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A WAY FORWARD TO TEACHING AND LEARNING COMPUTER SCIENCE IN HIGH SCHOOLS

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Abstract
This study was conducted to determine computer science teaching and learning situation in junior secondary schools in umuahia Educational Zone. In order to carry out this study effectively two research questions were asked and answered. They are as follows: what are the major problems of teaching and learning computer science in junior secondary schools in Umuahia Educational Zone and how can such problems be tackled? The instrument used is questionnaire. Data obtained were analyzed and many problems were solved in teaching and learning computer science, especially lack of qualified teachers and insufficient computer laboratories in our junior secondary schools.

Introduction

Education by the end of the 20th century no longer prepares individuals to secure collar jobs or lifelong employment in local industries or services. Rather, education is for individuals and national development. Similarly, the major objective of education is to bring about desirable change in behavior in individuals and society at large.

Abimade (1998) stated that the realization of the noble role of computer in man's quest for or comfortable living has today necessitated the introduction of computer as a curriculum in all the levels of our education institutions.

Recently, computer science students were introduced in the state to few selected secondary schools in Enugu education zone in (2000/2001) academic session by education resources teachers by contract from western part of the country. Unfortunately, there are myriad problems that are still hampering the proper take off of the studies in our secondary schools in Nigeria at large and Abia Sate in particular.

Research Hypothesis

There is no significant difference between the problems of teaching and learning computer science and integrated Science.

Some of these problems can be classified as lack of computer science teachers and computer components in our schools. The very few teachers that are available were posted to selected urban schools. The result is that computer studies have not stared well in Abia State in as much as it has not been registered in JSSCE examination. Even in urban schools the numbers of computer teachers are grossly inadequate not to talk of rural schools. That may be why Okeke (2006) stated that the State Ministry of Education may only register students in computer science studies in JSSCE when the product of Abia State College of Education and other Higher Institutions may have produced enough teachers to go round the state secondary schools.
These trained teachers would definitely provide the teaching required in the secondary schools. How would Abia State Government produce computer science teachers that can enhance the teaching and learning of computer studies effectively in our secondary schools?

Some Problems Hindering the teaching of Computer Science Effectively.

- Lack of Qualified Computer science teachers:

Lack of qualified computer science teachers is considered as the greatest problem that has affected the effective teaching of computer science. The quality of education is determined by the quality of teachers. This means that highly qualified teachers certainly impart high standard of education to their students.
Oyebanji (2003) stated that the performance of students depend to a large extend on the competence of the teachers. Kwacha (2007) remarked that most schools lack computer literate teachers and experts that would support and manage the applications of computing in the teaching-learning process.
Annie (2006) listed some qualifications which are expected or required of a computer science teacher which includes:

- Computer skill
- Technical related guidance
- Computer work experience
- Degree of college certificate
- Teaching preparation and experience
- Abilities and public relations
- Personal/social characteristics

A computer teacher without the above qualifications will be ineffective in his/her teaching. There is a direct relationship between the quality of the teaching personnel and the quality of the education process.

- Insufficient Instructional Materials:

These also contribute to the problems facing the teaching of computer science in secondary schools. Instructional materials are those facilities which help the teacher to drive home his point while teaching.
Anyanwu (1999) says that "if a teacher wants to be effective, he/she is bound to make use of a variety of instructional materials like textbooks, students guide, pictures, etc"

- Improving Method of Teaching Computer Science:

Computer science teachers facilitate learning experience. It is hoped that each computer science teacher would be able to lead students towards appreciation and understanding of computer science.
Some methods of teaching computer science are lecture method, textbook teaching method, class activity and laboratory method which involves the use of mouse clicking and manipulation of keyboards.
Teachers need to acquire the best method to teach, vary their method to suit the learning environment and create room fo4r questions, reinforcement and set induction in order to arrive at the most appropriate method of teaching.

- Need for Availability of Sufficient Fund for Computer Studies:

Conclusively, there should be fund made available for the purchase of computer material, for effective teaching of computer in secondary schools.
Olawole (1987) suggested the promulgation of a degree establishing a computer fund for the purpose of research into computer and technology.

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Data Analysis
The method used in analyzing data collection was simple percentage and table. The computation of simple percentage was done by using the:

$$\frac{P}{N} \times \frac{100}{1} = \text{Percentage}$$

Where:
P: Denotes the number of responses to a particular variable
N: Denotes the total number of questionnaires

Analysis of Data
This chapter deals with analysis of data collected in order to validate and evaluate the view and opinion of the respondents according to the researcher's observation.

