ASSESSMENT OF STRATEGIES FOR EFFECTIVE TEACHING OF COMPUTER SCIENCE IN SECONDARY SCHOOLS IN OVIA NORTH EAST LOCAL GOVERNMENT AREA OF EDO STATE

BY

Emmanuel Suru OWOLEWA
EDU1702660

FACULTY OF EDUCATION,
UNIVERSITY OF BENIN,
BENIN CITY

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY. IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR DEGREE IN EDUCATION B.SC (ED) SCIENCES, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE.

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CERTIFICATION

We the undersigned, certify that this research work was carried out by **Emmanuel Suru OWOLEWA** with matriculation number **EDU1702660** in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, Nigeria in partial fulfillment for the award of B.Sc (Ed) Degree in Science Education.

_____	_____
Dr. (Mrs.) B. N. Aghahowa	**Dr. (Mrs.) F. N Ofuani**
Project Supervisor	Project Coordinator
_____	_____
Date	**Date**

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Professor O. K. Omorogiuwa
Dean, Faculty of Education

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Date

DEDICATION

This study is dedicated to Almighty God for His mercy, grace, and strength for bringing me this far.

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Firstly the researchers wish to express gratitude to God for His providence and guidance all through his programme. He also wishes to appreciate the effort of his supervisor Dr. (Mrs.) B. N. Aghahowa who has been his backbone throughout this research work, he is very grateful for her patience and guidance. And to the project Coordinator, Dr. (Mrs.) F. N. Ofuani, his Head of Department, Dr. (Mrs.) R. J. Musa, the Dean of Faculty of Education Professor O. K. Omorogiuwa, and all the faculty lecturers especially those in Department of Curriculum and Instructional Technology whom he passed through their teaching throughout his stay in the University he expresses his profound gratitude

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ABSTRACT

This project analyzed the strategies for effective teaching of computer science in secondary schools in Ovia North East Local Government Area of Edo State. To carry out this study the following research question were formulated they are: what are the strategies that enhance the teaching of Computer studies in secondary schools? What are the problems that hinder the effective teaching of computer studies in secondary schools? Does the teaching method used in teaching computer science have an effect on students learning outcome? How effective is the use of computer on the teaching and learning of computer science in secondary schools? In order to ascertain whether the research questions would be accepted or rejected questionnaire were used to collect data from hundred teachers in Ovia north-east local Government area of Edo state.

Some of the results of this study include that it is evident that teaching with the aid of instructional material is one of the strategy that influence the learning and academic performance of student positively. The finding of this

research also showed that the adequate teaching methods of computer studies cannot be underestimated.

Based on careful examination of the analysts and data given in this study Government should build and establish new facilities for experiment in Junior Secondary Schools to help facilitate their knowledge, understanding and interest in computer science and Teachers should adopt the methods of improvisation and use teaching aid during lessons in science as this would build students imagination and broaden their literacy in computer science

CHAPTER ONE

INTRODUCTION

Background to the Study

Computer is rapidly becoming available to many individuals in our society and there is no doubt that it is affecting the way we live and do things today. Computer now plays a vital role in almost every aspect of our life. Computers are now fundamental component of our schools, health care etc. Our banking system and investment cannot function effectively without computers. Some of our medical and scientific facilities now depend entirely upon computer based system. (Crawford 2000 & Kirkman 2000). In fact, every day it gets harder to find any type of business, educational institutions or a government office that does not use computers and Information, Communication Technology (ICT) in some ways. There is probably no better indication of how advanced a society is than how computerized it is.

As computer began to find usage in a variety of fields, most persons have learnt how to use or operate them resulting in an effective

teaching and learning in society (Ogbonnaya 2014). This is a total shift from the past when only highly trained specialized employees know how to use computers. Today, computer usage has moved from computer specialists to non-computer specialists. Currently there is a steady increase in the number of people undergoing one form of computer training or the other to be able to fit in a world of technological changes. Again, one of the fundamental demands in many established interviews for job seeker is computer literacy skill. Many people have failed to secure jobs which they are qualified for only for lack of knowledge and skills in computer operations (Ayogu, 2018).

The use of computer as a facility is possible and necessary in our school system. Its use can aid communication among students. Computer communication has played and is still playing an important role, not only in schools, but also in offices, hospitals, libraries and in homes. At the secondary school level, computers enable the students communicate at fast, accurate and convenient pace to other people through e-mail. In computer training institutes, business centers, schools, companies etc.

computer training for effective teaching and learning programs are being organized to meet the yearnings of the National Policy on Education which stipulates that computer training should be organized in order to enhance effective teaching and learning of computer concepts in schools as the Federal Ministry of Education introduced computer studies at all levels of education in Nigeria (Federal Republic of Nigeria, 2014).

The term computer studies have been used interchangeably with computer literacy. In some cases it has been referred to as computer education while in other cases it is called computer literacy. In whatever way, it means the same thing. Computer education is the effort or the ability to make the generality of the people computer literate. They went further to state that computer education (literacy) means ability to tell the computer what you want it to do and understand what the computer says. Computer literacy as the ability to be able to read, write and speak the language of the computer. It can also be looked at as a process of educating the people on how to use a computer to run a program and diverse application including business, industry and commerce (Okorie,

2016). Computer studies according to Edhuze (2013) involve teaching and inculcating in the learner the basic skills required to independently manipulate the computer to achieve educational goals. He further stated that, computer studies as a subject is aimed at making students acquire skills and competencies required in this digital world of competitiveness. Such basic skills and competencies upon graduation make them conversant with term and practices embedded in the world of computer. Computer studies are therefore a subject organized to enable people understand the function, uses and limitations of the computer and to provide an opportunity for the study of the modern methods of information processing (Adigun 2014).

However, computer science, computer related courses and other subjects are now offered in schools: (primary, secondary and tertiary institutions). Sending and receiving data electronically will take only a few seconds. In information processing, computer can sort or search through huge amount of information in a flash. Computer communication makes any information needed easily and widely available irrespective of

distant between the two destinations. But the effort to ensure effective teaching and learning among students has not been without challenges and setbacks. In schools especially in secondary school level, some schools have computers but no qualify computer teacher to teach while some have been hearing of computer but have not seen it with their eyes. Government has been promising schools on the provision of computer and its facilities without fulfilling their promises. We all know too well that computer has a lot of benefits and it is very important to impart the knowledge to the younger once for they are the leaders of tomorrow still the government and schools don't want to implement it effectively in schools.

