on the availability of instructional facilities especially when it comes to town schools and rural schools. While some agreed that schools are equipped with instructional facilities others disagreed woefully. Below are some of those who disagreed:

- School don't have the required facilities in the teaching of ICTs let alone talk of relating ICT in teaching. There is need to restructure our classrooms with the required equipment for 21st century classroom.
- Grossly inadequate, some schools in towns are equipped while many of those in the rural areas are poorly equipped. This is due to many problems facing the rural areas like electricity and other limitation.

Below are some of those who agreed:

- Most schools in the towns have adequate facilities for the teaching of Computer Science and ICT but schools in the rural areas are poorly equipped with instructional facilities in the teaching of ICT and Computer Science.

The findings from this study shows that though teachers Computer laboratory is available whenever needed, internet could be access anywhere on campus with sufficient speed and sufficient technology training is provided, there was a generally disagreement by teachers that there is sufficient computers and Licence software for all the students. They equally complaint about the classroom conditions, arrangements and the Table and chairs as not suitable to be used with computers. Teachers equally agree that the computer speeds were not fast enough to be used for instructional activities. This implies that there are inadequate instructional facilities. This is corroborated by some of the RPI. For example, one was divergent in his opinion on instructional facilities. An RPI indicated that "*Most schools in the towns have adequate facilities for the teaching of Computer Science and ICT but schools in the rural areas are poorly equipped with instructional facilities in the teaching of ICT and Computer Science.* Another observed that "*Schools don't have the required facilities in the teaching of ICTs let alone talk of relating ICT in teaching. There is need to restructure our classrooms with the required equipment for 21st century classroom.* All these are pointer to the fact that some efforts have been done yet it is not enough to meet up with the changing demands for modern equipment to meet the challenges of access to computers and quality of the computers to be meet up with the increasing software requirements like speed, memory and storage capacities. The checklist showed some of the technologies were ready available in school. Though some were not working, most of the schools had some of the instructional facilities but this doesn't satisfy the user demand for ICT instructional Material.

From the above analysis, it could be concluded that instructional facilities are inadequate the South West Region of Cameroon for the teaching of ICT in Public Secondary Schools as presented by the RPI and teachers who use them.

This supports previous works like that of Shaibou et al. (2017) which revealed that teachers' use of ICT in teaching and learning process is low. Their findings showed

that an overall ICT use had a mean of just 2.24. To them, ICT integration in Cameroon secondary schools is low partly due to poor or no proper ICT infrastructure. They equally found out that the overall teachers' perceived ICT access is low (M=1.92, SD=.41). Though only the current study sampled only schools with MRC or Computer Laboratory where in access could not have been seen as a major problem compared to that of Shaibou et al. (2017) there was still issue with number of computer being able to meet the number of users. This study aligns with Agenda 2063 which was on providing access to ICT to children in schools and venture capital to young ICT entrepreneurs and innovators and migration to digital TC broadcasting by 2016 (Agenda 2063).

Equally the study of Ngololo in 2010 in Namibia also supports the findings of this study. It was found that ICT use and pedagogical use is low due to lack of professional development courses, pedagogical support and lack of ICT related resources. The study suggested ways to improve the pedagogical use of ICT in rural schools such as enable policymakers to make informed decision about resource allocation to the rural schools, and on teacher professional development.

This study is in line with findings of Ngozi (2014), who found out that the prescribed instructional materials were available and utilized to a less extent. She recommends that variety and quality of teaching equipment, materials, chemicals, specimens and other teaching support facilities for teaching the contents of the national curriculum for secondary school Biology should be provided to a greater extent than is the case now, as found in this study. Also, that teachers should very often utilize the available instructional materials for teaching and learning.

Matengu (2006), found out that availability of technology infrastructure at schools in Namibia particularly in Windhoek and Katima Mulilo did not guarantee their usage by learners and teachers. Contrary to this study, Matengu (2006) noted that schools were provided with computer on the basis that they did not have them. In Mozambique, a study by Cossa and Cronje (2004) on "Computers for Africa, they found out that the project succeeded because of government's political and financial support, the refurbishment of classrooms where the computers were installed, and the acquisition of new computer equipment for all teacher training colleges.

Also, experience from Trinidad and Tobago, reveals that the government made computers accessible to all teachers through a government subsidy to enhance computer practice at home and with the hope that the teachers will use them for pedagogical purposes (Gaible, 2008). These factors become important to consider for Cameroon as the present aims and objectives have not been evaluated, nor is the ICT implementation process thoroughly monitored to feedback the relevant offices for improvement of service provision to schools.

