

**FACTORS ASSOCIATED WITH THE TEACHING AND LEARNING OF COMPUTER SCIENCE IN SENIOR SECONDARY SCHOOL IN OREDO LOCAL GOVERNMENT AREA OF EDO STATE**

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**BENIN CITY**

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**A PROJECT WORK SUBMITTED TO THE DEPARTMENT OF EDUCATIONAL PSYCHOLOGY AND CURRICULUM STUDIES, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF BACHELOR OF SCIENCE B.Sc (Education) DEGREE IN COMPUTER SCIENCE EDUCATION**

**DECEMBER, 2014**

## **CERTIFICATION**

We certify that this research work was carried out by Duyile K. John, in the Department of Educational Psychology and Curriculum Studies, Faculty of Education, University of Benin, Benin City, Nigeria, in partial fulfillment of the requirements for the award of the B.Sc. (Ed) Degree in Computer Science.

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## **DEDICATION**

This research work is dedicated to God Almighty for His unfathomable love, grace and provision throughout this research. I live because of Him.

Also to my late mother Mrs. Christiana Duyile who had always wished to see me being a graduate but it's so unfortunate that you are no more today and I'm so sure that you are very happy with me and the decision have made so far in life. I will forever love and remember you (the best mother ever lived). Miss you.

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## **ABSTRACT**

*This study is conducted to investigate the factors associated with the teaching and learning of Computer Science in Senior Secondary School in Oredo local government of Edo state. Based on the research, questionnaire was designed for the study. One hundred copies of the questionnaire were administered on the analysis of the data, the following findings were discovered. The study revealed that there are some problems facing the teaching and learning of computer science such as inadequate professionally trained computer teachers, inadequate of fund, negative attitude of teacher towards students etc. Also to the extent to which lack of infrastructural facilities and teaching aids affect the effective teaching and learning of computer science in Senior Secondary School were discussed in the course of the study. Also it was discovered that inadequate of computer system could lead to lack of practical which happen to lack of effective teaching and learning of computer science in Senior Secondary School.*

## **CHAPTER ONE**

### **INTRODUCTION**

#### **Background to the Study**

The enviable position in which science education system of most countries of the world, including Nigeria is perhaps justifiable. The reason is that science can exert a dominant, if not decisive influence on the life of individual as well as on the developmental effort of a nation (Emovon, 1985). The universal recognition of the above submission is responsible for the prime position that has been accorded computer science in particular worldwide. Within the context of science education, computer science has been identified as a very important school subject and its importance in scientific and technological development in Nigeria, even within the short period of it's establishment. It was as a result of the recognition given to computer science in the development of the individual and the nation that made it a core-subject among the sciences and other science related courses in the Nigerian education system. Its inclusion as a core subject in the secondary school calls for the need

to teach it effectively. This is because effective computer science teaching can lead to the attainment of scientific and technological greatness of the nation.

Computer science teaching can only be result-oriented when students are willing and the teachers are favorably disposed, using the appropriate methods and resources (instructional material) in teaching the students. With the current increase in scientific knowledge in the world over, much demand is placed, and emphasis are laid on the teachers, the learners, the curriculum and the environment in the whole process of teaching and learning of science. Despite the importance of computer science to mankind and the efforts of researchers to improve on its teaching and learning, the achievement of students in the subject remains low in Nigeria. Among the factors that have been identified as responsible for the outcomes in computer science are, poor methods of instruction (Osuafor, 1999) teacher's attitude (Aghadiuno, 1992), laboratory inadequacy (Okegbile, 1996; Raimi, 1998; Bajah, 1999 and Adeyegbe, 2005), poor science background (Oshokoya, 1998 and Adesoji, 1999)

and as well poor instructional material delivery.

Papanastasiou (2001) reported that those who have positive attitude toward computer tend to perform either in the subject. The affective behaviors in the classroom are strongly related to achievement, and science attitudes are learned (George and Kaplan, 1998). The teachers play a significant role during the learning process and they can directly or indirectly influence the students' attitudes toward science which in consequence can influence students' achievement. Teachers are invariably role models whose behaviors are easily mimicked by students. What teachers like or dislike, appreciate and how they feel about their learning or studies could have a significant effect on their students. By extension, how teachers teach, how they behave and how they interact with students can be more paramount than what they teach.

Students' attitude toward the learning of computer science is a factor that has long attracted attention of researchers. Ojo (1989) and Adesokan (2002) asserted that inspite of realization of the recognition given to computer science among the science subjects, it

is evident that students still show negative attitude towards the subject, thereby leading to poor performance and low enrolment.

Other factors that may have causal relationships with students academic achievement is science, computer science study in particular include teacher attendance and readiness in the computer laboratory, laboratory adequacy, class size and school location.

One of the fundamental problems facing computer science teaching today is the question of how current the professional teachers are. i.e. how literate they are in the line of computer science which happen to be their area of discipline The majority of teachers who have been employed in the past decades have been doing the same thing, the same way all along. They have no knowledge of the current ideas and innovations that have taken place in the educational field of computer studies in the recent past. What account for this is that teachers have not been given the opportunity for re-training (Ogunbiyi, 2004). He therefore recommended that teachers should be encouraged to go for re-training in their areas of specialization.

Laboratory adequacy which is a school environment factor has

been reported to affect the performance of students in computer studies (Raimi, 2002 and Adeyegbe, 2005). Farounbi (1998) argued that students tend to understand and recall what they see or practicalize more than what they hear as a result of using laboratories in the teaching and learning of computer science.