Strategies are a general plan or set of plans intended to achieve something. It is also a method or plan chosen to bring about a desired future such as achievement of goal. Some strategies need to be looked at since it has really affect effective teaching and learning of computer in secondary schools. Firstly, visualization is a great strategy to summarize or process information that has been taught in class. When students

consume information through visual means, it helps them retain what they have learned for a longer time (Amedo 2015). This strategy also helps slow learners in class to visualize the ongoing lesson in a clear, simple and systematic way. Therefore, teachers have started using visual tools like graphic organizers, flow charts, Venn diagrams, and concept maps that effectively help students to grasp information through visual memory. Also, Student-led classrooms have become a creative way for teachers and students to interact and carry out discussions in the class. Encouraging students to switch roles and become teachers for the day not only helps them in gaining confidence but also brings in a new perspective to the class (Rogers 2015). Incorporating technology in teaching is another strategy for effective teaching of computer science. It is a great way to actively engage students. Using tablets and laptops in the classroom, teachers can introduce interactive online games like Prodigy for students to learn faster and interact more. These educational games function as a platform for students to polish their skills by engaging them

in a game module where they solve questions and puzzles all the while fighting battles and completing with their peers (Mills 2016).

Again, there is no better indication of how advance a society is than how computerized for technology rule the world. It is in this view that the researcher embarked on this study in order to Assessment of strategies for effective teaching of computer science in secondary schools in Ovia North East Local Government Area of Edo State.

Statement of the Problem

The contemporary breakthrough in science and technology has created the need to use technological devices to do things that were manually done before. This includes the use of computer in many areas in human endeavors. In the academic community, the use of computer for teaching and learning has been encouraged by many educationists. The use of computer has enhance teaching and learning but not without some fundamental problems. It therefore means that without proper improvement on the gaps facing computer studies in secondary schools in Ovia North East Local Government Area of Edo State, secondary school

students upon graduation are bound to be completely obsolete in our contemporary society where knowledge of computer has become a prerequisite for employment, interview and in some cases for promotion. It is on this basis that the researcher deems it necessary to conduct a study on strategies for effective teaching of computer studies in Ovia North East Local Government Area of Edo State.

Purpose of the Study

The main purpose of the study is to assess the strategies for effective teaching of computer science in junior secondary schools in Ovia North East Local Government Area of Edo State.

Specifically, the study seeks to:

1. To ascertain the teaching and learning strategies that enhances the teaching of computer studies in Junior secondary schools.
2. To investigate the problems that affects the effective teaching of Computer Studies in junior secondary schools.
3. To ascertain if the method of teaching computer science have effects on students learning outcome.

4. To investigate the effective use of computer and the teaching and learning of computer science in secondary schools.

Research Questions:

The following research questions guided the study:

1. What are the strategies that enhance the teaching of Computer studies in secondary schools?
2. What are the problems that hinder the effective teaching of computer studies in secondary schools?
3. Does the teaching method used in teaching computer science have an effect on students learning outcome?
4. How effective is the use of computer on the teaching and learning of computer science in secondary schools?

Significance of the Study

This work will be beneficial to the following groups and personalities: the ministry of education, students, parents, organizations, teachers, computer software manufacturers, educational researchers etc.

The ministry of education will find this work relevant by accessing the findings on the effective strategies to be adopted so that the use of computers in secondary schools will be effective.

The students who are longing for improvement in their academic pursuit will find the work helpful as different strategies will be itemized on the best approach to use computer to teach.

The parents and guardians will have to key in to the modern means of teaching and learning in schools. The parents will be encouraged to buy computer system and its packages for their children to use for teaching and learning.

Different organizations that are interested in sponsoring school program will find this work easy to supply computer systems to be used in school to enhance teaching and learning.

Teachers will see the need to use it as the modern means of teaching to enhance teaching and learning in schools.

Educational researchers will propel the best means of using computer to browse for information, teach and learn in institutions of higher learning, by encouraging students to learn more.

Scope and Delimitation of the Study

The study intends to determine the strategies for effective teaching of computer science and the problem hindering the use of the computer teaching strategies in junior secondary schools in Ovia North East Local Government Area of Edo State.

Definition of Terms

Assessment: assessment is the process of gathering and discussing information from multiple and diverse sources in order to develop a deep understanding of what student know, understand and can do.

Strategies: strategy is a plan of action designed to achieve a long-term or overall sim.

Effective Teaching: it is the ability to make a positive impact on students life and academic careers

Computer Science: is basically defined as the study of the principles and use of computer.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The review of related literature of this study has been carried out and organized under the following sub-headings:

Theoretical framework

Concept of Computer

Concept of teaching and learning

Concept of strategy

Strategies of teaching and learning

Strategies of effective computer studies

Empirical review

Summary of literature review

Theoretical Framework

The theory upon which this work is based on is propounded by Ivan Pavlov which is known as classical conditional theory. He experimented with a dog in which he placed some food before a hungry dog and the dog salivates naturally. Food here is referred to as

unconditioned stimulus (UCS) and salivation unconditional response (UCR). When the presentation of food was placed with ringing of a bell and the sequence was repeated several times, it was discovered that the dog salivated at the sound of the bell, because it is a conditional stimulus response (CR).

The educational implication of this is that when the elements of motivation, enjoyment, excitement and interest are added to teaching and learning of subjects like computer studies, students will always be willing and ready to learn.

That is to say applying effective teaching methods, teaching both theories and practical, making computer science compulsory, introducing science quiz competitions with attractive price, awarding of scholarships to brilliant students who do very well in computer science and encouragement of the students by their parents will motivate students enroll.

Concept of computer:

Computer Studies is made up of two words: ‘computer’ and ‘studies’. To properly understand the two words joined together, the two are explained separately before bringing them together to make an understanding of what the concept stands for. Many authors have tried to define computer in various, ways, but a few of them will be used in this write-up.

Computer according to Alo (2006) is an electronic machine or device that is capable of accepting inputs or data through input devices, process the input and generates appropriate results which are displayed through the output devices.