Data Presentation
Research Question 1
Is computer science taught in your school?
TABLE 1:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	100	100%
No	0	0%
Total	100	100%

The table above shows the responses and percentage of the question" is computer science taught in your school". The data given above by the respondents showed that computer science is taught in the various schools used for sampling.
Research Question 2
Are there computer laboratories in your school?
TABLE 2:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	50	50%
No	50	50%
Total	100	100%

The above table shows that 50% indicated there are computer laboratories in their school while 50% indicate that they don't have computer laboratories in their school. This therefore indicates that 50% of the schools used for sampling have no computer laboratories while 50% of the schools do have computer laboratories.
Research Question 3
Are practical demonstration done during the teaching of computer science in your school? TABLE 3:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	50	50%
No	50	50%
Total	100	100%

Research Question 4
Are your computer science teachers specially trained?
TABLE 4:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	69	69%
No	31	31%
Total	100	100%

The above table shows that 69% of the respondents answered positively to the above question given in table 4 above. The responses provided indicate that the computer science teachers are specially trained for their profession while 31% disagree on the above question asked.
Research Question 5
Could lack of qualified computer science teachers affect the teaching of computer science?
TABLE 5:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	94	94%
No	6	6%
Total	100	100%

The above table shows that 94% indicate that lack of qualifies computer science teachers can affect the teaching of computer studies while 6% indicated that lack of computer science teachers cannot affect the teaching of computer science studies.
Research Question 6
In your opinion, is performance of the students in computer subject good enough?
TABLE 6:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	12	12%
No	78	78%
Total	100	100%

The data shows above indicated that 78% of the performance of students in computer subject are not good while 12% indicated that the performance of the students in computer subject is good.
Research Question 7
Do the students attend laboratory exercises regularly?
TABLE 7:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	50	50%
No	50	50%
Total	100	100%

The above table indicates that 50% of the students attend computer laboratories exercise while 50% of the students don't.

Research Question 8
Are the students interested in learning computer studies?
TABLE 8:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	87	87%
No	13	13%
Total	100	100%

The data shows above indicated that 87% of the students are much interested in learning computer studies while 13% indicated that some students are not interested in learning computer studies. Research Question 9
Are computer teachers given some incentives in your schools?
TABLE 9:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	3	3%
No	97	97%
Total	100	100%

The data above shows that 97% of the computer teachers are not given incentives in the schools while 3% indicated that computer teachers are given incentives in the schools.
Research Question 10l Is the scheme of work for computer studies planned by the computer teachers?
TABLE 10:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	11	11%
No	89	89%
Total	100	100%

The above table shows that 11% of the teachers indicated that the scheme of work for computer studies is planned by the computer teachers while 89% indicated that scheme of work for computer studies is not planned by computer teachers.
Research Question11
Are seminar/symposium organized regularly for the computer teachers?
TABLE 11:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	2	2%
No	98	98%
Total	100	100%

The data shown above indicates that 98% of the teachers disagrees that seminar/symposium are not organized regularly for the computer teachers while 2% of the teachers indicated that seminar/symposium are being organized for teachers.
Research Question 12
Do you see the need for the government to provide more computer teaching instructional materials for secondary schools?

TABLE 12:

ALTERNATIVE PROVIDED	NUMBER OF RESPONSES	PERCENTAGE
Yes	94	94%
No	6	6%
Total	100	100%

The data above indicates that 94% of the teachers agree that there is need for the government to provide more computer teaching instructional materials for secondary schools while 6% disagree.

CONCLUSION

On the basis of the findings in this study, it could be concluded that there is poor performance in the teaching of computer science in most of the secondary schools in Umuahia Educational Zone.

This poor condition was as a result of absence of laboratory and lack of instructional materials, limited and incompetent teachers of educational policy.

Students' negative attitude to learning was not found to be a determining factor affecting effective teaching of computer science in schools because most of the teachers agreed that the students were very much interested in learning computer science despite the poor condition of learning.

Recommendations

As a result of the findings made by the researcher, the following recommendations would go a long way to improve the teaching and learning of computer science in secondary schools.

Government should endeavour to provide all the schools with laboratory well equipped with enough instructional materials which will enhance the teaching of practical demonstrations and concepts of computer subject. More teachers should be specially trained through service training. This will then increase the number of computer science teachers who are competent enough to handle the subject. The policy makers should appoint individuals that are qualified to plan the curriculum, computer oriented supervisor and inspectors.

To examine the effectiveness of teaching of computer science in secondary schools, teachers should also be encouraged by regular payment of their salaries.

Finally, if all the above recommendations are implemented, there will be an increase in the performance of students and improvement in the teaching of computer science in secondary schools.

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