The question, "Are smaller classes better than larger classes" continues to be debated among teachers, administrators and parents as well as in the research community. However, Robinson (1990) concluded that research does not support the expectation that classes will of themselves result in greater academic gains for students. He observed that the effects of class size on student learning vary by grade level, pupil characteristics, subject areas, teaching methods and other learning interventions. Adeyela (2000) found that large class size is uncondusive for serious academic work. i.e. The over population of student in a class of study might force them out of conveniency which could lead to distraction that will definitely affect the outcome of their performance and achievement in that particular course. Also Afolabi (2002) found no significant

relationship among the class size and students' learning outcomes.

In addition, the relationship between school location and student academic achievement in computer science has been widely reported. Adepoju, (2001) found that students in urban schools manifest more brilliant performance than their rural counterparts. Also, Ogunleye (2002) Ndukwu (2002), Odinko (2002) and Warwick (1992) reported a significant difference in the achievement of students in urban peri-urban areas. However, Daramola cited in Ogunleye (2002), and Orji (1997) did not found any significant difference in the urban and peri-urban schools. In view of these conflicting reports, there is the need to carry out a study with a view to determining which of the selected variables will have causal relationship with student achievement in computer science.

### **Statement of the Problem**

Due to the fact that computer education has failed to take off in the majority of schools, fears are that technological development may be a pipe dream for the country. Given this scenario, it is necessary for this study to look into factors associated with the

effective teaching and learning of computer science in senior secondary schools in Nigeria, Edo state precisely.

It is discovered that the teaching and learning of computer science in secondary schools depends to a large extent on teacher's own knowledge of the content and ability to adequately deliver the instruction(s) to the learners or students. However a lot of variables may inhibit or hinder effective dissemination of knowledge to the understanding of the content by the students, such variables may be lack of qualified teachers, teachers' qualification, students behavior towards learning, inadequate use of instructional materials among others etc. While the present study sought to determine the effect of teachers' qualification on senior secondary school students' performance in computer science.

It is therefore the thrust of this research to investigate the factors associated with the effective teaching and learning of computer science with particular reference to the senior secondary school in Edo State.

## **Purpose of the Study**

The purpose of this study is to carry or identify the verifiable factors associating with the teaching and learning of computer science

Specifically, the study intends to find out the following:-

- ✓ The facilities needed for computer studies in Edo State.
- ✓ The attitude of students towards teaching and learning of computer science.
- ✓ The possible solution to ensure effective teaching and learning of computer science at senior secondary level.

## **Research Question**

The study intends to answer the following question:

- ✓ How adequate are the requirement for the teaching and learning of computer in secondary schools?
- ✓ What measures have been taken to ensure effective teaching and learning of computer science?
- ✓ Are teaching aids and resources available for the teaching of

computer science in the senior secondary schools in Edo State?

- ✓ What are the things needed for computer science students in Edo State?
- ✓ What is the performance of the students of computer science studies in Edo State?

### **Significance of the Study**

The importance of the study, this if effectively carried out will be beneficial to the students, the teachers, the school authorities, and the government. The result of the study would help the students to discover how they contributed towards the factors that affect their performances and it would help them to change from the obnoxious ways of behavior that affect computer science education adversely.

The result of the study would help the teachers to know the areas they need extra effort for maintaining effective teaching and learning of computer science and improve such situations.

The school authorities from the result of the study will know those

areas that contribute to ineffective teaching and learning of computer science education and would work towards improving the situation. The result of the study will help the government to know the factors associating with the students' performances in senior secondary schools in Edo State. Such knowledge would help the government in the provision of infrastructures and instructional materials to improve the teaching and learning of computer science.

### **Scope and Delimitations of the Study**

The scope of this study is targeted on the senior secondary schools in Edo State. To know the problems or factors associated with the teaching and learning of the computer science in Senior Secondary Schools. The scope is also delimited on Senior Secondary School computer science students.

One of the main challenges in carryout this study is the aspect of data collection and also the time in administering the questionnaire.

### **Operational Definition of Terms**

**Computer:** A computer can be defined as the/an electronic device that compute data especially a programmable machine that performs high speed mathematical or logical operations or that assembles, store, correlate, or otherwise process information.

**Computer Education:** computer education is the process of acquiring the basic skills, ideas, in operating the computer basic function. It can also be referred to as the process of teaching and learning of computer.

**Computer Literacy:** computer literacy can be defined as the ability of an individual to understand and use the computer in any field or any area of study.

## CHAPTER TWO

## **REVIEW OF RELATED LITERATURE**

In this section, a review of related literature on the factors associated with the teaching and learning of computer science will be presented under the following sub-headings:

- ✓ Inadequate Professionally trained computer teachers
- ✓ Inadequate Provisions of Computer Laboratory Facilities
- ✓ Inadequate of Fund
- ✓ Negative attitude of teacher towards students
- ✓ Indiscipline of students towards learning
- ✓ Inadequate provisions of computers and teaching aids
- ✓ Available ways of making the teaching and learning of computer effective in the secondary schools
- ✓ Summary of Related Literature

### **Inadequate Professionally Trained Computer Teachers**

There is a high rate of failure in science subjects. E.g. computer studies. Various studies in the seventies and eighties have been conducted to establish or figure out the reasons for such poor

performance. These studies all concluded that in addition to the poor state of education in the country there are other reasons which impact negatively on computer science teaching. Amongst the reasons given are the fact that computer science teaching is taught by unqualified teachers .i.e. unskilled teachers, which is one of the major problems associated with the teaching and learning of computer science in Senior Secondary School in Nigeria, particularly in Edo state. The problems were exacerbated when the education budget got tighter and there were budget cuts. That led to shortages of facilities and equipment needed for computer science teaching.

The quality of education of a nation like Nigeria, particularly in Edo State, could be determined by the quality of her teachers. Hence, Lussa (1985) argued that no one gives what he/she does not possess. The most important factor in improving students' achievement through the effectiveness teaching in computer science is by employing seasoned qualified teachers(teachers that are current with the recent changes and development in computer) in all schools (Abe, Adu, 2013).

