**THE PROBLEMS AND PROSPECT OF TEACHING AND LEARNING OF COMPUTER SCIENCE IN NIGERIA**

**ABSTRACT**

This study investigated the problems and prospect of teaching and learning of computer science in Nigeria. Data was collected from 50 respondents comprising of 10 instructors and 40 students randomly selected from the Edo State institute of management and technology. The analysis of data collected revealed that inadequate professionally trained teachers, inadequate computers, inadequate instructional resources, inadequate instructional resources, lack of motivation and incentive for teachers, lack of encouragement and motivation for the students, student apathy and indifference are problems associated with the teaching and learning of computer science education. It was recommended inter alia, that computer science teachers should be given appropriate pedagogical training to provide them with the requisite knowledge needed for efficient and better performance and the relevant instructional resources and support infrastructural facilities provided to ensure effective teaching and learning of computer science education at the institution

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**CHAPTER ONE**

**INTRODUCTION**

**1.0 BACKGROUND OF THE STUDY**

Computer education technically in schools has become one of the most fast growing and far reaching developments in Nigeria (Okebukola and Ajewole, 1990). The transmission of information and instruction are now bending towards Computer technology. According to Okebukola (1990), the idea of using and studying computer in schools and its gradual acceptance started in the late 1960 even though computers have been around much earlier. Computer is conceived as a device or machine designed specially to perform calculations, process data and store information which can be easily retrieved whenrequired (Aghadino, 1990; Adamu and Bello, 2002). To Ahore (1990), computer refers to a device for executing precisely stated rules with accuracy, rapidity and with great reliability. On his part Adamu (1994), described computer as a machine used by human beings to solve problems. This probably explains the role of computer in processing information for dealing with certain problems confronting human kind. From the foregoing, it is obvious that computer is a device or machine designed to help process information or data and for storing such information for future use in dealing with problems of daily living. Computer education, on the other hand, Okebukola (1990) described as the learning that can lead to computer literacy. This implies that the aim of learning and teaching computer science is to make individual develop the knowledge and skills of computer application or use. Computer science is a learning process in which the individual is taken through the rudiments of using the computer to store and process data/ information accurately and efficiently. The process seeks to equip the individual with skills and knowledge that can make him/her use the computer effectively (Adamu and Bello, 2002). Anyone who is literate in computer or has received computer education and instruction is expected to tell the computer what he wants it to do and, this according to Gboboniyi (1989), Aghedino (1990), and Adamu and Bello (2002), include the ability to understand what the computer says. They add that to be literate in computer science amounts to been able to read, write and speak the language of the computer.In modern world, the computer is being gradually applied in all aspects of human endeavour. It has been stressed that the application of computer will enhance effectiveness and efficiency in this rapidly growing and technologically changing world. Computer education is being advocated because it is almost certain that computer literacy will have as much impact on career opportunities in the fast growing information age (Adamu and Bello, 2002). The relevance of computer science is therefore, hinged on its utility value. The National Policy of Education (NPE, 1981, revised in 1988, 1991, 1998 and 2004) introduced the teaching of computer science in Nigerian schools. The inclusion of the study of computer science in the school curriculum was aimed at providing opportunity for every student to become computer literate. The study of computer science has in effect, gained tremendous influence on the student and society. However, the use and study of computers in Nigeria is recent when compared to other parts of the world where computers have been in use in all facet of human endeavour including offices, schools, industries, research centre’s, communication, hospitals to mention but a few. The complex nature of present day school situation has

made transmission of information and instruction to students and the nature of learning and teaching in general more complex. This has made the role of the teacher in promoting learning more challenging. The new role does not just, involve mere transmission of information to students but also include looking at the problems associated with learning and instruction so that students can gain maximally from teaching and learning

process. Computers are now used where there is a lot of data to be manipulated, where complex tasks must be managed or where there is need for real time access to centralized information from arbitrary locations such as in education, telemedicine, telecommunicating and in several other area (Adewopo, 1995). The study of computer in school is therefore, aimed at helping the students cope with modern technological development, equip them knowledge and competencies or skills of programme and administrative management as well as, improve the learning process.. Students are expected to master the skills of computer appreciation or application and not just what it is and can do. Students are therefore, expected to be taught in such a way as not only to conceptualize and understand the computer, but also to be able to effectively manage their own learning, reinforce it and apply such knowledge or training in practical situation. This new approach hasmade the teaching of computer science a little bit more complex and challenging. It has been observed that the teaching and learning of 193 computer science in schools has not been quite easy. Often time, people talk about inadequate equipments, facilities, and computers instructional resources for learning and teaching exercise (Aghadino, 1990;Okebukola, 1990). It is believed that teaching of science in general and computer science in particular is beset with a number of problems (Adamu, 2000). The slow pace of learning and application of computer had been attributed to this. This presupposes that there are problems associated with the teaching and learning of computer science education.

**1.1 STATEMENT OF PROBLEM**

The first challenge in teaching and leaning Computer Science in nigeria is the problem caused by a lack of interaction between the teacher and the student/s that is a feature of face-to-face classroom teaching (Hentea, Shea, & Pennington, 2003). For technical subjects in Computer Science such as computer programming, database design and AI, this lack of interaction is exacerbated. In Computer Science subjects, the teaching requires a high level of communication between students and the teacher. In the class room where students may be located at a great distance and studying in isolation(for example, outback Australia), interaction may be synchronous (real time) or asynchronous (anytime). Asynchronous methods use collaborative tools that enable students to communicate with their teacher and their peers at any time forms of asynchronous communication technology, and can be used for teacher-student communication and student-student exchanges. The problem of teaching and learning of computer science and be summaried.

Thus:

• Inadequate Professionally trained computer teachers

• Inadequate computers

• . Lack of support infrastructural facilities

• Inadequate instructional materials or teaching aids

• Poor instructional delivery 104 2.08 Not accepted as problem

• Poor teachers attitude toward the subject

• General students apathy and indifference in computer science Lack of motivation and encouragement for students

• Lack of incentive and motivation for teachers.

**1.3 OBJECTIVE OF THE STUDY**

The objective of the study are listed below:

• To understand the problem in learning and teaching of computer science.

• To set up a strategy in solving those problem.

• To set up a standard for teaching computer science in Nigeria

**1.4 SCOPE OF THE STUDY**

The limits of this study is the problems and prospect of teaching and learning of computer science in Nigeria. A means of ensuring standard teaching and learning of computer science. The study involves the development of strategy in solving the problem.

**1. 5 SIGNIFICANCE OF THE STUDY**

• To understand the problems of teaching and learning of computer science in Nigeria.

• To know the methods or ways of solving them

• To know the standard to set up in teaching computer science in schools.

**1.6LIMITATION OF STUDY**

This research work in carried out in Nigeria and as a result it is limited from other countries.