Bada Adewale and Olalekan (2009) defines computer as a technological innovation under the control of stored program that can perform some of the intellectual roles of man even beyond human capacity. They went further to say that it is a power driven machine equipped with keyboards, electronic circuits, storage compartments and recording devices for the high speed performance of mathematical

operations. Not minding the number of definitions given by different authors, the common fact is that computer accepts input data, processes it, stores it, retrieves it when required and displays the result as output in a desired format.

Concept of Teaching and Learning

It is an accepted fact that teachers are usually not born but made. Good teachers nurture their knowledge and skills through constant and deliberate efforts. One of the prerequisite to be good teacher is to understand the teaching and learning process in more depth. This facilitates better appreciation of the teaching profession as well as the process of imparting education.

‘Teachers tend to think that teaching is all about teachers and their role; in fact the most important aspects of the educational process are the students and what they learn.’ This leads to what 'learning' is all about.

Learning is the process of acquiring new or modifying existing knowledge, behaviours, skills, values etc. It is also the activity or process of gaining knowledge or skill by studying, practicing, being taught, or

experiencing something. Learning is about a change: the change brought about by developing a new skill, understanding a scientific law, changing an attitude. The change is not merely incidental or natural in the way that our appearance changes as we get older. Learning is a relatively permanent change, usually brought about intentionally. When we attend a course, search through a book, or read a discussion paper, we set out to learn! Other learning can take place without planning, for example by experience. Generally with all learning there is an element within us of wishing to remember and understand why something happens and to do it better next time.

Learning Models:

These are models for learning; such Models can be used by any teacher depending on context. Example:

Pedagogical Vs Andragogical Models: Pedagogical approach teacher dominated learning situation - Students rather passive. Andragogical approach - emphasis on what the learner is doing - how adults learn.

Adult Expectations (Learning Needs):

Some of the common adult expectations are:

- Adults expect to be taught.
- Adult students expect to have to work hard.
- Adult student expectation is that the work is related to the vocation.
- Adult student's expectation is that they expect to be treated as adults.

Each of these four expectations although stated in general terms needs to be interpreted as individual needs. Students may vary in age, sex, background, etc. If students treated as individuals - find out more about them (inside - outside classroom), the greater likelihood to relate their learning to their needs and improve learning potential. Kindness, empathy and sincerity always reap rich dividends with adult learner.

Teaching is the act of instructing: Teaching is a set of events, outside the learners which are designed to support internal process of learning. Teaching (Instruction) is outside the learner. Learning is internal to learners. You cannot motivate others if you are not self-motivated. Motives are not seen, but, behaviours are seen. Is learning a motive or

behavior? Learning is both a motive and behaviour but only behaviour is seen, learning is internal, performance is external.

Role of the Teacher:

Generally, the role of teacher can be categorized into:

- Traditional Role - Teacher Centered
- Modern Role - Facilitator (Student Centered)

There has been a change from the Traditional role to the Modern role in the present context. The learning increases when the teacher builds on the previous experience of the student. However, individual's learning differs and each individual learns at his or her own pace. Identifying the slow learners and individual attention of the teacher may be required. Thus, effective learning is to a great extent based on experiences. Direct experiences are student centered and participation in problem solving. While in indirect experience, the contents are carefully designed and organized by teacher.

Basic Teaching Model:

Objectives are intended learning outcomes written down before the process of instruction.

General Objectives - Statement of instructional intent - student ability in general terms.

Specific objective statement of instructional intent-student ability in terms of specific and observable. Usefulness of objectives, Elements of objectives, Terminal behaviour.

Condition, and Criterion / Criteria.

Writers tend to separate learning into three main groups or domains. These are the psychomotor, cognitive and affective domains.

Those skills, which are concerned with physical dexterity, for example changing a wheel and giving an injection, fall into the psychomotor domain. Both of the tasks do need knowledge but, predominantly they are physical skills, which need practice.

Knowledge and knowing the 'how' and the 'why', the thinking skills, fall into the cognitive domain. Examples include 'stating the names of the

major bones in the body', 'explaining why we have tides'. Both of these require thought processes to be accomplished.

The third domain, and one we often neglect, is the affective domain. This is concerned with attitudes. Examples in this domain include 'the need to eat a healthy, balanced diet', 'the need for equality of opportunity for all', and 'politeness'. These deal with feelings and emotions and are different from the examples in the other domains.

Affective learning occurs when these three domains are seen as interdependent. Each of these domains should be developed as part of teaching/ learning session. Teachers should be able to define learning objectives in each of them.

In general, the concepts of teaching and learning, especially at the higher levels of education. Many countries make it mandatory for teachers to undergo formal course on education principles where the concepts of teaching and learning are taught. However, this exposure to teachers is non-existent for professional teachers who enter into teaching profession without any exposure to formal training in education. This

sometimes may act as a constraint in the process of effective teaching and learning process.

The Concept of Strategy

Strategy is about success. Strategy is not a detailed plan or programme of instructions; it is a unifying theme that gives coherence and direction to the actions and decisions of an individual or an organization. . A strategy is therefore defined as a framework of decision which provides basis for more detail planning. Henry Mintzberg (2010) defined strategy as a pattern in a stream of decisions to contrast with a view of strategy as planning. Dr. Kvint, Vladimir (2009) defines strategy as "a system of finding, formulating, and developing a doctrine that will ensure long-term success if followed faithfully."

In its broadest sense, strategy is the means by which individuals or organizations achieve their objectives. Common to definitions of business strategy is the notion that strategy is focused on achieving certain goals; that the critical actions which make up a strategy involve allocation of resources; and that strategy implies consistency, integration or

cohesiveness. Yet, as we have seen, the conception of firm strategy has changed greatly over the past half century. As the business environment has become more unstable and unpredictable, so strategy has become less concerned with detailed plans and more about the quest for success. If we think back to Jeff Bezos and Lady Gaga, neither wrote detailed strategic plans but both possessed clear ideas pointed out some definitions of strategy.

- Strategy: a plan, method, or series of actions designed to achieve a specific goal or effect.
- The determination of the long-run goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals. Alfred Chandler (2015)
- Strategy is the pattern of objectives, purposes, or goals and the major policies and plans for achieving these goals, stated in such a way as to define what business the company is in or is to be in and the kind of company it is or is to be. Kenneth Andrew (2009)

Strategies of Teaching and Learning

Choosing a teaching and learning strategy is not an easy task. Strategies need to be chosen carefully in order to contribute most effectively to student learning. Anytime students are actively engaged in learning, exploring new ideas, and grasping the conceptual nature of the discipline, they are learning in a deeper and more meaningful way to apply that knowledge and those skills to other parts of their lives. The following information outlines some strategies that may be used to enhance student learning.