Which brought about the comparison of teachers by their qualifications which are teachers:-

- ✓ Teachers who are academically qualified.
- ✓ Teachers who are professionally qualified.

Teachers who are academically qualified and those that are professionally qualified are engaged to carry out instructional process (Ahiazu, Prince Will, 2011).

Academically qualified teachers refer to those who have academic training as a result of enrolment into educational institutions and obtained qualifications such as HND, B.Sc, B.A, and M.A. and so on.

While, professionally qualified teachers are those who got professional training that gave them professional knowledge, skills, techniques, aptitudes as different from the general education (Edu, Kalu, 2012). They hold degrees like, B.Ed., B.Sc. Ed, B.A. Ed, and M.Ed and so on.

Okuruwa (1999) found that, policy investment on quality of teachers is related to improvement in students' performance.

Specifically, the measurement of teacher's preparation and certification are correlates of students' achievement in science and computer science studies. It is further reported that, teacher's characteristics such as certification status and degree in area of specialization are very significant and positively correlated with students learning outcomes in course like computer science. This report was in line with the findings of (Salman, 2009).

Moreover, many studies have pointed to the effect of teachers quality and as well teaching quality of which it's quite understood that the teachers quality determine or portrays the teaching quality to be delivered to the students or learners on their educational achievement and as well hindered the students from learning or having more knowledge about the recent things or changes in science studies, computer science studies precisely.

According to Kaplan and Owings (2001) teacher quality refers to the inputs that the teacher brings to the school (teacher preparation, aptitude, SAT and other examination scores). While, teaching quality refers to the things that teachers do to promote

student learning in the classroom (instructional strategies, positive learning climate etc).

According to Sanders and Rivers (1996), teacher's classroom expertise and behavior strongly correlates with students or learners achievement. Horgen (2004) also showed that teacher preparation has a greater influence on student achievement than other variables like teacher salaries and class size.

Coonery (1990) opined that students do not understand courses like computer science, when it is taught by an ineffective teacher. Izumi and Evess (2002) buttressed this by saying that teacher quality is the most important among other critical factors like quality curricula, funding, small class size and learning situation. Adieze (1986) sees unskilled teachers i.e. (non qualified and non-professional teachers in teaching profession) as those that are killing the profession because they are not really teachers. He regarded them as "bird" of passage that create unnecessary vacuum whenever they see greener pasture and better prospect in the profession they are originally trained for. The comparison of students' scores in

computer science achievement test based on teachers' qualifications becomes necessary in order to know if formal teaching methods has any significant effect or influence on students' performance in computer study or not.

Teacher training programs have to really taken into consideration for the changes that are needed to implement the innovative curriculum introduced in the schools, especially at the senior secondary education level. Because, no matter how good a course curriculum is, if we do not have well trained, qualified and motivated teachers, we may not achieve the desired goals or objectives.

### **Inadequate Provision of Computer Laboratory Facilities**

The decline in quality of education in Nigeria has been a major concern due to the rapid expansion in student numbers without comparable expansion in resources and facilities. This rapid growth has not been matched by substantial increases in the funding of education institutions. Government acknowledges that as part of improving quality in educational institutions, physical facilities have

to be upgraded and resources such as libraries, laboratories, modern communication and information technology equipment have to be provided.

Poor quality at all levels of education is compounded by a lack of instructional materials for effective teaching and learning. There is a shortage of textbooks in the schools due to the high cost of books. The problem is more serious at higher education levels. A recent World Bank 24 study indicated that less than 1% of primary schools have access to textbooks and that in general textbook availability in schools is 10% of what it should be. The study further indicated that there are disparities in textbook availability, ranging from 80% in elite schools to virtually no textbooks in some rural schools. At the higher education level, most of the textbooks are imported at high cost and are unaffordable by the average student.

However, with regard to the content of what students learn, many fall short because in general they do not possess the necessary educational facilities and therefore find it difficult to determine and understand what was done at school (Mji & Mbinda, 2005).

School facilities are the material resources that facilitate effective teaching and learning in schools. Jaiyeoba and Atanda (2003) posited that school facilities are things which enable a skillful teacher to achieve a level of instructional effectiveness that exceeds what is possible when they are not provided. Availability of infrastructures and facilities in the right quantity and quality is germane in education provision. A school with inadequate classrooms and facilities such as chairs, computers, libraries, textbooks, and laboratories will be uncomfortable for students or learners to learn. Unfortunately, there are inadequate infrastructure and facilities in many secondary schools in Nigeria, particularly in Edo State.

According to Ahmed (2003), in most secondary schools in the country, teaching and learning take place under uncondusive environment, lacking the basic materials, thus hindering the fulfillment of educational objectives or goals.

### **Inadequate of Fund**

The importance of adequate funding in educational development cannot be overemphasized. No organization can carry out its function effectively without adequate financial resources at its disposal. According to Obe (2009), without adequate funding, standards of education at any level shall be tantamount to a mirage, that is, building castles in the air. Money is important in a school because it is used to construct buildings, purchase needed equipment, pay staff' salaries and allowances, maintain the laboratory and keep the services going. In Nigeria, secondary education derives its major fund from the annual allocation to the education sector. Unfortunately, allocation to the education sector on which secondary education depends has been consistently low in spite of the strategic role of the sector in the training of manpower for the development of the economy

Statistics (CBN, 2010), revealed that between 2000 and 2010, allocation to the education sector by Federal Government in Nigeria was not more than 14% of the annual budget, which was even low when compared to the allocation of countries such as Kenya, Malawi,

Botswana, Angola, Sierra Leone, South Africa, all in Sub-Saharan Africa (United Nations Development Program, 2011). Furthermore, out of the three levels of education in Nigeria, tertiary education receives the largest share of Education Vote (Hinchliffe, 2002), thus implying that the remaining fund is to be shared by primary and secondary education (Hinchliffe, 2002). It has even been the practice of states to make provision for secondary education from the allocation to the education sector, which in most cases has been in form of running grant to schools, on term or session basis and depending on the size of enrolment of each school.