**1.7 DIFINITION OF TERMS**

• Computer: Computer is conceived as a device or machine designed specially to perform calculations, process data and store information which can be easily retrieved when required

• NPE: national policy of education

• CSETAQ: Computer Science Education Teaching Assessment Questionnaire (CSETAQ)

• PEFRN: Policy on Education Federal Republic of Nigeria

**CHAPTER TWO**

**LITERATURE REVIEW**

In this chapter, the researcher reviewed other related research works which were relevant to this research Topics. This provided the researcher with support and sense of direction. This chapter was based on the following sub-headings:-

2.1 Theoretical framework

2.2 Historical Development of Financial Computer science.

2.3 Objectives of Financial Computer science.

2.4 Branches of Financial Computer science.

2.5 Historical Development of Federal Government (Unity) Colleges

2.6 Teaching methods.

2.7 A to Z of Effective Teaching.

2.8 Review of Empirical Studies.

2.9 Summary of Literature Review.

**2.1 THEORETICAL FRAMEWORKS**

Learning theories were chosen for this research work because learning theories are conceptual frameworks that describe how information is absorbed, processed, and retained during learning. Learning brings together cognitive, emotional, and environmental influences and experience for acquiring, enhancing, or making changes in one‟s knowledge, skills, values and the world views. There are three main categories of learning theory. Namely a) Behaviorism Skinner in Raymond, U. and Ogunbameru, M.T. (2005), Coined the term “behaviorism.” Critical of Wundt‟s emphasis on internal states, Watson insisted that psychology must focus on overt measureable behaviors. Watson believed that theorizing thoughts, intentions or other subjective experiences was unscientific. Behaviorism as a theory was primarily developed by B. F. Skinner. It loosely encompasses the work of people like Edward Thorndike, Tolman Guthrie, and Hull. What characterizes these investigators are their underlying assumptions about the process of learning. In essence, three basic assumptions are held to be true. First, learning is manifested by a change in behavior. Secondly, the environment shapes behavior. And thirdly, the principles of contiguity and reinforcement are central to explaining the learning process. For behaviorism, learning is the acquisition of new behavior through conditioning. There are two types of possible conditioning namely:

1. **CLASSICAL CONDITIONING**,

where the behavior becomes a reflex response to stimulus as in the case of Pavlov‟s Dog. Pavlov was interested in studying reflexes, when he saw that the dogs drooled without the proper stimulus. Although no food was in sight, their saliva still dribbled. It turned out that the dogs were reacting to lab coats. Every time the dogs were served food, the person who served the food was wearing a lab coats. Therefore, the dogs reacted as if food was on its way whenever they saw a lab coat. In a series of experiments, Pavlov then tried to figure out how these phenomena were linked. For example, he struck a bell when the dogs were fed. If the bell was sounded in close association with their meal, the dogs learned to associate the sound of the bell with food. After a while, at the mere sound of the bell, they responded by drooling. Pavlov‟s work laid the foundation for many of psychologist John B. Watson‟s ideas. Watson and Pavlov shared both a disdain for “mentalistic” concepts and a belief that the basic laws of learning were the same for all animals whether dogs or humans.

1. **OPERANT CONDITIONING**

where there is reinforcement of the behavior by a reward or a punishment. The theory of operant conditioning was developed by B. F. Skinner and is known as Radical Behaviorism. The word ‟operant‟ refers to the way in which behavior „operates on the environment‟. Briefly, a behavior may result either in reinforcement, which increases the likelihood of the behavior recurring, or punishment, which decreases the likelihood of the behavior recurring. It is important to note that, a punishment is not considered to be applicable if it does not result in the reduction of the behavior, and so the terms punishment and reinforcement are determined as a result of the actions. Within this framework, behaviorists are particularly interested in measurable changes in behavior. In operant conditioning we learn to associate a response (our behavior) and its consequence and thus to repeat acts followed by good results and avoid acts followed by bad results. Since behaviorists view the learning process as a change in behavior, educators arrange the environment to elicit desired responses through such devices as behavioral objectives, competency-based education, and skill development and training.

**B) COGNITIVISM (PSYCHOLOGY)**

Cognitive theories grew out of Gestalt psychology. In Germany in the early 1900s, it was transplanted to America in the 1920s. Gestalt is roughly translated as “configuration,” or “pattern,” and emphasizes “the whole” of human experience. Over the years, the Gestalt psychologist provided compelling demonstrations and described principles by which we organize our sensations into perceptions. Gestalt views of learning have been incorporated into what have come to be labeled cognitive theories. Two key assumptions underlie this cognitive approach:

(1) That the memory system is an active organized processor of information and

(2) That prior knowledge plays an important role in learning. Cognitive theories look beyond behavior to explain brain-based learning. Cognitivists consider how human memory works to promote learning. The major difference between gestaltists and behaviorists is the focus of control over the learning activity: the individual learner is more key to gestaltists than the environment that behaviorists emphasize. Educators employing a cognitivist approach to learning would view learning as internal mental process where in order to develop learner capacity and skills to improve learning, the educator structures content of learning activities to focus on building intelligence and cognitive and meta-cognitive development.

**C) CONSTRUCTIVISM (LEARNING THEORY)**

Constructivism is a revolution in educational psychology. Built on the work of jean Piaget and Jerome Bruner, constructivism emphasizes the importance of active involvement of learners in constructing knowledge for themselves. Constructivism emphasizes top-down processing: begin with complex problems and teach basic skills while solving these problems. Constructivism explains why students do not learn deeply by listening to a teacher, or reading from a textbook. Learning sciences research is revealing the deeper underlying basis of how knowledge construction works. To design effective environments, one needs a very good understanding of what children know when they come to the classroom. This requires sophisticated research into children‟s cognitive development. The learning theories of John Dewey, Marie Montessori, and David kolb serve as the foundation of constructivist learning theory. In summary, the effect of teaching methods must focus on overt measureable behaviours in terms of students performance, compelling demonstrations and described principles of teaching methods by which we organize our sensations into perception must be provided, the teaching methods chosen emphasised active involvement of learners in constructing knowledge for themselves

**2.2 CONCEPTUAL FRAMEWORK DEMONSTRATION TEACHING METHOD:**

Omosewo (2004) defined demonstration method as a process of presenting or establishing facts or principles. A procedure of doing or performing something in the presence of others either as a means of showing them how to do it themselves or illustrate a principle. For the purpose of this study Demonstration Teaching method is defined as doing activities immediately after the teacher. Assignment Teaching Method: Douglas in Aggarwal (2006) defined Assignment method as an instructional technique comprises the guided information, self learning, writing skills and report preparation among the learners. For the purpose of this study Assignment method is defined as learning for self discovery. Performance: Is the average score of Student in each of the test given or administered. Performance in this study it is used to assess the effects of Teaching Method on a group of Students.

**2.3 HISTORICAL DEVELOPMENT OF COMPUTER SCIENCE**

In the past sixty years or so, computers have migrated from room-size megaboxes to desktops to laptops to our pockets. But the real history of machine-assisted human computation (“computer” originally referred to the person, not the machine) goes back even further. This week is Computer Science Education Week, and to kick things off the World Science Festival celebrates the long history of man’s best friend, the computer. First in the historical record was the abacus, helping the ancient technorati gain an edge over trading partners still counting cows and amphorae by hand. The oldest known complex computing device, called the Antikythera mechanism, dates back to 87 B.C; it’s surmised the Greeks used this gear-operated contraption (found in a shipwreck in the Aegean Sea early in the 20th century, though its significance wasn’t realized until 2006) to calculate astronomical positions and help them navigate through the seas. Computing took another leap in 1843, when English mathematician Ada Lovelace wrote the first computer algorithm, in collaboration with Charles Babbage, who devised a theory of the first programmable computer. But the modern computing-machine era began with Alan Turing’s conception of the Turing Machine, and three Bell Labs scientists invention of the transistor, which made modern-style computing possible, and landed them the 1956 Nobel Prize in Physics. For decades, computing technology was exclusive to the government and the military; later, academic institutions came online, and Steve Wozniak built the circuit board for Apple-1, making home computing practicable. On the connectivity side, Tim Berners-Lee created the World Wide Web, and Marc Andreessen built a browser, and that’s how we came to live in a world where our glasses can tell us what we’re looking at. With wearable computers, embeddable chips, smart appliances, and other advances in progress and on the horizon, the journey towards building smarter, faster and more capable computers is clearly just beginning.