Lecturing: Ten Things to Remember

1. Lecturing is especially useful to convey knowledge, but is not well suited for higher levels of learning.
2. Decide what you want the students to know and be able to do as a result of the lecture.
3. Outline the lecture notes — first your major points, then the minor points that elaborate on or explain each major point.

4. Choose relevant, concrete examples, in advance of the lecture, selecting examples familiar and meaningful to the students.
5. Find out about the students, their backgrounds, and their goals.
6. Permit students to stop you to ask relevant questions, make comments, or ask for review.
7. Intersperse periodic summaries within the lecture.
8. Start with a question, problem, current event, or something that just grabs the students' attention.
9. Watch the students. If you think they don't understand you, stop and ask them questions.
10. Use active learning techniques. Use technological aids, such as multimedia presentations.

Teaching and Learning Strategy Definition and Examples

Direct Instruction: The Direct instruction strategy is highly teacher-directed and is among the most commonly used. This strategy is effective for providing information or developing step-by-step skills. It also works well for introducing other teaching methods, or actively involving

students in knowledge construction. Possibilities Include: Lecture, Slide Presentation, Explicit Teaching, Drill and Practice, Didactic Questions, Demonstrations, Guided and Shared – reading, listening, viewing thinking, Guest Lecture, Video, Multimedia Presentation.

Interactive Instruction: Interactive instruction relies heavily on discussion and sharing among participants. Students can learn from peers and teachers to develop social skills and abilities, to organize their thoughts, and to develop rational arguments. The interactive instruction strategy allows for a range of groupings and interactive methods. It is important for the teacher to outline the topic, the amount of discussion time, the composition and size of the groups, and reporting or sharing techniques. Interactive instruction requires the refinement of observation, listening, interpersonal, and intervention skills and abilities by both teacher and students. Possibilities Include: Debates, Role Playing, Panels, Brainstorming, Peer Partner Learning, Peer Assessment, Discussion, Laboratory Groups, Labs, Think/Pair/Share, Co-operative Learning,

Jigsaw, Problem Solving, Tutorials, Interviewing, Conferencing, Team-Based Learning, and Seminars.

Indirect Instruction: In contrast to the direct instruction strategy, indirect instruction is mainly student-centered, although the two strategies can complement each other. Indirect instruction seeks a high level of student involvement in observing, investigating, drawing inferences from data, or forming hypotheses. It takes advantage of students' interest and curiosity, often encouraging them to generate alternatives or solve problems. In indirect instruction, the role of the teacher shifts from lecturer/director to that of facilitator, supporter, and resource person. Possibilities Include: Problem Solving, Case Studies, Reading, Inquiry, Reflective Discussion, Writing, Concept Formation, Concept Mapping, and Tutorials.

Independent Study: Independent study refers to the range of instructional methods which are purposefully provided to foster the development of individual student initiative, self-reliance, and self-improvement. While independent study may be initiated by student or

teacher, the focus here will be on planned independent study by students under the guidance or supervision of a classroom teacher. In addition, independent study can include learning in partnership with another individual or as part of a small group. Possibilities Include: Essays, Computer Aided Instruction, Journals, Learning Logs, Reports, Learning Contracts, Homework, Research Projects, Assigned Questions, Learning Centres, Independent Project/Course, and Self-Assessment.

Experiential Learning: Experiential learning is inductive, learner centered, and activity oriented. Personalized reflection about an experience and the formulation of plans to apply learning to other contexts are critical factors in effective experiential learning. The emphasis in experiential learning is on the process of learning and not on the product. Possibilities Include: Field Trips, Narratives, Conducting Experiments, Simulations, Games, Storytelling, Field Observations, Role-Playing, Model Building, Surveys, Studio Labs, Community Engaged Learning, Study Abroad, Community Service Learning, Undergraduate

Research, Internships, Practicum, Co-op Placement, Apprenticeship, Field Courses

Strategies of Effective Computer Studies

A computer study is a “one-stop shop” where you learn or upgrade your skills in a variety of computing areas. Here, specialized training in Microsoft office, adobe applications, programming, web designing and development, graphics designing and much more are offered.

Nigeria as a nation, has witnessed a lot of challenges especially in educational sector, which has been on the down ward trend. This has negatively affected the way we do things. Importantly, computer has not really gained its roots in our Nigeria schools, let alone the entire society. Its impact is not strongly felt by all, especially by our students. This is because there are some challenges facing it implementations in our society. So, in order to ensure effective teaching and learning of computer studies the following strategies should be considered:

Improving the Funding and assistance of the government, stakeholders in Computer Studies

The assistance of the government, stakeholders etc. like constant maintains of these computers, improving electricity supply, proper funding of schools, improving our educational system generally and paying of subsides to manufacturers and importers of computer facilities as well as donation of these facilities, employing of applicants with B. Sc (Ed) and B.Ed. computer education to teach the subject will enhance effective teaching and learning of computer education in schools.

Olaitan (2008) who asserted that through funding, physical facilities such as computers and other ICT resources and infrastructure required for teaching and learning are procured, maintained, and man-power employed. Without adequate funding of any project no matter how laudable it maybe, it becomes extremely difficult to actualize the objectives of such as program. Teaching and learning of computer studies at the secondary school level required adequate funding by the government and other stakeholders of our education system. According to Ayogu (2008), computer study is costly. Many strategies have to be put in place to finance computer studies. Ayogu however emphasized that such

strategies for raising fund for computer studies could come from government, private sectors, community etc.

The world is growing so complicated in science and technology that we need to buckle up to the challenges in this digital age he concluded. Computer studies is a skill merited programme aimed at manpower development, therefore, basic computer skills training needed by secondary school students requires the combined effort of parents, government, donor agencies, etc as strategies for raising funds needed for provision of computer/ICT instructional materials required for practical skill trainings and a conducive environment for the study.

Improving the Accessibility, Availability and Supply of Instructional Facilities Required for teaching Computer Studies

The availability and supply of instructional facilities such as computers, internet, modern software, printers, generators, scanners, joy stick, Laptops, server systems etc will help to improve the understanding of students in learning of computer studies. Without adequate instructional facility like the computer, meaningful learning cannot take

place. No one can be computer literate without operating the computer (Ayogu, 2008).