To worsen the situation, the limited allocation to secondary education is being threatened by increase in enrolment as a result of the rise in the demand for it.

In view of the persistent limited allocation to the education, government should increase the allocation to the sector so as to give room for increase in the running grant to secondary schools and ensure the provision of more infrastructure and facilities for the training of students.

## **Negative Attitude of Teachers toward Students**

In Nigeria, teaching has low status (Achimugu, 2005) while many teachers are involved in unwholesome practices such as examination malpractices, absenteeism from school and classes, late coming to school and classes, inappropriate and non-keeping of records, trading within and outside school, commercial driving, immoral relationship with female students, extortion of money from students, drinking and smoking during official hours (Ajayi and Shofoyeke, 2003; Adeyemi and Ige, 2002; Achimugu, 2005; Famade, 2001). The inability of teachers to show commitment to teaching in schools has been attributed to the unseriousness, indiscipline, poor academic performance of students in schools (Adeyemi and Ige, 2002; Nanna, 1997) which have continued to be of concern to secondary schools' administrators, government, parents/guardians and other education stakeholders.

This brought about the calling into action the secondary schools' administrators to be more alive and effective to their responsibilities. They should double their efforts at ensuring that

there is high-level of discipline in their domains. They should supervise the teaching of teachers in schools regularly and ensure that discipline is maintained among the students and teachers. Teachers and students found to have shown dereliction of duties and contravene school rules and regulations should be reprimanded.

It is obvious that teachers play significant role in the teaching and learning process in schools. Teachers thus have to be committed to teaching in schools. This can be achieved through prompt attendance to lesson delivery, coverage of syllabus, effective teaching of students among others, to improve the level of academic performance of students both within the school and at the end of their training

### **Indiscipline of Students towards Learning**

Students are expected to display high-level moral etiquette to show that they are from good homes. The behavior of a child outside reflects the situation in his or her home. A student is expected to obey the school rules and regulations and be committed to academics being the primary duty in the school. What can be noticed

in secondary schools these days are cases of indiscipline such as lateness to school, truancy, disobedience to teachers, beating of junior students, stealing, rape, extortion of money from junior students, wearing of assorted dresses apart from school uniform, smoking, drug abuse, drinking among students (Achimugu, 2005).

### **Inadequate Provision of Computers and Teaching Aids**

Lack of computers and its related outfits in most of the secondary schools in Nigeria, Edo State in particular, instances show that only a limited number of computers were present in few of the secondary schools which do not go round the class population deny most students access to the use of computers during practical.

The teacher facilitates the learning by acting as a coach, resource guide and companion in learning. The use of instructional materials does not only encourage teachers and students to work collaboratively but also results in more cooperative learning activities among the students. Ikerionwu (2000) refers to teaching aids as objects or devices which help the teacher to make learning meaningful to the students or learners. Similarly, Ezegebe (1994)

classified them into two as visual materials, made up of reading and non-reading materials and audiovisual materials comprising electrically operated and non-electrically operated materials. A computer science study is a subject that depends on the use of a number of resources. Osakwe and Itedjere (1993) summarized these resources as textual like books, audio-visual and human resources. They stated that these resources are either used individually or collectively in any meaningful computer science teaching and learning situation.

The purpose of teaching aids is to promote efficiency of education by improving the quality of effective teaching and learning. Incorporating these tools and materials present, support and reinforces teaching. According to Aduwa-Ogiegbaen and Imogie (2005) these materials and resources including audio tape recorders, video tape recorders, slide projectors, opaque projectors, over-head projectors, still pictures, programmed instruction, filmstrips, maps, chart, graphs and many more offer a variety of learning experiences individually or in combination to meet different teaching and

learning experiences.

Bolick, Berson, Coutts and Heinecke (2003) observed that while some educators are fascinated by the potential of teaching aids in enhancing teaching and learning, other teachers lagged behind in using teaching aids to teach. However, achieving these laudable goals of conscientious utilization of teaching aids and resources in computer science teaching and learning has been very challenging in developing countries such as Nigeria.

Since the inception of the National Senior Secondary School computer science Curriculum in Nigeria, few studies have been devoted to evaluating or investigating the availability and utilization of teaching aids and resources in the teaching of computer science in the senior Secondary Schools in Edo State of Nigeria. At the threshold of the new millennium, computer science teachers face both old and new challenges and need to evolve strategies to engage students or learners in activities that are active, meaningful and challenging.

**Viable Ways of Making the Teaching and Learning of Computer**

## **Effective in the Secondary Schools**

In the view of inadequate professionally trained computer teachers, teacher training programs have to really taken into consideration for the changes that are needed to implement the innovative curriculum introduced in the schools, especially at the senior secondary education level. Because, no matter how good a course curriculum is, if we do not have well trained, qualified and motivated teachers, we may not achieve the desired goals or objectives and also in the view of the level of inadequacy in secondary schools in Nigeria, government should recruit additional teachers from the pool of unemployed graduates in the society and distribute them to secondary schools.

Government should also enforce that those teachers without the minimum teaching qualification (NCE) should make effort to upgrade their qualification through in-service training. There should also be periodic training of teachers (old and new) in secondary schools through seminars, workshops and conferences, to improve their performance.

In view of the persistent limited allocation to the education (inadequate funding) government should increase the allocation to the sector so as to give room for increase in the running grant to secondary schools and ensure the provision of more infrastructure and facilities for the training of students. It needs not be overemphasized that the funding of education is becoming a yoke for government, being the major financier.