**2.6 TEACHING METHODS**

The word „method‟ is often used very loosely. It has been supposed to involve a body of fixed and stereotyped modes of procedures each applicable to its appropriate subject as a kind of ritual to be observed by all teachers, and in all circumstances. In this sense, method has been rightly scorned and is now becoming discredited. it is important to remember that good method can result only from the constant observation of certain broad principles, These include orderly procedure in teaching, an arrangement of subject matter which will avoid waste of time and energy and a redistribution of emphasis which will secure the greatest cooperation from the pupils and maintain their active interest”. Teaching methods are the tools/means through which practicing teachers engage their students into meaningful activities as a result of which ideas, values and facts are learned. Methods are the procedures by which objectives or goal can be easily attained. The use of method in teaching computer science conserves the energy of the teacher enhances his success and quicken the learner understanding. According to Ajoma (2009), teaching method is the professional technique teachers adopt in their instructional exercises to enable them impart relevant knowledge and skills to their students. Obi (2005) opined that teaching techniques are strategies employed by the teacher to enhance teaching. Also, Omosewo (2004) considers teaching method as the art of creating learning situations and making pupils think by providing books, equipment, materials and questions to be answered. From the definitions given, it could be deduced that the 27 responsibility of the selection and adoption of teaching method to be used in the teaching of a subject or a particular topic lies on the shoulder of the teacher since there is no stereotyped method or strategy to be adopted. It is in the light of this that Omosewo (2004), opined that, it is difficult to give a simple answer to the question, “what is the best way to tech” or to say, “teach this way, follow these rules and all will be well.” So much depend on the teacher needed to have a good understanding of the several methods of teaching available to the teacher in presenting his lessons to students. These teaching methods of teaching as listed by Baba (2007) are lecture method, project method, class method, group method, questioning method Demonstration method and Assignment method. Each of these methods are briefly explained as follows:-

**2.7 LECTURE METHOD**

This is the type of method of teaching in which the teacher prepares the content to be learned in advance is otherwise called Conventional Teaching Method. Materials are prepared bearing in mind, the age, ability and educational background of the students. The teacher gives instruction by way of talking, explaining and citation of examples to support the content of the lecture. Ideally, a one-hour lecture is supposed to be backed up with a two-hour research by the students. Aliyu (2008) opined that lecture method is a situation where the teacher talks and tells while students listen. The lecture method of teaching irrespective of the different views of authors is still the most widely used form of teaching. Abimbola (2004), was of this view that the lecture method is still the best method for teaching students new concepts and principles. Also in the view of Siagh and Rana (2004), the lecture method has received more criticisms than any teaching strategy yet it continues to be used extensively; they believe that the lecture method is undoubtedly one or the most efficient means of purveying large quantities of information in short period of time.

**The advantages of this method of teaching a**re listed by Ahmed (2007) as:-

(a) It is good for mature students who need to be directed on how to get the materials necessary for their work.

(b) It saves time and energy on the part of both the students and lecturers

(c) It encourages the spirit of self-reliance and independent work

(d) It is a good strategy for teaching large classes especially these days of large student enrolment in schools

(e) It is applicable for teaching a range of school subjects, is therefore indispensable.

The disadvantages stated by Ahmed (2007) were:

(a) Immature students may not conduct any research and may therefore rely on the lecturer‟s note

(b) Some lecturers see lecturing as dictation session and therefore are not lecturing at all.

(c) There may be a risk of misquoting or writing things incorrectly on the part of the students.

(d) Lazy students cannot learn anything meaningful in this arrangement.

**2.7.1 Project method/activity method**

This deals with a particular idea, task, unit or materials to be learned under the guidance of the teacher. The idea or task is transformed into the content, which is to be learned through the activities designed by the teacher. Ajoma (2009), described the project method as a student centre method of teaching and learning in business education in which learners are allowed a great deal of involvement right from the beginning to the end of the project. The method enhances student‟s full participation and quick assimilation of skills. Mill (2007), saw the project method of teaching as the most effective ways of arousing students interests. The use of the project method of teaching can help students to be innovative, thoughtful and creative, since they are fully engaged in the learning process. Howell and Mordini (2003), affirmed that the project method of teaching serves the interest of the students best by utilizing problem-solving to encourage critical thinking, progressing through the steps of investigation, planning, testing, evaluation and improving during their project fabrication. Ahmed (2007) stated the advantages of project method of teaching as follows:

(a) It creates and sustains the learner‟s interest because they will be engaged in meaningful activities.

(b) It is a problem-solving exercise/method

(c) It makes learning real and as practical as possible.

Disadvantages

(a) It may create confusion and disorder if the planning, organization and supervision are faulty.

(b) Identification and selection of projects is difficult for most teachers.

(c) It may be costly in terms of human and material resources that may be required for the identified project.

**2.7.2 Class method**

This is the type of teaching arrangement in which the learners are grouped in a class of 25-40. The teacher prepares his lesson based on his knowledge of the chronological age, class and previous knowledge of the learners. It presumes that children of the same age have average mental ability and could learn at the same rate under normal circumstances. Teachers due to the obvious reasons of being the traditional method frequently use this method of teaching. Ahmed (2007) further stated the advantages of class method:

(a) It is very economical because one teacher could attend to a class of 40 at a time and even more.

(b) It gives the teacher a prominent role of being the master who is the source of knowledge to be acquired by the students.

(c) It gives leadership training to the pupils who may be appointed to head the classes.

(d) It encourages peer learning and the spirit of interdependence as students could learn from one another.

(e) It promotes interaction among students who may come from different families, ethnic and cultural backgrounds. Some points to note using class method: (a) Consider the average age and mental ability of the students (b) Involve students otherwise some students will not participate. (c) Be democratic and objective (d) Give consideration to weak students.

**2.7.3 Group method**

According to Ahmed (2007), in this method the teacher divides the students into groups for the purpose of instructions. Each group may be assigned a task, reading, recording and production of items in case of practical activities. The groups are given definite tasks, enough instructions and the necessary conditions sometimes group leaders are appointed. They will be reporting to the teacher the observations, problems or question that may arise while doing the work. The teacher in this arrangement serves as a consultant or guide. He goes round the groups giving them the necessary assistance or answering their questions. The task assigned to the group if arranged well will keep the learners busy for the period of the lesson and beyond. Group method poses challenges to students because they have to understand or accomplish the work given. According to Mishra (2007), group learning is often called collaborative learning or peer teaching he explained that this teaching technique fasters student‟s face-to-face interaction, interpersonal and small group skills, group processing, individual accountability and personal responsibility, and positive interdependence. It also gave students the opportunity to affirm their learning through teaching others and provides students with other styles of teaching that may be more accessible to them. The Dynamic Flight Handbook (2003) defined the group learning method as an instructional strategy which organizes students into small groups so that they can work together to maximize their own and each others learning. It was further stated that numerous research studies in diverse school settings and across a wide range of subject areas, indicate promising possibilities for academic achievement with this strategy. For example, advocates have noted that students completing group learning, group tasks tend to have higher test scores, higher-self esteem, improved social skills and greater comprehension of the subject they are studying. Group learning method ensures students participation in the teaching and learning process instead of being passive and waiting for whatever the teacher has for the lesson, the students in this learning method contribute maximally. Some elements are responsible for the success of this method which according to Johnson in mishra (2007) are:

i. Positive independence: students feel responsible for their own and group‟s effort ii. Face-to-face interaction: students encourage and support one another; the environment encourages discussion and eye contact. iii. Group behaviours: group members gain direct instruction in the interpersonal, social and collaborative skills needed to work with others occurs iv. Group processing: group members analyze their own and the group‟s ability to work together. Group learning method changes students‟ and teachers‟ roles in classrooms. The ownership of teaching and learning is shared by groups of students and is no longer the sole responsibility of the teacher. The authority of setting goals, assessing learning and facilitating learning is shared by all. Wachanga and Mwangi (2004) emphasized that the shared responsibility and interaction are likely to generate better inter-group relations, and result in better self-images for students with histories of poor achievements. Again, there is need for proper planning when using group learning method to teach students, else the efforts put in by both the teacher and the students will be fruitless. Mishra (2007) opined that group learning requires good planning in order to be successful. He stated that the following points should be noted: Group work as a learning strategy must be appropriate for the course objective. Moreso, the group task must be clearly outlined, feasible and relevant to the course objectives. It often helps to provide students with an explicit rational for group work. Furthermore, group membership must be determined carefully and positive social interaction within the groups based on instructor awareness of student abilities or social skills, some teachers assign specific roles such as task director, time keeper, social monitor and reporter to group members. Finally, group work must be assessed appropriately. Some instructors ask students to rate each other‟s performance and some ask for self-evaluation. Most instructors give students some combination of individual and group grade, although for some tasks, one or the other is chosen.

**2.7.5 Questioning method**

Questioning method is sometime referred to as the Socratic Method because it took its root from Socrates. According to Aliyu (2008), questioning method is where the teacher develops concepts and thinking by students through developmental questioning. The questions asked by the teacher help the students to think reason and organize their thoughts to be able to give answers. Fajemidagba (2004), also expressed that Socratic Method is translated to mean “question and answer thus: “the teacher asks a question: one students answers” the teacher reacts and ask another question which is responded by a second student and so forth”. The believed that the method is extremely valuable as a way to guide developmental thinking, to stimulate creativity, problem-solving, to initiate discussion and to stimulate quick recall of requisites needed for the day‟s lesson. Siagh and Rana (2004) reported that questioning is an important part of the teaching process without which no teaching can be effective. They went further to state its advantages: one is that the teacher can easily know through the questions whether his students have followed him or not. Second is that it keeps the students alert and therefore, keep their attention intact. Besides good questions can generate healthy discussions that may lead to a better understanding of the material by the students. Questioning breaks the passivity and monitoring that often pervades in a class as most teacher use lecture method only. Mishra (2007) asserted that posing questions can be an effective technique. The author further gave the following tips for the effective use of questions:

**2.7.7 Assignment Method of Teaching**

The Assignment method is the most common method of teaching especially in teaching of science. It is a technique which can be usually used in teaching and learning process. It is an instructional technique comprises the guided information, self learning, writing skills and report preparation among the learners. The Assignment method is an important step in teaching and learning process (Douglas in Aggarwal 2006)

**Objectives of Assignment Method**

Bates in Aggarwal (2006) defined that the Assignment given in the lesson concerned to the student must train them in self learning and to acquire the presentation skills of the learners. The Assignment method inculcates the learning experience and information retrieval and report writing skills. The following objectives can be derived from the Assignment method. The diverse and multiple learning experiences must be coordinated with a common method is an important objective in teaching of science. The Assignment method can integrate and coordinate the different learning experiences of a learner from different approaches.

a. It provides good training for information seeking and retrieval behavior.

b. It inculcates the self learning attitude among the students.

c. It provides information analysis and research attitude to the learners.

d. It develops the learning experiences from various sources.

**Step/stages in Assignment**

In order to achieve the desired objectives from the Assignments, the teacher should mind the following steps/stages before assigning the work to the students.

1. The assignment must be lesson concerned and related with the text books and curriculum. 2. The topic/unit of the assignment must be explained with the availability of resources.

3. The core of the subject or unit must be clarified.

4. The hard and difficult portions of the assignment need to be explained well.

5. The topics/units irrelevant to the assignments must be defined very well.

6. The questions and answers for the assignment provided to the learners must comprise the following:

7. Questions must investigate the learners/students attitude.

8. Questions need to express whether the students have gone through the entire questions and assignment instructions.

9. The answers must be simple and smaller in nature.

10. The questions must allocate space for diagrammatic illustrations by the students

11. Questions can provide experimental work and tools for the students

**Qualities/Features of a Good Assignment:**

The significance of the Assignment has not been felt by the students because they were given by the individual without having proper understanding of the objectives of assignment method. According to Tram in Aggarwal (2006) Assignments given with ambiguous instruction and lesser time to complete the task are also results in to substandard work by the students. A good assignment has the following best features and provides a good learning experience that is, Assignment must;

a. Be relevant to the subject taught to the students.

b. Reflect the affinities with the subject contents in the text book concerned.

c. Be simple and enable the students to complete it within the stipulated time.

d. Avoid ambiguous, complex information and instructional structure.

e. Have clear and definite objectives.

f. Be given with other methods of teaching enable the good learning experiences.

g. Be given ensuring the level of the students‟ age, attitude, skills and availability of resources for the topic/unit.

h. Develop the creativity and capable of individual learning by doing.

i. Challenge the Students thinking and analysts power.

j. The group assignments may encourage the coordinated learning among the students.

**Types of Assignments**:

Generally, the assignments are classified into two types viz Home Assignment and School Assignment.

**Home Assignments**

The Assignments given by the teacher is completed by the students in their home with the help of reference books and instructions/information provided by the teacher. The completed assignments were evaluated by the teacher.

**School Assignments**

Prior to the experiments to be done or any difficult tasks, the teacher interrogates some questions regarding the experiment or tasks. The students have to find the answer with the help of text books and library books and report it in written form. The teacher observes the information collected by the students for the assignment. If the information collected is relevant and sufficient, the students will be allowed to proceed further towards the experiment or tasks. Otherwise they are again instructed with further information and clarification to resubmit the assignments, such assignments are termed and known as school assignments.

**Teacher’s Role in Assignment Method:**

In order to achieve the effective learning experience among the students through the Assignment method teacher has his/her own important role and functions in this method. The following role and functions are considered mandatory for every teacher when executing the Assignment method.

1. In teaching of science subject the lesson is divided into easier and appropriate parts that should be enable to pursue as assignment topics.

2. The assignments must be interrelated and develop from one to another gives good learning experiences.

3. Teacher must have some targets in the learning experiences that to be acquired by the students from the assignments.

4. Before giving the assignment works to the student‟s progress sheet should have been prepared by the teacher.

5. Teacher should have the complete bibliography and references for the subject he assigned for the assignment to the students.

6. The reference and required information must be given with guidelines to the students when they opt for assistance in their assignment as well as in other academic works.