The computer can be applied for instruction in two distinct ways namely: Computer Assisted Instruction (CAI) and Computer Managed Instruction (CMI) (Obineli, 2008). According to Nworgu (2008), CAI is a program of instruction or package presented as computer software for instructional purpose. He further stated that the use of CAI has been found to make teaching and learning efficient, most effective, easier and less cumbersome since it present concepts in such organized manner that makes for greater clarity and easier understanding. On the other hand, Nworgu states that CMI is a program of instruction where the computer records the learners experience and interests. Hence learners are exposed to the learning environment (computer) and allowed to discover things for themselves since constant practice leads to perfection. Other strategies include the provision of standard virtual libraries through the Parent Teacher Association (PTA) be explored to support the day-to-day use by teachers and students.

- Improving Methodology required for teaching Computer Studies

The teaching and learning of computer studies can be improved by improving the teaching methodology adopted by computer studies teachers. Etuk (2007) who remarked that teachers need to be properly educated to be morally responsible enough to ensure that ICT is not adopted in the classroom as surrogate teaching but as a means to enhance innovations in teaching and learning, creativity, building confidence and sense of self-reliance in both the teachers and the students. According to Obineli (2008) the computer takes the place of the guidance counselor in CAI while in CMI; the guidance counselor manages the teaching learning process with the aid of the computer. The computer brings different teaching methodology into learning. This teaching methodology could be in form of tutorial, drill and practices, games and different types of demonstrations methods. Teaching method for the information age should integrated different approaches to learning. According to him, teaching-learning process in the classroom should be activity centered than conveying fact to learning and forcing them to internalize them. Teachers

should also try to use modern instructional materials, different teaching methods, carryout effective evaluation of learners through the use of continuous assessment means, use of group projects, been able to improvise learning aids through drawings and construction of systems thus ensuring that students are actively engaged in the teaching and learning process.

- Improving the availability of Quality of Human Resources required for teaching of Computer Studies

The availability and quality of human resources required for teaching of computer studies will improve effective teaching and learning of computer studies. Gary (2011) who asserts that the availability of quality human resources such as staffing, personnel management is necessary because of global competition, technological advancement, economic challenges and fast changing world of work. To achieve this, there is need to deemphasize employment based on paper certificates, proven ICT experts as computer teachers be employed, consistent staff developmental activities to be planned, developed and followed up,

providing scholarships to teachers and students who distinguishes themselves as well as developing and maintaining appropriate channel of communication between teachers, students and superiors staff like principals, education secretaries etc. In line with this, Etuk (2007) opined that the quality of educational experiences of each student depends on the initiative and competence possessed by the teacher. He maintained that attainment of functional and qualitative education will be a mirage without adequate trained and qualified teachers to meet the challenges of the school system in this computer age and globalization. The study supports the need to partner with internet service providers and other cooperate organizations such as GLO, MTN, YAHOO, MICROSOFT, HP etc to provide ICT training centres and skilled ICT experts required for the use and maintenance of these facilities.

- Motivation and training of teachers can enhance effective teaching and learning of computer education

The computer studies teachers and other subject teachers in general should be retrained to become computer literate since a good number

were not exposed to computer and its skills during their years of training (Etuk, 2007). This can be facilitated through the school administrators namely principals and vice principals in conjunction with cooperate organizations like HP, GLO, MTN, Microsoft etc such as to equip teachers with sound computing skills that will enable them to prepares students successfully for today's information and knowledge. Organizing seminars conferences etc to enlighten teachers, staff and also paying teachers well, training them especially in effective teaching and learning of computer education, employing ICT experts to assist and train teachers, employing more computer science teachers who are able to demonstrate sound computing skills and effective supervision and inspection of teachers and schools will equally enhance effective teaching and learning.

- Motivation and sensitization of secondary school students

Applying effective teaching methods, teaching both theories and practical, making computer science compulsory, introducing science quiz competitions with attractive price, awarding of scholarships to brilliant students who do very well in computer science and encouragement of the

students by their parents is an important strategy for effective computer studies.

Empirical Review

Strategies for promoting effective teaching and learning of computer studies. Uba (2008) carried out a study on the strategies for enhancing the teaching and learning of computer studies in Ebonyi state. The findings of this study showed that the following could enhance teaching and learning of computer studies in Ebonyi state: appropriate methodology and facilities for teaching computer, employment of qualified teachers, establishment of cordial relationship between parents and teachers, instructional materials, practical task and monitoring of students' abilities for teaching and learning of computer in secondary schools. Four research questions were used for the study. 33 questionnaire items were formulated and administered to 190 respondents which include computer teachers and students from eighteen secondary schools in the three zones of the state. Random sampling technique was

used to sampled the eighteen secondary schools used in the study while frequency and simple mean were used for data analysis.

Another research study carried out by Nwanze (2014) on the strategies for improving computer studies in secondary schools in Oshimili and Aniocha local government area of Delta state adopted survey research design. Four research questions were used in the study. 282 respondents which include 118 principals, 118 vice principals and 46 Computer Studies teachers from 118 secondary schools in Aniocha and Oshimili L.G.As Delta state were used. Mean and standard deviation were used for data analysis. The findings of the study revealed that to achieve this, there is need to deemphasize employment based on paper certificates, proven ICT experts as computer teachers be employed, consistent staff developmental activities to be planned, developed and followed up, providing scholarships to teachers and students who distinguishes themselves as well as developing and maintaining appropriate channel of communication between teachers, students and superiors staff like principals, education secretaries etc. It was concluded

that there are some basic strategies that could be adopted in other to improve the teaching of computer studies in secondary schools in Oshimili and Aniocha Local Government Areas of Delta State. It was recommended that school administrators (principals, vice principals and teachers) should be sponsored on retraining programmes at least twice a year through workshop, seminars and conferences to enable them learn the modern technological skills in their chosen field of endeavour.

The motivational skills for teachers to embrace for better impartation of the knowledge of computer studies to students.