It is imperative for government to curb inadequacy of fund in education of the country and states (Edo state). To achieve this, Government should initiate advocacy measures for parents and students through print and electronic media, and parents or guardians should be given orientation against premature withdrawal of their children from schools. As far as poverty of parents or guardians is one of the major factor associating with education in Nigeria, Edo state in particular.

Government should award scholarships and bursaries to learners and students of secondary schools, to ameliorate the effect of the lack of funds of their parents or guardians. Government

should also re-introduce education loan for learners or students to enable poor parents pay the fees and procure needed materials for their children.

In the view of negative attitude of teachers toward students, the secondary schools' administrator needs to be more alive and effective to their responsibilities. They should double their efforts at ensuring that there is high-level of discipline in their domains. They should supervise the teaching of teachers in schools regularly and ensure that discipline is maintained among the students and teachers. Teachers and students found to have shown dereliction of duties and contravene school rules and regulations should be reprimanded.

It is obvious that teachers play significant role in the teaching and learning process in schools. Teachers thus have to be committed to teaching in schools. This can be achieved through prompt attendance to lesson delivery, coverage of syllabus, effective teaching of students among others, to improve the level of academic performance of students both within the school and at the end of

their training. There is need to arrest the increasing trend in examination malpractice in schools. Secondary schools' administrators should investigate any reported case(s) of this menace and ensure that those involved are punished to prevent others from indulging in it in future. Teachers should however be committed to teaching so that students can acquire deep knowledge that will enable them pass examination without recourse to malpractice. Government should also enforce the laws against examination malpractice. Those caught in the act should be punished to serve as deterrent to others. Teachers, being role models to students, should also refrain from examination malpractice. Parents also owe it a duty to inculcate high- level moral training on their children so that they can refrain from examination malpractice in schools.

In the view of inadequate provision of computer and teaching aids, it believes that teaching is not complete until knowledge has been successfully transferred or impacted to the learners or students which in most cases may not just be tied to teacher

effectiveness or teaching skill only, but the teaching aids used in the teaching and learning process. According to Jimoh (2009), ordinary words or verbalization has been found to be inadequate for effective teaching. Teaching aids serve as a channel through which message, information, ideas and knowledge are disseminated more easily in the act of teaching and learning of computer science. They can therefore be manipulated, seen, heard, felt or talked about. These materials facilitate activities and they are anything or anybody the teacher turns to for help in learning process.

While acknowledging that the issue of teaching aids may not be easily resolved, it is important to remark that teachers should not use lack of teaching aids as an excuse not to teach well (Killen, 2008). It should be recognized that alternatives are out there to get for usage and teachers should refrain from depending solely on the local education council for the provision of readymade materials. They should reach out for local materials in the environment and improvise whenever the need arises.

### **Summary of Related Literature**

In this paper, the factors associating with the teaching and learning of computer science in secondary school education in Nigeria, Edo State precisely, which include the inadequate Professionally trained computer teachers, inadequate Provision of Computer Laboratory Facilities, inadequate of Fund, negative attitude of teacher towards students, indiscipline of students towards learning and inadequate provision of computer and teaching aids were discussed. The ways to tackle the challenges were also looked into. The government, teachers, and secondary schools' administrators have roles to play towards ensuring that these challenges are combated and that secondary education is moved forward, from its static or motionless state.

### **CHAPTER THREE**

## **RESEARCH METHODOLOGY**

This chapter explains the procedures followed by the researcher to delineate information for the research work. The procedures are further structured under the following sub-headings:

- ✓ Research Design
- ✓ Population of The Study
- ✓ Sample and Sampling Techniques
- ✓ Research Instrument
- ✓ Reliability of instrument
- ✓ Administration of Instrument
- ✓ Method of Data Analysis

### **Research Design**

The method employed in this study is the survey research technique. The choice is premised by the fact that only a representative sample of the entire population will be studied.

### **Population of the Study**

The population of the study consists of the students in public Senior Secondary Schools in Oredo local government area of study.

### **Sample and Sampling Techniques**

The simple random sampling was used in selecting five (5) secondary school in Oredo local government. The sample of this study consisted of one hundred (100) students in Senior Secondary Schools (SSI - SSIII) in Oredo local government area of Edo state.

### **Research Instrument**

The research instrument use to obtain data for this research is the questionnaire. The questionnaire was designed to elicit information or responses from students on the factors associating with the teaching and learning of computer science in senior secondary school in Edo state.

The questionnaire consists of two (2) sections: Section A and Section B. Section A which consist of the respondent bio-data such as Sex, Age, Class. While, Section B consist of the items to be administered to the respondents.

### **Validity of Instrument**

The sample questionnaire will be submitted to the project supervisor for critical examination and necessary corrections and suggestions were made. Thereafter, these were taken into consideration in the final draft of the questionnaire.

### **Reliability of Instrument**

The instrument was administered to one hundred students for the reliability test. The questionnaire was given to students, scored and collated. It was subjected to computer data analysis using SPSS version 16. Then the Cronbach Alpha reliability was computed to determine the instrument's measures of internal consistency. The value of the Cronbach Alpha based on standardized items was 0.67.

### **Administration of Instrument**

The researcher personally visited all the secondary schools selected and administered the questionnaire to the respondents with the assistance of the teachers. Before completion, the objectives of the questionnaire were explained to the respondents and they were assured that any information given would be treated with

confidentiality. The questionnaire was collected same day of it's administration.

### **Method of Data Analysis**

The data collected from the respondents were presented in tables and analyzed using mean and simple percentage.

