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Factors Influencing Computer Education Curriculum Implementation in Nigerian Junior Secondary Schools

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Abstract

This study examined the quality and adequacy of the Computer Studies teachers, the extent of the availability of the teaching resources used in teaching Computer Studies as the determinants of the implementation of the curriculum. A total of seventy-two (72) respondents formed the sample size of the study. Multi-stage sampling technique was used to select the sample for the study. 75% of the sampled population were from the private secondary schools while 25% belong to the public secondary schools. Meanwhile, 8.3% of the public schools investigated do not offer Computer Studies. Computer Teachers Quality and Adequacy Questionnaire (CTQAQ) and Teaching Resources Checklist (TRC) were used for data collection. The result revealed that 62.9% of Computer Studies teachers are qualified to teach the subject and it is of note that 54.5% of the subject teachers teach another subject along with Computer Studies. Considering the teaching resources, 61.1% of the sampled schools have desktop Computers and 50.0% makes use of laptop Computers. Result also showed that 94.4% of the schools sampled make use of the latest edition of Computer studies textbook for teaching the subject.

Keywords: Computer, Education, Curriculum, Implementation.

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Introduction

The quality of the educational system of a nation largely depends on the relevance of the objectives and the sufficiency of the contents of the nation's schools' curricula, and the effective implementation of the schools' curricula at various levels (Moses, 2012). The society through the knowledge institutions, deliberately transmit its cultural heritage from one generation to the other. However, different societies have different objectives and methods of education designed to achieve a specified curriculum. Curriculum determines what the school does in implementing its basic functions in society. Schools as special institutions are established to perform the educational functions of society and accept significant responsibilities on behalf of the society. Both public and private schools exist to meet defined objectives and goals. Thus, these schools have controlling bodies regulating and overseeing their operations. Hence, the need for schools to specify in clear terms their educational intentions through well-defined goals, select appropriate learning opportunities, indicate anticipated outcomes and state procedures for determining achieved outcomes. Generally, the type, content, pattern and organization of curriculum vary from school to school and from one society to another. Recently introduced into the Nigeria secondary school curriculum is Computer education, Computer Studies being a new subject in the secondary school curriculum needs to be given due recognition because of its unquantifiable significance to development.

The National Committee on Computer Education in Nigeria was introduced in 1987 with the objective to bring about a Computer literate society in Nigeria by the mid-1990s and enable present school children to appreciate and use the Computer in various aspects of life and in future employment (Jegede and Owolabi, 2003). Nigeria has also embraced the need for ICTs in schools and this has been demonstrated by the inclusion of computer education in all sectors of education from primary to tertiary education. Computer education which was introduced into the schools curricula is now a pre-vocational subject at the Junior Secondary School (JSS) level and a vocational elective at the Senior Secondary School (SSS) level. It implies that any student, who is to register Computer as a subject in various external examinations, should have been taught using the Computer Education curriculum.

To thrive and stay competitive in this digital age, much attention is required to be given to computer education and this can only be done by properly implementing the computer education curriculum in all the schools in Nigeria and most importantly at the primary and secondary schools which serves as foundation for any educational system. In order to achieve this, adequate funding is expedient for ensuring proper improvement of computer studies at primary and post primary school in Nigeria. According to Ayogu (2003), computer study is costly. Many strategies have to be put in place to finance computer studies. However, Ayogu emphasized that such generally believed that the implementation of the curriculum involves putting into practice the planned curriculum by the teachers, learners, school administrators and parents as well as interaction with physical facilities, instructional materials, psychological and social environment. The level of implementation calls for frequent evaluation; this is because evaluation runs through all aspects of the curriculum development process. Through feedback from evaluation, information will be gotten on the relevance and appropriateness of what is selected for teaching, methods adopted for teaching, teaching resources and actual learning of students.

The application of computers to teaching and learning is now widely adopted as many educators use different types of information and communication technologies (ICTs) devices such as the internet, PowerPoint, social media and other multimedia devices to enhance learning. Setzer (2000) observed that the use of computers by children at an early stage both at home and in schools, positively influence the education system and the society. The author noted that it increases the literacy level and makes the children to be updated and enhances their academic achievement. Considering the cost of acquisition, the author noted that the adoption of computers in schools would require high support from the business community as the schools may not be able to raise enough fund to afford enough computers for all the children. Mangesi (2007) observed that the universities have their own ICTs policy which gives the students uninterrupted access to computers and the internet.