Uchenna (2010) carried out a study on the motivational skills for teachers to enhance teaching and learning of computer studies in Osun State. The findings of the study showed that the following motivational skills can enhance teaching and learning of computer in Osun State: Sponsoring of teachers in computer training, employing ICT experts to assist teachers, the use of appropriate instructional materials. Five (5) research questions were used for the study, 30 questionnaires items were formulated and administered to the teachers from fifteen (15) secondary

schools in the four (4) zones of the State. Random sampling and simple mean was used for data analysis.

Another study on the effect of using instructional materials in teaching and learning of computer studies was carried out by Animasolum (2009). Data was collected from a sample of 147 students, t-test and analysts of variance was used to analyze the data collected for the study. The findings revel that student's poor academic achievement in computer studies is partly due to the method of teaching used.

Summary of Literature Review

Words that form the framework of the research topic were thoroughly explained under the conceptual framework which discussed the concept of computer, concept of teaching and learning, concept of strategy, strategies for teaching and learning and strategies for effective computer studies.

The learning theory upon which this research topic is predicated was comprehensively discussed under the theoretical framework which based on the classical conditional theory experimented by Ivan Pavlov

using dog, food and ringing of bell to achieve a conditional stimulus response. Which in the work, means that applying effective teaching methods, teaching both theory and practical and giving price to students that do well in computer studies will make teachers and students to have interest in learning of computer studies.

Four empirical studies were reviewed which include that of Uba (2008), Nwanze (2014), Uchenna (2010) and Animasolum (2009). Related works were exhaustively reviewed under the empirical studies moving the variables in the study as benchmark.

So, the literature reviewed has shown that there are so many strategies to be looked at for effective teaching and learning of computer studies.

CHAPTER THREE

RESEARCH METHODOLOGY

The research procedure or methodology takes the following approach such as:

- Research Design
- Population of the Study
- Sample and Sampling Techniques
- Research Instruments
- Validity of the Instruments
- Reliability of the Instruments
- Method of Data Collection
- Method of Data Analysis

Research Design

The research design adopted for this study is the survey research design. The character of this study underscores the need for adoption of

descriptive survey design. The adoption of this research design allows for the use of questionnaire by the research as a data collection instrument and it is cost effective.

The adoption of this design was informed by its efficient way of collecting information about the population of interest, ease of administration of research instrument-questionnaire, which can be tailored to the problem the research is studying.

Population of the Study

The population of the study consists of all private and public teachers from all secondary schools in Benin Metropolis zone.

Sample and Sampling Techniques

70 private and public secondary schools were randomly selected from Benin metropolis. Biology teachers each were selected from the two (2) sample schools selected for the study. A total of seventy (70) teachers were selected for the study.

Research Instrument

The instrument used in this research study is mainly questionnaire. It was administered to the teachers in the ten schools of the research study. The questionnaire consists of 20 items which is subdivided into two sections; A and B.

The section A contains the respondent's personal data. This includes name, gender, school, class taught, and subject taught while section B consists of the questions which are specifically stated to analyze the strategies for effective teaching of computer studies. In the questionnaire the respondents are to tick (🏳) in the column of their choice against the expected answer as shown below; Strongly Agreed (SA), Agree (A), Disagree (D), Strongly Disagree (SD). This will enable the researcher to group those that support the questions from those that have other opinion about the questions.

Validity of Instrument

To ensure the validity o the research instrument, the questionnaire and checklist was submitted to the research supervisor and two other experts in the Department of Curriculum and Instructional Technology for scrutiny, corrections and suggestions made was considered by the research in the process of drafting the final copy of the questionnaire

Reliability of the Instrument

An Instruments will not only be valid in measuring what it supposed to measure but should also be reliable in measuring the construct it is supposed to measure consistently. To establish the reliability of The instruments a pilot testing was carried out using 20 teachers who are the members of the population involved in main study the instrumental is administered to teachers twice within a period of two weeks and the mark obtained on the two occasions were correlated using Pearson product correlation formula to obtain a coefficient stability. The coefficient was found to be which showed that the instrument was very reliable

Method of Data Collection

The data were collected through questionnaire which was done with the help of a trained assistant and the researcher. In the process of administering of questionnaire, the teachers were selected by proportional random sampling were served with questionnaire by the trained assistant and the researcher. And after the questionnaires have been filled they were retrieved by the researcher for analysis.

Method of Data Analysis

The data collected were analysed using frequency count, simple percentile, mean and standard deviation, using 2.5 as the criterion mean. Any item between 0.0 and 2.49 was seen as disagreement while any item above 2.50 was seen as agreement.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter deals with the analysis, interpretation and discussion of the results of the data collection through questionnaire. The data was collected from teachers of both private and public schools in the Ovia North East Local Government Area of Edo State. The results of the analysis are presented in tables below.

Table 1: Sex Distribution of Respondents

S/N	Sex	No of respondents	Percentage
1	Male	35	71.4%
2	Female	14	28.6%
	Total	49	100%

Table 1 had 35 respondents which represent 71.4% of the total respondents of male and the female respondents were a total of 14 representing 28.6% of the total respondents.

Table 2: Class Level Distribution of Respondents

S/N	Class Level	No of respondents	Percentage
1	SSS 1	14	28.6%
2	SSS 2	20	40.8%
3	SSS 3	15	30.6%
	Total	49	100%

Information on table 2 shows that out of 49 respondents, 28.6% (14) of the respondents teaches SSS 1, and 40.8% (20) of the respondents teaches SSS 2 while 30.6% (15) of the respondents teaches SSS 3.

Research Questions Analysis

An analysis of respondents' response to the item in the questionnaire was done. The result of the data collection and analysis is presented in tables below:

Table 3: What are the strategies that enhance the teaching of computer studies in secondary schools?

S/N	ITEM	A		D		TOTAL	
		F	%	F	%	F	%
1	The use of instructional materials aid the teaching and learning process	49	100.0	-	-	49	100.0
2	Effective supervision and inspection of teachers will enhance effective teaching and learning among students	32	65.2	17	34.8	49	100.0
3	The problem-solving method of teaching enhances the teaching/learning process	31	63.2	18	36.8	49	100.0
4	Provision of visual instructional materials aid the teaching of computer	41	83.6	8	16.4	49	100.0
5	Student-centred teaching method is better than teacher-centred method	44	89.8	5	10.2	49	100.0

In table 3 100% (49) agreed that the use of instructional materials aid the teaching and learning process while respondents with the level of disagreement were none. 65.2% (32) of the respondents agreed effective supervision and inspection of teachers will enhance effective teaching

and learning among students, while 34.8% (17) of the respondents disagree to the statement. The largest percentage of respondents which is 63.2% (31) agreed that the problem solving method of teaching

enhances the teaching/learning process, while 36.8% (18) of respondents disagreed. The largest percentage of respondents which is 83.6% (41) agreed that provision of visual instructional materials aid the teaching of computer, while those that disagreed with the statement were at 16.4% (8). 89.2% (44) agreed to the statement that student-centred teaching method is better than teacher-centred method, while 10.8% (5) disagreed to the statement.