7. The teacher must have the list of the assignments and its feed back with the problem solving guidelines to reduce the gaps in learning process among the students. Active sheets must be prepared and kept under his custody for the experiments and laboratory work. The assignment represent one of the most important phases of teaching. Orum in Aggarwal (2006) suggests, “teachers generally do not appreciate the importance of the assignment, and the work of the pupils probably suffers as much from hasty or careless assignment as from any other single cause”. Whether or not assignment should be given to the student is a controversial point. Extreme views have been expressed regarding the usefulness of Assignment. The Assignment task has been emphatically denounced by Bray in Aggarwal (2006). Wrote, “under normal conditions, a reasonable day‟s work for a student has been done at the close of the afternoon and assignment as it is generally organized does more good than harm from the point of view of examination success. Boice, (2000) has listed the following types of assignment:

(a) Page or paragraph assignment: often thought of as the textbook assignment. This method is still widely used as recent studies have revealed.

(b) Chapter assignment: Another form of the textbook assignment though vastly different from the page or paragraph form. Chapters usually are of a unitary nature and involve some elements of completeness within themselves.

(c) Topical assignment: This type may or may not centre on a single chapter in a textbook. It has a wealth of possibility in the social sciences particularly.

(d) Problem assignment: where an arbitrary distinction is set up between a problem and a project, the type becomes very valuable form of assignment.

(e) Project assignment: Adapted especially to the workshop, natural science and some measures to the social sciences. Its special appeal is through the natural motor activity required.

(f) Experience assignment: Most frequently used in mathematics. It represents old traditional approach to teaching although if used in combination with other types, this form can be used very effectively.

(g) Individual or group report assignment: Used extensively as a device to supplement other types and to provide for individual differences in interests and capacities within the class; very effective.

(h) Unit assignment: It may apply to any extensive segment of classroom activity that presents factors of cohesion and a relatively complete additional element around which the unit may resolve itself as a core. A rather pretentious problem may serve as this unitary core. (i) Experimental assignment: This is a form of the problem and project types characteristic of the science laboratory. Too often in practice, it does not represent either an experiment or a problem in the true sense. It can be made a vital instrument of educational training if properly used.

(j) Practice assignment: This type represents an assignment of repetitions of activities designed to produce mental or motor skills. Essentials of an assignment according to Orum in Aggarwal (2006) were as follows Assignment should:

i. Be clear and definite

ii. Be concise but sufficiently detailed to enable each student to understand the task assigned.

iii. Anticipate special difficulties and suggest ways to remove them.

iv. Relate the new unit to past experience.

v. Make students to understand the importance.

vi. Arouse an interest in advance work.

vii. Provide for differences in the ability and interest of students.

viii. Be motivated chiefly by the hope of worthwhile achievement, rather than scholastic reward or the fear of punishments.

ix. Stimulate thought.

x. Provide necessary and specific directions for the study of the lesson.

xi. Be adjusted to the time and opportunity of the class.

xii. Be varied and adaptable to the needs and interests of the students. Purpose of assignment is stated as follows according to Aggarwal (2006): which were to:

1. Provide opportunities to students work independently and thereby to develop in them self-reliance and initiative.

2. Develop habits of reading regularly among the students.

3. Provide opportunities to the students to utilize their leisure time profitably. It is generally seen that our school children waste their precious time in loitering about or making mischief when no such work is given to them.

4. Give them an opportunity to do practice what is done in the school.

5. Finish the prescribed courses in time. The syllabus is too heavy to be finished in the classroom work.

6. Serve as a link in the parent-teacher cooperation. It enables the parents to know that regular work is being done in the school.

7. Develop permanent interests and to train the students in the profitable use of leisure.

8. Enable the child to revise his previous lesson and prepare the next one.

9. Provide remedial measure for backward children.

10. Give chance to every child to progress at his own speed.

**Methods of correction**

This is an important aspect of Assignment method of teaching, correction should be properly done in order to achieve the set goal i.e.:-

1. Correction by the teacher: This is the best method and should be usually resorted to.

2. Correction with the help of the best students in the class: Sometimes it may not be possible for the teacher to correct the work himself and he may resort to the help of the bright students. It is very important that in such cases a teacher must have a cursory glance over the work and then he should sign it.

3. Correction with the help of the blackboard: In language lessons, this method may be used. 4. Correction by interchanging the exercise books: Dictation work is generally checked by this method and it saves a lot of time without any loss to any individual student.

The secondary education Commission observed, “When a great deal of assignment is given and it is not properly scrutinized by the teacher, the mistakes of spelling of grammar, of expression, of involved presentation and above all, of confused thinking remain undetected and are likely to become imagined. That is why a little assignment willingly done and carefully corrected is far better than a great deal of slipshod work reluctantly accomplished.

**2.8 A - Z of Effective Teaching**

Effective teaching is a comprehensive concept. Several variables are involved in teaching. The teacher through his training is equipped to be in-charge of the teaching and learning process and as a result is responsible for the effectiveness of the teaching and learning process. In line with this, Siagh and Rana (2004) were of the view that, able teachers always find ways and means to improve their teaching technique. With the changes in time, the teachers are asked to employ newer methods of teaching their students more effectively so that they can be able to cope with the demand of the one. Bastick in Aggarwal (2006) defined effective teaching as maximizing student‟s academic attainment and teacher and students course satisfaction. This definition is further supported by Boice (2000), who believed that effective teaching requires being able to decide what to teach and how to teach it, and assessing how well your students have learned what you are teaching. It is clearer that effective teaching is very important to the realization of the aim and objectives of the teaching and learning process. The issue of effective teaching is a concern to a lot of authors and they have come up within number of ideas about it. Berk (2005) derived twelve strategies to measure effective teaching, which include student ratings, peer ratings, teaching evaluation, videos, student interviews, alumni ratings, employer ratings, administrator ratings, teaching scholarship, teaching awards, learning outcome measurements and teaching portfolios. Effective teaching could be analyzed through the alphabetical manner according to Aggarwal (2006) as:-

A “A” is for alertness on the part of the teacher to the multifarious needs of the learners. Alertness is very helpful in tracking appropriate decisions and timely corrective measures. A is also for adaptabilities handling several situations.

B „B‟ is for businesslike attitude. It is to be ensured that every learner in the class, remains busy in realizing the goals set

C „C‟ stands for cooperative/group teaching-learning. The learners must be made active partners. „C‟ is for clarity of purpose. The teacher and the learners must be clear about the goals for the achievement of which they are working. „C‟ is for clarity of the subject matter taught. A teacher must make all possible efforts to make his lesson clear. Difficulties of the learners must be appreciated and clarified.

D „D‟ stands for democratic classroom environment. „D; is for discovery. Children should be guided to find out new facts, ideas and principles. It helps children in becoming independent and resourceful learners. „D; stands for democratic discipline.

E „E‟ stands for expectancies. Each learner should be expected to learn. No learner should be considered without any potential. „E; stands for enthusiasm. The teacher himself must demonstrate enthusiasm for his work. „E; stands for appropriate etiquettes

„F‟ is for feedback. Feedback helps the teacher and the learners to take timely corrective measures for the completion of the task. „F; stands for faith of the teacher in himself.

G „G; is for goal setting. Appropriate goals should be set for the learners. They should also be made clear about the suitability of goals. Efforts may be made to associate the learners with the setting of goals.

H „H‟ is for hardwork on the part of the students as well as teachers. „H‟ is for humour. Humour on the part of the teacher releases fatigue and tension. „H‟ stands for human touch. I

„I‟ stands for involvement of all the learners in classroom activities and experiences. „I‟ stands for impartial attitude. „I‟ stands for inspirational teaching-learning.