Though on the November Edition 2015 of High School schemes of work for Computer Science and ICT it was spelt out clearly that the major limitations to implementation was that of funding for equipment and the training of educational partners that are necessary for the dissemination of the skills and knowledge, efforts made has not yielded the desirable objectives. This therefore implies that the problems

of equipment have been an ongoing concern of the schools. This is further compounded by the breakdown of some of the equipment needing maintenance or repairs on regular basis.

4.1 Contributions of the Study

The purpose of this study is to evaluate the instructional facilities used in the implementation of Information and Communication Technology (ICT) curriculum in Public Secondary Schools in the South West Region of Cameroon. This is the first study of this scale in the History of Curriculum Studies and Teaching, University of Buea. The study has introduced a series of debate and is already exposing the need to evaluate materials for effective implementation. This work has equally opened discussions on the issues facing the implementation of ICT not only in Secondary but at all level so education.

In addition, a good number of current empirical literature has equally been placed at the disposal of for other researchers to be able to select that which could be comfortable for them to use. Hence the work was able to introduce other approaches that can be employed in studies of this nature.

Another contribution was in the line of solving trending issues around ICT. It was able to identify access and funding as major hindrance to successful implementation. Recent literature provided from other scholar within Cameroon decrying the problem of ICT facilities goes without saying that the research was able to identify solutions to problem which supported recent literature conducted in different locality within the context of this study. The recommendations made in this study were based on experience and empirical data which increase relevance and ensures usability. Hence the findings and as well as good recommendations listed are major contributions to knowledge.

5. Recommendations

The objective was to assess the level of adequacy of instructional facilities used in the teaching of ICT in Public Secondary Schools in the South West Region. On instructional facilities, it was found out that there are inadequate instructional facilities even in schools with Multimedia Centre and or computer laboratories. Principal with collaboration with the SMB and PTA, could make provision for the basic required technology a priority to give the students the minimum competent desired to sit for the GCE A/L. They could equally appeal to some NGOs, Businessmen and Alumni for donations of equipment or to provide Funding to assist in provision of the needed technology, like Computer, Printer, Projector, Generator, UPS, required software amongst others.

6. Conclusion

The purpose of this study was to evaluate the ICT Curriculum in Public Secondary Schools in the South West Region of Cameroon. This study was able to use Stufflebeam (1971) CIPP model of evaluation supported with Fullan's (1982) Educational Change theory. The study was able to evaluate the adequacy of the aims, level of adequacy of instructional facilities, ICT Teachers competency, effectiveness ICT Teachers and what the level of achievement attained by ICT students in Public Secondary Schools in the South West Region. It could be concluded that ICT has gone passed the level of mere adoption as it is now gone pass 50% of its implementation as some indicated. However, given that the aims are still adequate, it would imply that much need to be done to increase the available instructional material, the need for funding ventures, an improvement in the training process. This study has been able to diagnose and expose the situation of ICT implementation in Public Secondary Grammar Schools in the South West Region, the challenge is therefore for all stakeholders to put ICT as priority and increase the fund allocated for this change which will change the outcome of schooling in the future.

6.1 Strengths
The study also introduces a triangulation of methods to examine the evaluate the Implementation of ICT from different actors and using different instruments and method of analysis to accomplish the task.

The findings of this study give a clear picture of the current situation of the implementation of ICT in Public Secondary Schools in the South West Region of Cameroon. Due to the findings of this work, many Chiefs examiners as well as Pedagogic Inspectors of Computer Science at getting interested a may possibly create awareness on the need for funding and training of ICT teachers to ensure continuity of ICT curriculum.

6.2 Limitations to the study
1. Getting the population of the study was not possible as there were no data with all students offering ICT for the 2017/2018 academic year at the South West Regional Delegation for Secondary Education; hence the purposive sampling was employed.
2. The study was carried out during the period of the institutional and social crisis that bedevilled the two Anglophone regions of Cameroon. Getting participants in some cases posed a serious problem, as many divisions and schools were shutdown hence only two Divisions Fako and to a lesser extent extend Meme were used for the study. This was further compounded as some of the schools that were selected during sampling were shut down during data collection like GBHS Muyuka and GHS Ekona. Hence a return rate of 75.92 and 54.55 for students and teachers respectively.