Table 4: What are the problems that hinder the effective teaching of computer studies in secondary schools?

S/N	ITEM	A		D		TOTAL	
		F	%	F	%	F	%
1	Does the qualification of the teacher affect the effective teaching of computer science	28	57.2	21	42.8	49	100.0
2	Lack of communication skill of the teacher affects the teaching process	29	59.2	20	40.8	49	100.0
3	Poor practical skill of the teacher affects the teaching of computer science	34	69.3	15	30.7	49	100.0
4	Lack of computer laboratory affects the effectiveness of teaching computer science	44	89.8	5	10.2	49	100.0
5	Does the number of students in a class affect the teaching of computer science	15	30.6	34	69.4	49	100.0

The largest percentage of responses in table 4 were those who agreed that the qualification of the teacher affect the effective teaching of computer science which represents 57.2% (28), followed by those who disagreed with 42.8% (21) . The largest percentage of the responses of 59.2% (29) agreed that lack of communication skill of the teacher affects the teaching

process, followed by those who disagreed with 40.8% (20) responses. Also, 69.3% (34) of the respondents agreed with the statement that poor practical skill of the teacher affects the teaching of computer science, followed by those who disagreed with 30.7% (15). 89.8% (44) of the respondents agreed that lack of computer laboratory affects the effectiveness of teaching computer science, followed by those who disagreed with 10.2% (5). Furthermore, 30.6% (15) of the respondents agreed to the statement that the number of students in a class affect the teaching of computer science. The largest percentage of respondents disagreed with 69.4% (34).

Table 5: Does the teaching method used in teaching computer science have an effect on students learning outcome?

S/N	ITEM	YES		NO		TOTAL	
		F	%	F	%	F	%
1	Teacher centred teaching method is not effective for teaching computer science.	46	93.9	3	6.1	49	100.0
2	Practical method simplifies the teaching and learning process of computer science.	44	89.8	5	10.2	49	100.0
3	Teacher who explore different method of teaching computer science get more positive result.	42	85.8	7	14.2	49	100.0
4	E-Learning facilitate the teaching and learning.	49	100.0	-	-	49	100.0
5	Student comprehends most concept during practical classes than theory class.	41	83.6	8	16.4	49	100.0

From table 5, it is observed that 93.9% (46) of the respondents agreed to the statement that teacher centred teaching method is not effective for teaching computer science while the respondents that disagreed was represented with 6.1% (3). The largest percentage of the responses of 89.8% (44) agreed that practical method simplifies the teaching and learning process of computer science, followed by those who disagreed

with 10.2% (5) responses. Also, 85.8% (42) of the respondents agreed with the statement that teacher who explore different method of teaching computer science get more positive result, followed by those who disagreed with 14.2% (7). 100% (49) of the respondents agreed that E-Learning facilitate the teaching and learning, while none disagreed. Furthermore, 83.6% (41) of the respondents agreed to the statement that Student comprehends most concept during practical classes than theory class. The lowest percentage of respondents disagreed with 16.4% (8).

Table 6: How effective is the use of computer on the teaching and learning of computer science in secondary schools?

S/N	ITEM	YES		NO		TOTAL	
		F	%	F	%	F	%
1	Most secondary school do not have computer labouratory.	46	93.9	3	6.1	49	100.0
2	Most computer science teachers cannot operate computers.	44	89.8	5	10.2	49	100.0
3	Computer gadgets and equipment are good for students retention of a particular topic.	42	85.8	7	14.2	49	100.0
4	Most schools do not have qualified computer science teachers.	49	100.0	-	-	49	100.0
5	Provision of e-library in secondary schools will aid the effect teaching and learning of computer science.	41	83.6	8	16.4	49	100.0

In table 6 100% (49) agreed that most secondary school do not have computer labouratory while respondents with the level of disagreement were none. 65.2% (32) of the respondents agreed that most computer science teachers cannot operate computers, while 34.8% (17) of the respondents disagree to the statement. The largest percentage of

respondents which is 63.2% (31) agreed that computer gadgets and equipment are good for students retention of a particular topic, while 36.8% (18) of respondents disagreed. The largest percentage of respondents which is 83.6% (41) agreed that Most schools do not have qualified computer science teachers, while those that disagreed with the statement were at16.4% (8). 89.2% (44) agreed to the statement that Provision of e-library in secondary schools will aid the effect teaching and learning of computer science, while10.8% (5) disagreed to the statement.

Discussion of Findings

This study aimed to access the strategies for effective teaching of computer science. From the study, it was observed that the respondents on What are the strategies that enhance the teaching of Computer studies in secondary schools? is very high. This shows that adequate teaching methods of computer studies cannot be underestimated. It means the use of instructional materials aid the teaching and learning process helps students acquire more skills to improve their academic performance, it

provides academic support for new teachers and students, it promotes innovation and creativity among students and it provides a good teaching practice to student and teachers. This study is in line with, Ayogu (2018) he stated that the instructional material does not only enhance the teacher but create a lasting memory in the child. Instructional material enhances to the objectives of self realization of an individual. Work offered in computer studies enables the students to improve their abilities to solve problems in the world. Lack of sufficient practically oriented technical teachers who would arouse and sustain students interest is a serious setback in the progress of computer science as a field of study.

However, there is need for adequate number of computer in schools, regular power supply for operating the available system and Provision of standby generator for operating the system to improve teaching of computer science. The teachers also needs to be aware of the ethical and legal responsibilities that guides the use of adequate teaching methods as they are the ones to guide students in the use of these resources.