J „J‟ stands for just attitude. „J‟ stands for judicious rewards and punishments.

K „K‟ stands for knowing children‟s abilities, aptitudes and interests. „K‟ stands for the knowledge of the sub-matter.

L „L‟ stands for linking present, past and future knowledge. „L‟ stands for leadership qualities.

M „M‟ stands for motivation. „M‟ stands for management of the class.

N „N‟ stands for needs of the learners and their satisfaction.

O „O‟ stands for open-mindedness. „O‟ stands for out of class activities. „O‟ stands for objectivity in approach.

P „P‟ stands for praise. Verbal and non-verbal praise of children can motivate them to hardwork. „P‟ stands for personal contact with every learner.

„Q‟ is for quiz. From time to time, quiz competitions may be arranged in the class. „Q‟ stands for quality teaching. „Q‟ stands for question-answers.

R „R‟ stands for review of the lesson. „R‟ stands for relationships. „R‟ stands for resourcefulness.

S „S; stands for success experience. Success motivates the learner to achieve more. „S;‟ stands for scientific temper. „S; stands for self-analysis and self-control.

T „T‟ stands for technology of teaching. „T‟ stands for tutoring which involves removing difficulties individually or in small groups.

U „U‟ stands for individual attention to teaching. „U‟ stands for unbiased attitude to the treatment of controversial issues.

V „V‟ stands for visual aids. „V‟ stands for variety of experiences. „V; stands for voice-modulated. „V‟ stands for variation in the presentation.

W „W‟ stands for welcoming attitude „W‟ stands for warmth towards students.

X „X‟ stands for x-ray of the teaching process. It implies finding out of the difficulties and potentials of the students.

Y „Y‟ stands for yardstick i.e. same standard basis of making a judgment on the performance of the students. „Y‟ stands for you, implying that you (students) are the most important element in the teaching-learning process. „Y‟ stands for yearning, for improvement.

Z „Z‟ stands for zeal and zest for work. „Z‟ stands for zenith or excellence.

2**.9 Empirical Studies**

The study of Anukan (2004) on a comparison of the achievement of students taught Computer science by Experimental and those taught Computer science by Traditional approaches such as the Conventional used of lecture methods. The purpose of the study was to determine the level of awareness of senior secondary school students on double entry principles of computer science, the effect of teaching double entry principles of computer science by experimental instructional approach and traditional approach on student‟s retention ability. It was also to compare male and female student‟s achievement in double entry principles of computer science based on experimental instructional approach. The population for that study was 100 Computer science students in four (4) public secondary schools and the same number of students was taken as sample size and they were of the same social-economic background, admission and promotion policy and the same public secondary schools. The study took four (4) weeks of treatment using 160 minutes per week, a test was conducted and the results analyzed at the alpha level of 0.05 using t-test statistical method. The study revealed that the experimental instructional approach in the groups displayed aptitude concerning retention of double entry concept than the traditional approach. The result also showed that the knowledge of double entry computer science method was low and very much inadequate among many students tested in the study. The researcher observed certain uncontrollable variables in the study, which might have contributed to the said result. Among these were the classroom environment, teacher‟s qualification, and the students‟ academic ability. The use of one post-test was equally not good enough for such generalization of result.

**CHAPTER THREE**

**RESEARCH METHODOLOGY**

**POPULATION**

The population of the study consisted of the senior computer science teachers in all the secondary schools in Benin LGA of Edo State where students offer computer science and are registered for the SSE Examination for at least the immediate past five years. The study population was estimated at 140 senior computer science teachers.

The choices of senor computer science teachers was made because of their experience apart from teaching the subject and are in the best position to identify the problems of teaching and learning computer science in secondary schools.

**SAMPLE AND SAMPLING**

A total of 50 senior computer science teachers were sampled from at least four secondary schools and at most eight secondary schools in eight Benin LGA of Edo State. A purposive sampling technique was used in some local government areas, with few schools taking computer science and registering students for the SSE Examinations. The same technique is applicable to selecting private schools and Public schools with boys only or girls only. The samples from the sixteen Local Government areas are: Edo south, Igbo Eze south, Edo North, Nsukka and Edo east

**RESEARCH DESIGN**

A descriptive method was adopted in order to observe, with the use of a scale, the perception/rating of the respondents towards the problems facing teaching and learning of computer science in secondary schools. The dependent variable in the study was the problems facing teaching and learning computer science in secondary schools. Independent variables were the type of school, the mode of school and location of school. Independent group and factorial design were used.

**STATISTICAL ANALYSIS**

The Statistical analysis involved were: mean responses to determine the rating and identify problems and solutions accepted; the independent T -test to determine difference in perception/rating between respondents in public and private schools; and analysis of variance to determine the differences in perception/rating among respondents based on type of school and respondents based on local government location. The coefficient of homogeneity (CHO = 1-coefficient of variation) was used to measure the degree of agreement of all respondents in rating a particular problems or accepting a particular solution.