About the Author(s)

Ndang Gilbert Farinkia is a PhD student in Curriculum Studies and Teaching (CST) awaiting defence of his PhD thesis at the Faculty of Education, University of Buea, he holds a DIPET II in ICT. His research interest is in Educational Evaluation, Educational Technology, web technology, educational reforms.

Publication and projects:

1) Factors that Hinder the Implementation of Information and Communication Technology (ICT) in Public Secondary Schools in Fako Division, South West Region of Cameroon http://www.ijtrd.com/papers/IJTRD17975.pdf

2) Development and implementation of an online examination system: The case of Higher Technical Teachers Training College (HTTTC) Kumba.

Agborbechem Peter Tambi is an Associate Professor, Dean of Faculty of Education, his interest is in the areas of Educational evaluation; test and measurement, Programme Development and Evaluation, Development and standardization of Research instruments, Evaluation of programs among others.

Publications:

1) Curriculum Structure and the Cameroonian Labour and Industrial Market. March 2016. Published by European Centre for Research Training and Development UK (www.eajournals.org)

2) The Use of Computer Software in Item Selection and Banking in High Stake Examinations in Cameroon, 2016. Journal of Educational Policy and Entrepreneurial Research (JEPER) (Online) www.ztjournals.com

3) Sorting' in examinations: Evaluating the quality of assessment in Universities in Cameroon, June 2015. Available online http://www.interesjournals.org/IRJASS http://internationalresearchjournals.org/irjass/june-2015-vol-4-issue-5

4) Challenges of Public examinations in diverse cultural settings in Cameroon, 2015. Journal of Educational Policy and Entrepreneurial Research (JEPER) (Online) www.ztjournals.com

References

Adeyemo, A. A. (2010). The impact of information and communication technology on teaching and learning of physics. *International Journal of Educational Research and Technology, 1*(2), 6-8.

Agenda 2063 (2015). "The Africa We Want', Final Edition: African Union Commission.

America Library Association. (1983). *The ALA glossary of library and science information*. Chicago: ALA

Ayeni (2013), Effective utilization and maintenance of ICT facilities for quality teaching and learning outcome in secondary schools in Ondo State, Nigeria, *International Journal of Research Studies in Educational Technology,* Volume 2 Number 2, 27-40

Ayeni. A. J. (2010). *Teachers' instructional task performance and principals' supervisory roles as correlates of quality assurance in secondary schools in Ondo State*. Doctoral dissertation, Obafemi Awolowo University, Ile-Ife, Nigeria.

Berman, P., & McLaughlin, M. W. (1978). *Federal programs supporting educational change, Vol. VIII: Implementing and sustaining innovations* (No. R-1589/8-HEW). Santa Monica, CA: Rand.

Bobbitt, F. (1918). *The Curriculum.* Boston, USA: Houghton Mifflin Company.

Butcher, N. (2010). ICT, education, development, and the knowledge society. Retrieved August 8, 2016, from http://www.gesci.org/assets/files/ICT,%20Education,%20Development,%20and%20the%20Knowledge%20Society(1).pdf

CAM-EDUC Leaflet. Retrieved from http://www.cam-educ.com. Date last accessed: May. 2010.

Cameroon General Certificate of Education Board Syllabus 2013/2014

Cameroon Internet. (2016, August 31). Retrieved from cameroonweb.com: www.cameroonweb.com.

Cameroon National Information and Communication Infrastructure http://www.uneca.org/aisi/nici/Documents/cameroonniciplan.pdf, Accessed on the 10th of September, 2010.

Cameroon's Sector Wide Approach to Education (2005).

Cameroons Vision 2035.

Chaudhary, G. K. (2015). Factors affecting curriculum implementation for students. *International Journal of Applied Research* 1 (12) : 98 4 - 98 6

Chikumbi, N. and Makamure, T. (2005) Training teachers for quality education in Europe European Journal of Teacher Education. 25(1): p. 11-17.

Department of Education and Science. (2008*). ICT in Schools: Inspectorate Evaluation Studies.* Dublin: Printed by Brunswick Press.

Education for All, A Framework for Action in Sub-Saharan Africa: Education for African Renaissance in the Twenty-first Century. Adopted by the Regional Conference on Education for All for Sub-Saharan Africa Johannesburg, South Africa, 6-10 December 1999.

Ellis, A. K. (2004). *Exemplars of curriculum theory.* New York, Larchmont, USA: Eye on Education.