On the issue of what are the problems that hinder the effective teaching of computer studies in secondary schools? it was observed that poor practical skill of the teacher affects the teaching of computer science. The study also vividly shows that Lack of computer laboratory affects the effectiveness of teaching computer science which is in line with, Ogbonnaya (2014) he opined that lack of practical skills of the tutor affect the coherent nature of knowledge given to student as planned by the curriculum planners, teachers need to be motivated for optimal output on their job; part of this motivated to practice what they teach the student in the laboratory because this will help the students performance

On the issue of does the teaching method used in teaching computer science have an effect on students learning outcome? it was observed that practical method simplifies the teaching and learning process of computer science. This is in line with, Adigun (2014) in his research towards the perception of service teaches toward the use of ICT in teaching stated that in the acquisition for any skill, there must be interest. It is only when there is interest that the person will perform well

despite its complexity. But most of our students still lack interest in computer science and this is a pointer to the low progress recorded in the study of computer science in our secondary schools. Most Nigeria students see computer science as something unfamiliar, distant and mysterious. Rather than being seen as a tool for personal and national development, computer science is seen as a hurdle (NITDA, 2003).

On the issue of how effective is the use of computer on the teaching and learning of computer science in secondary schools? it was observed that Most secondary school do not have computer labouratory. The study also vividly shows that provision of e-library in secondary schools will aid the effect teaching and learning of computer science. According to Nworgu (2008), CAI is a program of instruction or package presented as computer software for instructional purpose. He further stated that the use of CAI has been found to make teaching and learning efficient, most effective, easier and less cumbersome since it present concepts in such organized manner that makes for greater clarity and easier understanding of computer science , Tunde (2005)in his research

towards the perception of service teaches toward the use of ICT in teaching stated that in the acquisition for any skill, there must be interest. It is only when there is interest that the person will perform well despite its complexity. But most of our students still lack interest in computer science and this is a pointer to the low progress recorded in the study of computer science with the adequate facility in our secondary schools.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The data of this study was gathered through structured questionnaire administered to hundred respondents that were made up of secondary school 2 Computer teachers of some selected schools in Ovia North East Local Government Area in Edo State. In the course of conducting the study, four research questions were formulated which lead to following findings:

1. Adequate use of instructional materials is one of the strategy that enhances the effective teaching of computer studies in secondary schools.
2. Lack of practical skills, communication skills are some of the problems that hinders effective teaching of computer studies in secondary schools.
3. Adequate teaching methods enhance the teaching of computer studies in secondary schools.

4. Adequate use of computer by a competent teachers enhance the teaching of computer studies in secondary school

Conclusion

Adequate teaching methods is one of the strategy that enhance the teaching of computer studies in senior secondary schools. Therefore, there is need for adequate number of computer in schools, regular power supply for operating the available system and Provision of standby generator for operating the system to improve teaching of computer science. The teachers also needs to be aware of the ethical and legal responsibilities that guides the use of adequate teaching methods as they are the ones to guide students in the use of these resources.

Recommendations

The results of this study indicated that adequate teaching facilities enhance the teaching of Computer studies. Government should provide regular power supply for operating available system as well as Provide standby generator for operating the system to improve teaching of computer science.

Also government should employ more qualified teachers into the system and with time they gain experience base on the years they have spend teaching and in turn transfer this experience into teaching.

Also, government should motivate the teachers for optimal output on their job; part of this motivation is assured through payment of their salaries and other fringe benefits.

Suggestion for Further Studies

This study can be the basis for further research opportunities. This particular study could be expanded to include additional schools from different Local Government Area in the state and it can also be expanded to different states of the federation. The expansion could occur by specific class or in different classes.

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APPENDIX

DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY
FACULTY OF EDUCATION
UNIVERSITY OF BENIN
BENIN CITY

QUESTIONNAIRE ON THE ASSESSMENT OF STRATEGIES FOR EFFECTIVE TEACHING OF COMPUTER SCIENCE IN SECONDARY SCHOOLS IN OVIA NORTH-EAST LOCAL GOVERNMENT AREA OF EDO STATE

Dear Respondent,

I am an undergraduate of the above named institution and department. This questionnaire is strictly for academic purposes and is geared towards obtaining relevant information on the topic “Assessment of Strategies for Effective Teaching of Computer Science in Secondary Schools in Ovia North-East Local Government Area of Edo State” in Benin City, Edo State" and so, your responses will be treated as confidential.

Please, read each statement carefully before responding by ticking (✓) in the box that relates to your response to each question.

Thank you,

Owolewa Suru Emmanuel

SECTION A: (Background Information)

Please read the questions and statement carefully and tick (☞) against the option that reflect your response**.**

1. Sex of Respondent: Male [ ] Female [ ]

2. Age of Respondent: 25-30 yrs [ ] 31-40 yrs [ ] 41-50 yrs [ ] 51 and above [ ]

3. Years of Experience: Less than 5 years [ ] 6-10 years [ ] 11-15 [ ]

   16 years and above [ ]

4. Class Taught:_____

SECTION B

S/N	ITEMS	SA	A	D	SD
Strategies that enhances the effective teaching of computer science.					
1.	The use of instructional materials aid the teaching and learning process				
2.	Effective supervision and inspection of teachers will enhance effective teaching and learning among students				
3.	The problem-solving method of teaching enhances the teaching/learning process.				
4.	Provision of visual instructional materials aid the teaching of computer				

5.	Student-centred teaching method is better than teacher-centred method.				
Problems that hinders the effective teaching of computer science in secondary schools					
6.	Does the qualification of the teacher affect the effective teaching of computer science				
7.	Lack of communication skill of the teacher affects the teaching process				
8.	Poor practical skill of the teacher affects the teaching of computer science				
9.	Lack of computer laboratory affects the effectiveness of teaching computer science				
10.	Does the number of students in a class affect the teaching of computer science.				
Teaching method used in teaching computer science					
11.	Teacher centred teaching method is not effective for teaching computer science				
12.	Practical method simplifies the teaching and learning process of computer science.				
13.	Teacher who explore different method of teaching computer science get more positive result.				
14.	E-Learning facilitate the teaching and learning				
15.	Student comprehends most concept during practical classes than theory class				
The effective use of computer in teaching computer science					
16.	Most secondary school do not have computer labouratory				

17.	Most computer science teachers cannot operate computers				
18.	Computer gadgets and equipment are good for students retention of a particular topic				
19.	Most schools do not have qualified computer science teachers				
20.	Provision of e-library in secondary schools will aid the effect teaching and learning of computer science				