## **CHAPTER FOUR**

### **DATA ANALYSIS AND DISCUSSION OF RESULTS**

This chapter gives the result of this research. The data were collected in accordance with five (5) research question earlier formulated. The data collected on the study was analyzed using percentage. One hundred (100) copies of questionnaires were administered in five (5) different schools in Oredo Local Government Area of Edo State. Some schools in Oredo Local Government Area were randomly selected were the questionnaires were administered, the schools are: Idia College, New Era College, Imaguero College, Edokpolor Grammar School and Greater Tomorrow College. These research questions were analyzed and discussed under the following sub-headings:

- ✓ Presentation and analysis of data
- ✓ Discussion of findings

## Presentation and Analysis of Data

### Distribution of questionnaire used in each school

S/N	Schools	No. of Respondents
1.	Idia College	20
2.	New Era College	20
3.	Imaguero College	20
4.	Edokpolor Grammar School	20
5.	Greater Tomorrow College	20
	Total	100

The range of percentage of retrieved questionnaires 100%. The effect of the researcher to arrive at this figure is a satisfactory representation of five secondary schools.

## Research Question 1

What are the things needed for computer science students in Edo State?

In answering this question, questionnaire items 1, 2, 6, 9 and 15

S/N	ITEM	Positive response (%)	Negative response (%)	Total
1.	I have a computer science teacher in my school	82(82%)	18(18%)	100
2.	My computer teacher is friendly	50(50%)	50(50%)	100
6.	I have a computer laboratory in my school	82(82%)	18(18%)	100
9.	My computer science studies teacher is very harsh	50(50%)	50(50%)	100
15.	I am always given class work at the end of each computer class	42(42%)	58(58%)	100
	Total	306 (61.2%)	194 (38.8%)	500

For item 1 which states "I have a computer teacher in my school", the positive response of the total respondents is 82% while the negative response of the respondents is 18%.

For item 2 which states "my computer teacher is friendly", the positive response of the total respondents is 50% while the negative response of the respondents is 50%.

For item 6 which states "I have a computer laboratory in my school", the positive response of the total respondents is 82% while the negative response of the respondents is 18%.

For item 9 which states "my computer science studies teacher is very harsh", the positive response of the total respondents is 50% while the negative response of the respondent is 50%.

For item 15 which states "I am always given class work at the end of each computer class", the positive response of the total respondents is 42% while the negative response of the respondents is 58%.

## Research Question 2

Are teaching aids and resources available for the teaching and learning of computer science in Senior Secondary Schools in Edo state?

In answering this question, questionnaire items 8, 10 and 18

S/N	ITEM	Positive response (%)	Negative response (%)	Total
8	My school computer teacher always provide teaching aids for each class	42(42%)	58(58%)	100
10	My school computer laboratory is well equipped with the necessary materials	52(52%)	48(48%)	100
18	We make use of the computer laboratory during practical's only	45(45%)	55(55%)	100
	Total	139 (46.333%)	161 (53.666%)	300

For item 8 which states "my school computer teacher always

provides teaching aids for each class", the positive response of the total respondents is 42% while the negative response of the respondents is 58%.

For item 10 which states "my school computer laboratory is well equipped with the necessary materials", the positive response of the total respondents 52% while the negative response of the respondents is 48%.

For item 18 which states that "we make use of the computer laboratory during practical only", the positive response of the total respondents is 45% while the negative response of the respondent is 55%.

### **Research Question 3**

What measures have been taken to ensure effective teaching and learning of computer science?

In answering this question, questionnaire items 3, 4, 7, 16, 19, 20, 21, 23 and 24

<b>S/N</b>	<b>ITEM</b>	<b>Positive response (%)</b>	<b>Negative response (%)</b>	<b>Total</b>
3	I always study my computer science text book ahead of next class	47(47%)	53(53%)	100
4	There's always a room for question on what I don't understand in my computer class	82(82%)	18(18%)	100
7	I always have computer practical at least one's in a week	53(53%)	47(47%)	100
16	I have access to computer system in my school	60(60%)	40(40%)	100
19	I make use of the computer laboratory often	79(79%)	21(21%)	100
20	My school computer teacher always come to class early	71(71%)	29(29%)	100
21	My school computer teacher motivate me to study	51(51%)	49(49%)	100
23	Assignment is always given at the end of each computer studies class	32(32%)	68(68%)	100
24	I always do my computer assignment on time even before the next class	48(48%)	52(52%)	100
	<b>Total</b>	<b>523 (58.111%)</b>	<b>377 (41.888%)</b>	<b>900</b>

For item 3 which states "I always study my computer science text book ahead of next class", the positive response of the total respondents is 47% while the negative response of the respondents is 53%.

For item 4 which states "there's always a room for question on what I don't understand in my computer class", the positive response of the total respondents is 82% while the negative response of the respondents is 18%.

For item 7 which states "I always have computer practical's at least one's in a week", the positive response of the total respondents is 53% while the negative response of the respondents is 47%.

For item 16 which states "I have access to computer system in my school", the positive response of the total respondents is 60% while the negative response of the respondents is 40%.

For item 19 which states "I make use of computer laboratory often", the positive response of the total respondents is 79% while the negative response of the respondents is 21%.

For item 20 which states "my school computer teacher always come

to class early", the positive response of the total respondents is 71% while the negative response of the respondents is 29%.

For item 21 which states "my school computer teacher motivates me to study", the positive response of the total respondents is 51% while the negative response of the respondents is 49%.

For item 23 which states "assignment is always given at end of each computer studies class", the positive response of the total respondents is 32% while the negative response of the respondents is 68%.

For item 24 which states "I always do my computer assignment on time even before the next class", the positive response of the total respondents is 48% while the negative response of the respondents is 52%.

#### Research Question 4

How adequate are the requirement for the teaching and learning of computer science in Senior Secondary Schools?