Aboderin & Olukayode (2014) carried out a study in Ondo state, Nigeria. The study investigated availability of computer resources in the schools, the budgetary and funding of computer education in

schools, availability of trained manpower in teaching computer education in schools, the attitude of the school community towards the teaching and learning of computers in schools, adequacy of time for computer lessons on the timetable and Remedies to ensure computer education is fully implemented in schools. The study revealed that the schools are characterized with lack of computer resources were, budgetary and funding constraints, lack of trained manpower, inadequate time for the computer lessons on the timetable and that the school community show positive attitude towards the teaching and learning of computers in schools.

In a similar study conducted by Bamidele & Bakare (2015), they investigated the implementation of computer education curriculum in public secondary schools of Osun state, Nigeria by considering the availability and quality of teachers as well as determined the availability of computer facilities in the schools. The findings of the study showed that the implementation of the curriculum in the state schools was very low and affirmed that there were computer science teachers in the schools but with no computer facilities. It also concluded that the stakeholders in the state has poor attitude to the implementation of the curriculum. It was revealed that many schools in Nigeria lack up to date computer technology and that many of those that have computers have little or no access to electricity. It is of concern that most schools that offered computer as a subject, have only the theoretical knowledge without the practical.

Jegede, in an interview with vanguard learning stated that "*Computer education should not just be in the domain of the computer teacher, but the responsibility of every teacher. We should apply the social learning theory and understand that students learn by continuous practice. If the teachers use computers, it would be a better way to inculcate computer skills than just the strict subject approach that we practice in Nigeria*." (Vanguard Learning, 2012).

Several factors have been identified to determine the rate of ICT adoption and its applications in secondary schools. These factors as put by Adomi and Kpangan in 2010 includes poor information infrastructure, inadequate facilities, unstable power supply, non integration and application of Computer curriculum, poor implementation of ICT policies, inadequate manpower to handle ICT courses, poor administration and attitude of teachers towards change brought about via the use of ICT. The school net was launched by the Federal Ministry of Education as an ICT driven project with the aim of equipping all schools with ICT facilities.(Adomi 2005, FRN, 2004) .

A finding by Jegede and Adelodun (2003) identified that the computer-student ratio is small, funding by government has not been encouraging, computer education syllabus is unpopular among students and parents and thus hardly implemented, and teachers are inadequate to implement computer education in Nigerian secondary schools. Ability to operate computers and perform basic computing task has been discovered to be the challenge of secondary school teachers and thereby impede the adequate implementation of computer education curriculum. (Yusuf, 2005)

In a study on teachers competence in ICT as an implication for computer education in Zimbabwe, Bukaliya and Mubika (2011) found out that the majority of the teachers were not computer literate because they were not exposed to ICT training or the practical hands on experience. Quiet a number of them had no formal ICT qualifications while a few had a diploma in computers while none had a degree. Lack of adequate computer hardware, limited knowledge on how to make full use of ICTs in the classrooms and limited understanding on how to integrate ICTs into the teaching processes were the identified factors responsible for the implementation. They however, recommended that schools should raise fund in order to purchase computers, develop their staff and that teacher training institutions should offer ICT training to student teachers during their courses.

The Osun state government of Nigeria in its developmental agenda has some ICT policy key objectives. Some of the objectives were to build a critical mass of ICT professionals and ICT knowledgeable workforce that can effectively drive state developmental objectives, whilst being globally competitive, to empower the state indigenes as Nigerians to participate in ICT hardware and software development, to ensure that information and telecommunications resources are available to promote efficient development and ensuring the state becomes an information and knowledge society that enables its citizens to fully participate in the information age. In as much as this is well articulated, to achieve this, it will require a well implemented computer education curriculum in the

secondary schools. This study therefore examined the quality and adequacy of teachers, teaching resources availability as part of the determinants for the adequate implementation of the computer education curriculum in Osun State junior secondary schools and make necessary policy recommendations.

Two specific research questions were raised as regards the identifiable factors:

- ✓ Are there qualified and adequate teachers to teach Computer Studies in the schools?
- ✓ Are resources for teaching Computer Studies available in the schools?