**CHAPTER FOUR**

**DATA ANALYSIS AND INTERPRETATION**

The following are explained in relation to table 1 below:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3X | | = | Sum of the responses on each item | | | | | |  |  |  |
| 0 |  | = | Mean responses of each item | | | |  |  |  |  |  |
| SD | | = | Standard Deviation of each item | | | |  |  |  |  |  |
| COH | | = | Coefficient of Homogeneity (i.e. 1- Coefficient of | | | | | | | | |
|  |  |  | variation) |  |  |  |  |  |  |  |  |
| COV | | = | Coefficient of Variation (i.e. SD | | | |  | X) |  |  |  |
| R0 | |  | Ranking according to mean responses | | | | | |  |  |  |
| RCOH | |  | Ranking according to coefficient of Homogeneity. | | | | | | | | |
| HA | |  | Highly Accepted as problems: items 1,2,3,4,10,13,16 | | | | | | | | |
|  |  |  | and 17 |  |  |  |  |  |  |  |  |
| A | |  | accepted: items 5, 6,11,12,14 and 18 | | | | | |  |  |  |
| R | |  | Rejected as Problems: items 7, 8, 9, and 16 | | | | | | |  |  |
| REM | |  | Remark. |  |  |  |  |  |  |  |  |
|  |  |  | **Problems identified** | | | |  |  |  |  |  |
| **Table 1:** Mean | | | Response and | Coefficient | | | of Homogeneity of | | | | |
|  |  | Respondent on the problems Identified | | | | | | |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |
| S/No | Test items | |  | 3X | 0 | SO |  | COH | R0 | RC | REM |
|  |  |  |  |  |  |  |  |  |  | 0H |  |
|  |  |  | |  |  |  |  |  |  |  |  |
| 1 |  | Student have little interest in | | 153 | 3.83 | 1.19 |  | 0.69 | 6 | 9 | HA |
|  |  | intellectual works 'and this also | |  |  |  |  |  |  |  |  |
|  |  | affects computer science | |  |  |  |  |  |  |  |  |
| 2 |  | Most students would not do | | 159 | 3.98 | 0.97 |  | 0.76 | 4 | 2 | HA |
|  |  | assignments given to them by their | |  |  |  |  |  |  |  |  |
|  |  | computer science teachers | |  |  |  |  |  |  |  |  |
| 3 |  | Poor background at the primary | | 162 | 4.05 | 1.14 |  | 0.72 | 2 | 4 | HA |
|  |  | level to JSS and then to SSS | |  |  |  |  |  |  |  |  |
| 4 |  | Poor understanding of Business | | 162 | 4.05 | 1.05 |  | 0.74 | 2 | 3 | HA |
|  |  | Studies (Majorly book-keeping and | |  |  |  |  |  |  |  |  |
|  |  | commerce) at the JSS level | |  |  |  |  |  |  |  |  |
| 5 |  | Students are not adequately | | 130 | 3.28 | 1.06 |  | 0.68 | 12 | 10 | A |
|  |  | prepared for computer science | |  |  |  |  |  |  |  |  |
|  |  | examinations |  |  |  |  |  |  |  |  |  |
| 6 |  | Parents and guardians do not take | | 143 | 3.58 | 1.20 |  | 0.66 | 11 | 12 | A |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | their wards'/children's educating as |  |  |  |  |  |  |  |
|  | priority; they do not provide |  |  |  |  |  |  |  |
|  | necessary materials like computer science |  |  |  |  |  |  |  |
|  | textbooks and consumables such as |  |  |  |  |  |  |  |
|  | Computer hardwares and softwares |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 7 | There are inadequate qualified and | 116 | 2.90 | 1.56 | 0.46 | 15 | 18 | R |
|  | experienced computer science teachers. |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 8 | Neglect of responsibility on the part | 109 | 2.73 | 1.22 | 0.55 | 17 | 15 | R |
|  | of the teachers. |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 9 | Periods allocated to computer science are | 109 | 2.73 | 1.3 | ,0.51 | 18 | 16 | R |
|  | not enough. |  |  |  |  |  |  |  |
| 10 | Students have negative attitudes | 148 | 3.70 | 1.12 | 0.70 | 8 | 7 | HA |
|  | generally towards numerate |  |  |  |  |  |  |  |
|  | subjects. |  |  |  |  |  |  |  |
| II | Strikes, Academic Crisis, irregular | 125 | 3.13 | 1.28 | 0.59 | 13 | 14 | A |
|  | calendar affects coverage of |  |  |  |  |  |  |  |
|  | computer science syllabus. |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 12 | Frequents transfer of computer science | 123 | 3.08 | 1.12 | 0.64 | 14 | 13 | A |
|  | teachers. |  |  |  |  |  |  |  |
| 13 | Absence of students from | 153 | 3.83 | 1.07 | 0.72 | ·6 | 4 | HA |
|  | school/class room (truancy). |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 14 | Allowances and incentives are not | 146 | 3.65 | 1.22 | 0.67 | 10 | 11 | A |
|  | paid to computer science teachers to serve |  |  |  |  |  |  |  |
|  | as motivation. |  |  |  |  |  |  |  |
| 15 | There are inadequate instructional | 155 | 3.68 | 1.09 | 0.72 | 5 | 4 | HA |
|  | Materials |  |  |  |  |  |  |  |
| 16 | Computer science is not made compulsory | 112 | 2.87 | 1.49 | 0.48 | 16 | 17 | R |
|  | at SSE Examinational and not make |  |  |  |  |  |  |  |
|  | as a pre-requisite for further study |  |  |  |  |  |  |  |
|  | in computer science. |  |  |  |  |  |  |  |
| 17 | Parents/Guardian misconception of | 163 | 4.08 | 0.88 | 0.78 | I | I | HA |
|  | free education, thinking that at |  |  |  |  |  |  |  |
|  | covers everything like materials, |  |  |  |  |  |  |  |
|  | textbooks, and basic expenses in |  |  |  |  |  |  |  |
|  | account. |  |  |  |  |  |  |  |
| 18 | Promotion of students with low | 147 | 3.68 | 1.10 | 0.70 | 9 | 7 | A |
|  | marks in computer science in SSC classes. |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

Items 1 to 8 are identified as affecting learning, 9 - 14 are identified as affecting teaching and items 15 to 18 are identified as affecting both teaching and learning of computer science in the secondary schools.

The items, with mean responses of 0>3.70 arc highly accepted (HA,) while items with 2.75>0<3.70 are accepted and items with mean responses of 0<2.75 are rejected (R).

The coefficient of homogeneity (COH) measures the degree of agreement of all respondents in rating a particular problem. Items 17, 2,4,3,13,15, 10 and 1 are highly accepted ~d are arranged in order of acceptance. The COH>O.70 except. Item 1 with COH=0.69. Generally 70% and above respondents rated the items as highly accepted.

The spearman's Rank correlation coefficient of the mean responses and CoH is r = 0.95. The relationship between the mean response 0 and CoH is significant at r = 0.95 df = 16, P = 0.05 at a table value of r

* 0.506, This shows that the higher the mean responses, the higher the Coefficient of Homogeneity.

**Table 2:** Independent t-Test showing differences between public and private schools-Hypothesis one

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Source | N | 0 | SD | DF | t-cal | t-table | P |
|  |  |  |  |  |  |  |  |
| Variable |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Public School | 35 | 3.47 | 0.53 | 34 | 2.37 | 2.04 | 0.05 |
|  |  |  |  |  |  |  |  |
| Private School | 5 | 2.98 | 0.73 |  |  |  |  |
|  |  |  |  |  |  |  |  |

The obtained value of 2.3 7 is more than the table value of 2.04 at the degree of freEdom of 34; for a two-tailed test at 0.05 level of significance. We therefore rejected Ho, This means that there is a significant difference in the perception rating of the problems by the respondents in public and private schools.

**Table 3:** One-Way ANOVA showing the effect of the type of schoolon the perception/rating of the respondents – Hypothesis two

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Source | SS | DF | MS | F-cal | F- | p |  |
|  |  |  |  |  | table |  |  |
|  |  |  |  |  |  |  |  |
| Total | 27.713 | 53 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Between groups | 0.015 | 2 | 0.0075 | 0.0143 | 5.06 | <0.05 |  |
|  |  |
|  |  |  |  |  |  |  |  |
| Within groups | ·26.698 | 51 | 0.523 2 |  |  |  |  |
|  |  |  |  |  |  |  |  |

Since our calculated value (0.0143) is less than the table value (5.06), we will accept Ho. This means that there is no significant difference in the respondents' perception/rating of the problems. The type of school does not affect the computer science teachers' perception/rating of the problems facing teaching and learning of computer science in secondary schools in State. One- Way ANOVA showing the effect of location on the perception/rating of respondent - Hypothesis three

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Source | SS | DF | MS | F ratio cal | F | table | P |  |
| value |  |  |
|  |  |  |  |  |  |  |  |  |
| Total | 183962 | 143 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Between Groups | 11.27 | 7 | 1.61 | 0.0012 | 2.07 |  | > 0.05 |  |
|  |  |  |  |  |  |  |  |  |
| Within Groups | 183950.7 | 136 | 1352.58 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

Since an obtained value (0.0012) is less than the table value (2.07) we will accept HO and reject H1. This means that there is no significant difference in perception/rating of the problems by computer science teachers of the schools in each of the different local Government areas of State.