In answering this question, questionnaire items 12, 14 and 22

S/N	ITEM	Positive response (%)	Negative response (%)	Total
12	I have at least five computer systems in my school	82(82%)	18(18%)	100
14	Each student is entitle to a computer system during practical	42(42%)	58(58%)	100
22	My school computer laboratory is conducive and well arranged for computer classes	31(31%)	69(69%)	100
	Total	155 (51.666%)	145 (48.333%)	300

For item 12 which states "I have at least five computer

systems in my school", the positive response of the total respondents is 82% while the negative response of the respondents is 18%.

For item 14 which states "each student is entitled to a computer system during practical", the positive response of the total respondents is 42% while the negative response of the respondents is 58%.

For item 22 which states "my school computer laboratory is conducive and well arranged for computer classes", the positive response of the total respondents is 31% while the negative response of the respondents is 69%.

### **Research Question 5**

What is the performance of the students of computer science studies in Edo state?

In answering this question, questionnaire items 5, 11, 13 and 17.

<b>S/N</b>	<b>ITEM</b>	<b>Positive Response (%)</b>	<b>Negative Response (%)</b>	<b>Total</b>
5.	My school time table aid my computer classes	51(51%)	49(49%)	100
11.	I perform best in computer science studies than any other subject	52(52%)	48(48%)	100
13.	I have a good computer science studies teacher in my school	73(73%)	27(27%)	100
17.	I prefer computer science studies as a subject to any other subject	56(56%)	44(44%)	100
	<b>Total</b>	<b>232 (58%)</b>	<b>168 (42%)</b>	<b>400</b>

For item 5 which states "my school time-table aids my computer classes", the positive response of the total respondents is 51% while the negative response of the respondents is 49%.

For item 11 which states "I perform best in computer science

studies than any other subject", the positive response of the total respondents is 52% while the negative response of the respondents is 48%.

For item 13 which states "I have a good computer science studies teacher in my school", the positive response of the total respondents is 73% while the negative response of the respondents is 27%.

For item 17 which states "I prefer computer science studies as a subject to any other subject", the positive response of the total respondents is 56% while the negative response of the respondents is 44%.

### **Discussion of Findings**

The analysis of research question one reveals the things needed for computer science students in Edo state which are indicated as the availability of computer laboratory in the school, the availability of regular class work or exercise and the relationship between the computer teacher and his/her students. The findings of Jaiyeoba and Atanda (2003) posited that school facilities are things

which enable a skillful teacher to achieve a level of instructional effectiveness that exceeds what is possible when they are not provided.

The analysis of research question two reveals the availability of teaching aids and resources for the teaching and learning of computer science in Senior Secondary School in Edo state which are indicated as the availability of necessary materials in the computer laboratory, availability of teaching aids and usage of the computer laboratory. According to Ikerionwu (2000) refers to teaching aids as objects or devices which help the teacher to make learning meaningful to the students or learners.

The teacher facilitates the learning by acting as a coach, resource guide and companion in learning. The use of instructional materials does not only encourage teachers and students to work collaboratively but also results in more cooperative learning activities among the students.

The analysis of research question three reveals the measurement taken to ensure effective teaching and learning of

computer science in Edo state which are indicated as the familiarity with the computer laboratory and accessing the computer through conducting of practical's for more knowledge, the students reading their computer text book ahead of next class, asking of question they don't understand during the teaching and giving of assignment.

According to the findings of Achimugu (2005) says that students are expected to display high-level moral etiquette to show that they are from good homes. The behavior of a child outside reflects the situation in his or her home and also encourage teachers that sees teaching as of a low status to show good example to their student by coming to school and classes early enough, presenteeism in school and classes and promoting of appropriate record keeping in order to motivate the students to study. Because, the inability of teachers to show commitment toward teaching in schools has been attributed to the unseriousness, indiscipline, poor academic performance of students in schools.

The analysis of research question four reveals the adequacy of the requirement for teaching and learning of computer science in

Senior Secondary School which are indicated as the adequate provision of computers and provision of a conducive and well equipped laboratory for the enhancement of practicals. It is revealed that there is Lack of computers and its related outfits in most of the secondary schools in Nigeria, Edo State in particular, instances show that only a limited number of computers were present in few of the secondary schools which do not go round the class population deny most students access to the use of computers during practical of which it is well known that education is mostly all about practical. Because, what you practice often is what stick to your memory and what you practicalise is always very easy to put into remembrance.

The analysis of research question five reveals the performance of the students of computer science in Edo State which are indicated as the interest of students in computer science, well composing of the school time table. This brought about the calling into action the secondary schools' administrators to be more alive and effective to their responsibilities by computing and presenting a well reasonable time table mostly for the favor of the students without any form of

partiality so as to aid proper attendance to lesson delivery. It is obvious that time table play significant role in the teaching and learning process in schools.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter summarizes the entire study under the following subheads: summary, findings, conclusions and recommendations. It also highlights some suggestion for further studies.

#### **Summary**

The study is based on factors associated with the teaching and learning of computer science in senior secondary school in Oredo Local Government Area, Edo State.

The following five research questions are raised to guide the study:

- ✓ How adequate are the requirement for the teaching and learning of computer in secondary schools?
- ✓ What measures have been taken to ensure effective teaching and learning of computer science?
- ✓ Are teaching aids and resources available for the teaching of computer science in the senior secondary schools in Edo State?

- ✓ What are the things needed for computer science students in Edo State?
- ✓ What is the performance of the students of computer science studies in Edo State?

It is assumed that all the variables in the question above have contributed to the factors associated with the teaching and learning of computer science in senior secondary schools in Edo State.

Furthermore, this study is very vital in the sense that it will no doubt constitute useful information to the Ministry of Education and Post-Primary School Board in Edo State in particular and Nigeria in general for the assessment of public and private secondary schools. It is hoped that it will lead to administrative improvement of private school and mostly especially public schools in Edo State.