Methodology

The study employed survey research design. The population for the study consisted of all the Computer studies teachers and principals (administrators) of the junior secondary schools in Osun State. Multi-stage sampling technique was used to select the sample for the study. Four local government areas were selected from each of the three senatorial districts of Osun State using simple random sampling techniques. Three secondary schools were selected from each of the local government areas using simple random technique. A total and thirty-six (36) Computer Studies teachers and thirty-six (36) principals were purposively selected. A questionnaire tagged Computer Teachers Quality and Adequacy Questionnaire (CTQAQ) and Teaching Resources Checklist (TRC) was used to collect the data for the study. The resources listed for the subject are obtained from the junior secondary school curriculum in the state. The instrument was validated by experts in Computer Education and Curriculum Studies. Data collected were analyzed using frequency counts and simple percentages.

Results

Research Question 1: Are there qualified and adequate teachers to teach Computer Studies in the schools? To answer this question, the subject teacher and the principal of the school were required to respond to a 17-item questionnaire designed for the purpose. Seventy two questionnaires were given to thirty six (36) Computer Studies teachers and thirty six (36) principals out of which, sixty six were retrieved which is approximately 92% of the administered questionnaire. The summary of their responses are as shown below

Table 1: Respondents Biographic Data

Required Information	Classification (N=66)	Frequency	Percentage (%)
Sex	Male	30	45.5
	Female	36	54.5
Marital Status	Single	17	25.8
	Married	49	74.2
Years of Experience	≤5	8	12.1
	6-10	22	33.3
	11-15	7	10.6
	16-20	8	12.1
	21-25	15	22.7
	26-30	5	7.6
	30-35	1	1.5
Employment Status	Full time	60	97.5
	Part time	-	-
	NYSC	6	1.5

Source: Field Survey, 2016 *NYSC- National Youth Service Corps

Table 1 provides some basic demographic information on sex, employment status, marital status and years of experience. Besides 55.5% were females while 45.5% were males and 75.2% of them were married and 25.8% were single respectively. In addition, 33.3% of the sampled population have spent between 6-10 years in teaching in secondary schools while a limited number of corp member were engaged in the teaching of the subject in the state. This shows that more females were employed in the teaching profession in Osun State compared with their male counterpart.

Table 2: Computer Teacher's Quality

Required Information	Classification (N=66)	Frequency	Percentage
Qualification(s)	NCE	13	19.7
	Degree	53	80.3
Qualification in CE	Diploma	23	37.1
	Degree	16	25.8
	NCE	23	37.1
Registration with TRCN	Yes	19	28.8
	No	47	71.2
Is Computer one of the subjects taught in your school?	Yes	54	81.8
	No	12	18.2
How many period(s) are for practical in a week	1- 2	50	75.8%
	None	16	24.2%
No of Student to a PC	≤ 3	42	78.8%
	4-6	13	19.7%
	>6	1	1.5%

Source: Field Survey, 2016

CE = Computer Education, TRCN = Teachers Registration Council of Nigeria PC=Personal Computer

Table 2 shows the six identified variable for Computer teachers quality. 80.3% of the respondents have degree as at the time of this study while those with 19.7% are National Certificate in Education (NCE) holders. It is observed that 37.1% of the respondents have one diploma or the other and NCE while only 25.8% of them have a degree in Computer Education which seems to be low for an evolving discipline as Computer Studies. In addition to that, 71.2% of them are not yet registered with the Teachers Registration Council of Nigeria (TRCN) which means that only 28.8% of them are qualified as professional teachers.

The study of Jegede and Owolabi (2003), has is it that 17% of those who teaches Computer Education were qualified but this study found that 25.8% of them have a degree in Computer Education which is a significant improvement. This also complements the work of Bamidele and Bakare 2015 which study affirmed that teachers with degree constitute 58.33% while NCE Holders constitute 25.00%.

Table 3: Computer Teachers Adequacy

Required Information	Classification (N=66)	Frequency	Percentage
Period for CE per week in a class	≤ 3	16	24.2
	4-6	24	36.4
	7-10	26	39.4
No of CE teacher in a school	1	39	59.1
	2	22	33.3
	None	5	7.6
Teacher Teaches another Subject	Yes	36	54.5
	No	30	45.5

Table 3 indicates that 39.4% of the respondents have Computer education between 7-10 periods in a week for a class, this means that if a school has only one Computer a school has only one Computer Studies teacher, he/she is expected to teach at least 35 times at the junior classes and depending the

number of times the subject appears on the school time table juxtaposing this with the number of Computer teachers in a school with 59.1% them having one Computer teacher in a school viz-a-viz the percentage of the teacher teaching another subject apart from Computer (54.5%), it implies that the workload on the teacher may be considered much. However, Aboderin and Olukayode (2014) revealed that there was inadequacy of manpower to teach the subject in Ondo State, Nigeria. Staff strength is seen as one of the basic factors for effective implementation of the Computer Education curriculum. According to Vanguard Learning (2012), some Nigerian students have only been in a Computer laboratory when NYSC members are available to teach the subject.