**DISCUSSION**

Table 1 indicates that most parents have been affected by their misconceptions of the operation of free education. Free education has not covered the costs of secondary education at 100 percent. Parents/guardians still need to provide textbooks, study materials, writing materials, uniforms and boarding to mention a few. Eight problems are ranked as "Highly Accepted", six as "Accepted" and four as "Rejected". The respondents' perception/rating of the problem tends to be uniform; since there is a significantly positive relationship between the mean response ranking and coefficient of homogeneity ranking. Another problem of attention is that students are not adequately prepared for examinations. This problem implied that there are inadequate qualified and experience teachers and neglect of responsibility on the part of teachers. The rating of inadequate and qualified teachers and neglect of responsibility on the part of teachers were very low and probably out of sentiments. The low rating of inadequate qualified and experienced teachers is not in agreement with Olodi (2000) that reported NCE teaching the SSS classes because of inadequacy of qualified and experience teachers in vocational education. Also the result does not lend any credence to Azikiwe (1993) and Dosumu (1982) who supported inadequacy of vocational education teacher as a serious problem confronting vocational education in Nigeria.

The study also revealed that both public and private schools are not faced with the same type of problems. Also, result showed that the type of school (girls only, boys only and mixed) has no effect on the perception/rating of the respondents. Another important aspect in Table 4 is that location of school does not affect the problems identified. No particular problem is peculiar to schools in one local government or the other. The implications of these findings are that these problems arc far reaching and as such educational planners should take note of them.

Finally, all the solutions proffered in Table 5 have mean responses more than 3.90; the COH is more than 0.80 and hence can be taken as far reaching in solving the problems identified in this study.

**CHAPTER FIVE**

**CONCLUSION AND RECOMMENDATION**

**CONCLUSION**

The study has successfully identified some problems encountered in teaching and learning computer science in secondary schools. The goals of vocational education at this level via the knowledge of computer science and the competences required for a successful entrepreneurship and self-reliance may not be met if these problems are not well addressed by the concerned-the government, parents, teachers and the students. The solutions proffered in this study are the basis of conclusion made:

1. Government should do everything possible to discourage strikes, academic crisis irregular calendar which consequence, in adequately preparing students for examination, neglect of responsibility on the part of teachers with the incidence on students engaging in cheating in examination in computer science.
2. Government should provide necessary instructional materials, qualified and experienced computer science teachers, computer science laboratory 10 enhance practical lesson and motivate the teachers

Parents should take the education of their wards as priority. They should motivate the students; desist from forcing science subjects on them in place of computer science. They should provide study materials and other needs to make the subject and schooling attractive and hence reduce truancy in computer science lessons.

1. Parents and students should be educated through seminars workshops etc of the prospects of computer science career.
2. Computer science teachers should live up to their responsibilities to ensure students good performance in computer science

**5.4 Recommendations**

In line with the findings of this study, the researcher recommends the following:

Schools should provide enough audio and visuals to enable teachers clarify their lesson. Adequate infrastructure facilities and conclusive atmosphere are Sine Qua Non for effective learning and retention of what is learnt.

Schools should send their Computer science language teachers to seminars and workshops in order to up date their knowledge.

Teachers should be encouraged by the school by paying incentives. They should be upgraded when necessary. This will enable them to improvise audio and visuals for teaching

Computer science teachers should conduct the teaching and learning of the subject effectively, efficiently and interestingly. Their teachers should be resourceful, knowledgeable and vary his teaching method at all times. The teacher should ensure appropriate use of audio and visuals during their lesson.

Teachers should try to improvise audio and visuals so that the students will benefit-maximally.

Parents should provide adequate and necessary learning materials in Computer science. This will encourage their wards to read.

Students should read extensively worth while publications, journals, newspapers, listen to radio and television news in Computer science, in addition to their recommended books. This will widen their knowledge to be able to agree and refute what the teacher teaches them. This extensive reading will make them avid readers and fluent speakers of Computer science Maduekwe (1998). This will drastically reduce the mass failure in Computer science.

In conclusion, teachers are at the centre of educational instruction. They should strive hard to make their teaching very effective. Akande (1989) asserts “the medical doctor buries his mistake, the engineer dies with his mistake but the whole society perishes with the mistake of the teacher. This shows how valuable a teacher is in the growth of an individual and the society at large. Then the teachers of Computer science and all other teacher should make imperative to use audio and visuals during teaching so that the learners will be influenced positively.

**Limitations of Study**

The major factor that constituted a limitation to this study was the insincerity of the respondents in supplying appropriate information required of them in relation to their personal data, socio-economic and educational background. Besides, insufficient fund to take the researcher to vast areas like Lekki and Ikorodu areas limited the wider coverage of the study. Time constraint also posed a limitation to the study.

Finally, incessant power failure circumspect the researcher’s ability to get adequate necessary information from the internet, which in turn cushioned the volume of the literature reviewed during the study.

**REFERENCES**

Agbenta, J.A (2008). Why there are not Enough Science Applicants: University Admission in Nigeria *Journal of Science Teachers* *Association of Nigeria 20 (1).*

Ajogbeje, O.J. (2007). The problems of Learning and Teaching Mathematics: A Case of Student' Self Concept and Mathematics Achievement. Paper Presented at the Institute of Education, Ado- Ekiti: State University, 3rd September:

Akujo, D. (2009). Book Scarcity - A National Concord. *Education* *Today* 4 (1) 20

Aningbose, T.O. (2010). Entrepreneurial Cornpetences Needed in Agricultural Sciences Business: The Case Study of Rabbit Production. In Esomnu, N.P.M (Ed.) *The Essentials of* *Entrepreneurship Education in Technology, Science and Art,* Umunze: FCE Research and Publication Unit. Pp.68-81.

Arukwe, O.N. (2013). Female Participation in Science Technology and Mathematics (STM) Education Implication on Manpower Development in Anyakoha E.U. & Oranu, R.N. (Eds.).

*Vocational/Technical* *Education* *and* *Manpower*

*Development.* Nsukka: NVA Publications, 89-97.

Azikiwe, U. (2007). Gender Issues in Technical Teacher Education: The Nigeria Experience *Nigeria Vocational Journal V1, 152-162.*

Azikiwe, U. (2005). Constraints Militating Against Effective Implantation of Vocational Technical Education in Nigeria in Eze-T.I and Ezeani N.O.M (Eds.) *Empirical studies on Social* *and Economic implications of Vocation and Technical education in Nigeria* 186-197.

Dosumu*,* T. (1982). Government and Training of Artisans, Craftsmen and Technical *Teachers Nigerian Journal of Technical* *Education 1* (2), 44-46.

Edem, D. A. (2008). *Introduction to Educational Administration in* *Nigeria.* Ibadan: Spectrum Books Ltd.

Ejiofor, P. (2004). *Management* in *Nigeria,* Edo: African Educational Press Ltd.

Fakuade, R. A. (1980). The Controversy about Mathematics Education in *Nigeria West Africa Journal of Education XXI*

(2) 29 – 44.

Fafuniwa, A. B. (2008). *New Perspectives ill African Education* Nigeria: Macmillan and Company Ltd.

Igbo C. A. (1998). *Entrepreneurship* competences needed by the Rural women in Home Economic Related Business: Implications for Rural Development in Esomnu N.P.M (Ed.) *The Essential of Entrepreneurship Education in Technology, Science and Arts Umunze:* FCE Research and PublicationUnit 145-159

Ike M. N. (1995). Origin and objectives of Vocational-Technical Education in Nigeria in Eze, T.I. & Eneare, N. P. M (Eds) *Empirical Studies on Social and Economic Implications of Vocational and Technical Education* in *Nigeria.* Umunze:FCE Research and Publication Unit 175-185.

Iloeje, S. O. (2009). *Certificate practical Biology in En cyclopedia of* *Education, 473-480*