A study of this nature may help to throw more light on the various factors that affect the teaching and learning in our secondary schools and consequently, their effects on the academic performance of our students. It is expected that this study will

promote effective teaching and learning in computer science in our secondary schools through its recommendations.

The researcher used questionnaire which was administered to students in some selected schools in Oredo Local Government Area. The information (data) gathered from the questionnaire were analyzed using simple percentage and frequency tables and the result from the analysis were interpreted and decisions were made based on this interpretation.

In the course of this study, some findings were made from this analyzed data collected from the respondents that:

- ✓ Inadequate professionally trained computer teacher is a major factor that associated with the teaching and learning of computer science in Senior Secondary School in Oredo Local Government Area.
- ✓ Inadequate provision of computer laboratory facilities is a major factor that associated with the teaching and learning of computer science in senior secondary school in Oredo Local Government

Area.

- ✓ Inadequate fund is a major factor associating with the teaching and learning of computer science in Senior Secondary School in Oredo Local Government Area.
- ✓ Negative attitude of teacher towards students is a major factor that associated with the teaching and learning of computer science in Senior Secondary School in Oredo Local Government Area.
- ✓ Indiscipline of student towards learning is a major factor that associated with the teaching and learning of computer science in Senior Secondary School in Oredo Local Government Area.
- ✓ Inadequate provision of computers and teaching aids is a major factor that associated with the teaching and learning of computer science in Senior Secondary School in Oredo Local Government Area.

## **Conclusion**

The result from this research brought to limelight the factors associated with the teaching and learning of computer science in Senior Secondary School in Oredo Local Government Area. It has been found out that majority of teachers and students are of the view that the objectives of factors associated with the teaching and learning of computer science have been achieved in Senior Secondary Schools. They hold the opinion that that programme has been effective in all the Secondary Schools.

Emerging from the study was a confirmation that an approved syllabus exists for the effective teaching and learning of computer science. The syllabus has been made available to all the Senior Secondary Schools in the local government area and they are basically in use.

Although most of the schools lack teaching facilities for the teaching of computer science, this did not pose any threat to the implementation of the programme.

## **Recommendations**

On the basis of the research findings, the recommendations were made:

Public schools should be encouraged to organize their activities more effectively around academic achievement objectives in order to improve performance. Effort should be made at improving infrastructural facilities in public schools through an integrated programme of renovation, reconstruction and maintenance of existing school facilities.

In the view of inadequate professionally trained computer teachers, teachers training programmes have to really taken into consideration for the changes that are needed to implement the innovative curriculum introduced in the schools, especially at the senior secondary education level.

In view of the persistent limited allocation to the education(inadequate funding) government should increase the allocation to the sector so as to give room for increase in the running grant to secondary schools and ensure the provision of more

infrastructure and facilities for the training of students.

In the view of negative attitude of teachers toward students, the secondary schools' administrator needs to be more alive and effective to their responsibilities. They should supervise the teaching of teachers in schools regularly and ensure that discipline is maintained among the students and teachers

In the view of inadequate provision of computer and teaching aids, these materials facilitate activities and they are anything or anybody the teacher turns to for help in learning process. They can therefore be manipulated, seen, held, felt or talked about. Teachers should not use lack of teaching aids as an excuse in teaching. So, it is recommended that teacher should always get affordable materials as an alternative at the absence of any teaching aid or material for the enhancement of the teaching.

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## **APPENDIX**

### **DEPARTMENT OF EDUCATIONAL PSYCHOLOGY AND CURRICULUM STUDIES, UNIVERSITY OF BENIN**

#### **STUDENTS QUESTIONNAIRE**

Dear Respondents,

I am an undergraduate student of the faculty of education, University of Benin, undertaking a study on “Factors associated with the teaching and learning of computer science in senior secondary schools in Edo State”.

The questionnaire is design to investigate the strategies for improving Computer Science teaching and in Oredo Local Government Area of Edo State.

Kindly answer this question as honestly as possible. All responses will be treated in strict confidentiality.

## SECTION A

- ✓ **Name of School:**.....
- ✓ **Age of Student:**.....
- ✓ **Class:**.....
- ✓ **Sex:**.....

## SECTION B

Tick {✓} against the alternative that reflect your true experience

- ✓ A {Agree}
- ✓ SA {Strongly Agree}
- ✓ D {Disagree}
- ✓ SD {Strongly Disagree}

S/N	STATEMENT	A	SA	D	SD
1	I have a computer teacher in my school				
2	My school computer teacher is friendly				
3	I always study my computer science text book ahead of next class				

S/N	STATEMENT	A	SA	D	SD
4	There's always a room for question on what I don't understand in my computer class				
5	My school time table aid my computer class				
6	I have a computer laboratory in my school				
7	I always have computer practical at least once in a week				
8	My school computer teacher always provide teaching aid for each class				
9	My school computer science studies teacher is very harsh				
10	My school computer laboratory is well equipped with the necessary materials				
11	I perform best in computer science studies than any other subject				
12	I have at least five computer system in my school				

S/N	STATEMENT	A	SA	D	SD
13	I have a good computer science studies teacher in my school				
14	Each student is entitle to a computer system during Practical				
15	I am always given class-work at the end of each computer class				
16	I have access to computer system in my school				
17	I prefer computer science studies as a subject to any other subject				
18	We make use of the computer laboratory during practical's only				
19	I make use of computer laboratory often				
20	My school computer teacher always come to class early				

S/N	STATEMENT	A	SA	D	SD
21	My school computer teacher motivate me to study				
22	My school computer laboratory is conducive and well arrange for computer class				
23	Assignment is always given at the end of each computer studies class				
24	I always do my computer assignment on time even before the next class				