Farinkia, N.G. (2018). Factors that Hinder the Implementation of Information and Communication Technology (ICT) in Public Secondary Schools in Fako Division, South West Region of Cameroon. *Published in International Journal of Trend in Research and*

Development, (5)5. ISSN: 2394-9333, October 2018, URL: http://www.ijtrd.com/papers/IJTRD17975.pdf

Farinkia, G.F. (2011). *The experiences of schools implementing Information and Communication Technology (ICT) in Cameroon: the case of selected Secondary Schools in Fako Division, South West Region.* Master Thesis, Department of CST, Faculty of Education, University of Buea, Cameroon.

Federal Ministry of Education. (2011b). *Statistics of education in Nigeria*: 2006-2010. Abuja: Statistics and NEMIS Branch, Federal Ministry of Education. First draft Cameroon NICI policy plan, 2001.

Fullan, M.G. (1982). *The new meaning of educational change*. New York: Teachers College Press.

GCE Advanced Level Examination by Subjects statistics booklet from 2011-2016

GCE Board Reviews of examination subjects, available at www.cameroonpostline.com/gce-board-reviews-examination-subjects/, accessed on the 1st of July, 2016 at 12:55pm.

Gronlund, N.E., (1981) Measurement and Evaluation in Teaching, The MacMillan Company, New York.

Hokanson, B., & Hooper, S. (2000). Computers as cognitive media: Examining the potential of computers in education. *Computers in human behaviour*, 16(2000), 537-552.

Idoko, C.E. (2001). Evaluation of the implementation of the primary education science core curriculum. *Unpublished Ph.D Thesis* Sub. Department of Science Education University of Nigeria, Nsukka.

Matengu, K. M. (2006). *Adoption of ICT at schools in core and periphery settings of Namibia: Exploring innovation, technology policy and development issues*. Aachen: Shaker Verlag.

Mbangwana, M. A. (2008). Introduction of ICT in Schools and Classrooms in Cameroon. (T. T. k. Toure, Ed.) *ICT and Changing Mindset in Education*.

Mkpa, M. A. (2007). Curriculum development. Owerri: Totan publishers Ltd.

Ngololo, E. N. (2010). An evaluation of the implementation of ICT policy for education in rural Namibian schools, PhD thesis, University of Pretoria, Pretoria, Accessed on the 17th of May 2018 < http://upetd.up.ac.za/thesis/available/etd-05202011-091049/

Ngozi, I.H. (2014), Evaluation of the implementation of National Department of Science Education. (PhD thesis). Faculty of Education. University of Nigeria, Virtual Library

Nwambam, A. S., Nnennaya, O.O. & Igwe Silas Nwankpu, I.S. (2018).Evaluating the entrepreneurship education programme in Nigerian universities for sustainable development. *Journal of Entrepreneurship Education*, 21(1) 1528-2651-21-1-136

Okpala, P.N. & Onoche, C.O. (2004*). Concept of educational eval*uation. Jattu-Uzarue, Edo State: Stiring-Horden Publisher.

Onwuka, U. (1981). *Curriculum Development for Africa.* Onitsha, Nigeria: Afriana-Fep Publishers Limited.

Owen, J. G. (1973). *The management of Curriculum Development.* Cambridge: Cambridge University Press.

Shaibou A. H., Moluayong, G.E., Park, I.,(2017) Teachers' Use of Information and Communications Technology in Education: Cameroon Secondary Schools Perspectives. *The Turkish Online Journal of Educational Technology, (*16) 3.

Tambo, L. I. (2003). *Principles and Methods of Teaching: Applications in Cameroon Schools.* Limbe: Anucam

Tella, A., Tella, A., Toyobo O. M., Adika L. O., & Adeyinka, A. A. (2007). An assessment of secondary school teachers' uses of ICTs: Implications for further Development of ICT's use in Nigerian secondary school. *Turkish online Journal of Educational Technology, 6*(3), 5-16.

UNESCO-UIS, (2015). *Information and Communication Technology (ICT) in Education in Sub-Saharan Africa: A comparative analysis of basic e-readiness in schools.* Montreal: UNESCO Institute for Statistics.

www.prc.cm

Ndang Gilbert Farinkia, Agborbechem Peter Tambi
EVALUATION OF INSTRUCTIONAL FACILITIES USED IN THE IMPLEMENTATION OF INFORMATION AND
COMMUNICATION TECHNOLOGY (ICT) CURRICULUM IN PUBLIC SECONDARY SCHOOLS
IN THE SOUTH WEST REGION OF CAMEROON