Research Question 2: Are resources for teaching Computer Studies available in the schools? To answer this question, the basic requirements for teaching Computer Studies according to the Computer education policy is ratio one Computer to five students. That is, every school must have minimum of 8 (eight) Computers for a class of 40 students and its peripherals.

Table 4: Teaching Resources Observation

S/N	Computer Equipments	Availability	
		A	N.A
1	Desktop Computers	22 (61.1%)	14 (38.9%)
2	Laptop Computers	18 (50.0%)	18 (50.%)
3	Interactive Training CDs	25 (69.4%)	11 (30.6%)
4	CD-ROM/Video tapes	28 (77.8%)	7 (22.2%)
5	Counters	12(43.49%)	24(66.6%)
6	Charts	34(94.4%)	2(5.6%)
7	Radio	27(75.0%)	9(25.0%)
8	Television	22(61.1%)	14(38.9%)
9	Abacus	4(11.1%)	32(89.9%)
10	Slide rule	6(20.7%)	30(83.3%)
11	Keyboard	28(77.8%)	8(22.2%)
12	Mouse	26(72.2%)	10(27.7%)
13	Printers	20(55.6%)	16(45.4%)
14	Keyboard Tutor	19(52.8%)	17(47.2%)
15	Tablet/ hand held Devices	22(61.1%)	14(38.9%)
16	Word Processing Software	28(77.8%)	8(22.2%)
17	Documentary videos	20(55.6%)	16(45.4%)
18	Flash Drives	20(55.6%)	16(45.4%)
19	Sample of BASIC Programme installed	28(77.8%)	8(22.2%)
20	Computer systems with graphic packages	28(77.8%)	8(22.2%)
21	Computer Laboratory/ Cybercafé	26(72.2%)	10(27.7%)
22	Textbooks(Latest Edition)	34(94.4%)	2(5.6%)

Field Survey, 2016

Table 5 shows the frequency count of the number of schools with available teaching resources and their corresponding percentages. It showed that most of the schools sampled either have a desktop or laptop Computers. As regards Abacus and Slide rule, it was observed that 89.9% and 83.3% respectively of the schools do not have these resources. When asked for the reason of its absence, the researcher was informed that they are obsolete.

The findings of the study revealed that on the average, the schools sampled have relatively needed resources for teaching of Computer Studies and this is corroborated by the findings in the literature (Bamidele, 2015). However, this seems not to be the case in Zimbabwe, as the work of Bukaliya and Mubika (2011) indicate that lack of teaching resources.

Conclusion and Recommendations

The findings of this study revealed that there is a significant improvement in the implementation of Computer Education curriculum in Osun State junior secondary schools and this is based on availability of manpower and teaching resources that are relatively available. The study therefore conclude that, for the state to realise its objective of building a critical mass of ICT professionals and ICT knowledgeable workforce that can effectively drive state development objectives, whilst being globally competitive. Adequate attention should be given to Computer education at the secondary schools in the state.

On the basis of the findings of this study and for effective implementation of the Computer Studies curriculum in secondary schools, the following are hereby recommended:

i. That more Computer Studies teachers and Computer technicians be employed to facilitate the effective teaching of the subject and maintain the Computers and its peripherals.

ii. Well equipped and adequately managed and updated Computer laboratories should be provided so as to ensure that all students have access to Computers as stipulated in the Computer education policy.

iii. Like the other science and vocational subjects, Computer practical sections in exterminations should be conducted in the Computer laboratories in order to bridge the gap between theory and practise.

iv. Computer Education in secondary schools should be considered a prerequisite for admission into tertiary institutions.

v. Training and re-training of Computer teachers will enhance effective delivery and update them on current Computer technologies and information communication technology (ICT) in general.

vi. Finally, emphasis must be laid on the practical rather than the theoretical knowledge of the subject.

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