Impediments on the Implementation of Computer Science Education Curriculum in Public Secondary Schools in Osun State Nigeria

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Abstract - *This study investigated the impediments on the implementation of Computer Science Education (CSE) curriculum in public secondary schools in Osun state, Nigeria. It assessed the extent to which CSE curriculum had been implemented in Osun State public secondary schools. It also determined the availability and quality of computer teachers in public secondary schools in the State. It further determined the availability of computer facilities in public secondary schools in the state and examined stake-holders attitude towards the non-implementation of CSE curriculum in public schools in the State. 60 teachers were randomly selected from the six educational zones in the State. Data were collected using a questionnaire titled 'Computer Science Education Curriculum Implementation Questionnaire (CSECIQ). The findings of the study showed that the extent of CSE curriculum implementation in the State was very low (18.33%) at the Secondary school level. It further showed that there were available and qualified computer science teachers in the schools (78.30%). However, result further revealed that there were no computer facilities in the schools and lastly it revealed that the attitude of stakeholders to CSE curriculum implementation in the state is poor. The study concluded that a lot of factors are responsible for the low implementation of Computer Education in the public secondary schools in Osun state of Nigeria. The major factor is the non provision of Computer facilities in the public schools for teaching and learning despite the government knowledge of the importance of computer science education in fostering technological advancement of the state and the nation at large.*

Keywords: *Computer Science Education, Curriculum deterioration, Curriculum, implementation, Impediment, Computer facilities.*

INTRODUCTION

In recognition of the prominent role of Computer Science Education (CSE) in advancing knowledge and skills necessary for effective functioning in the modern world, Information and Communication Technology (ICT) was introduced into secondary education in Nigeria [1]. However, since the introduction and integration of this subject into the secondary school curriculum in Nigeria, it was observed that computer education as a subject was not taught in most public secondary schools in Nigeria. Also, the subject was not offered at the by students in the public secondary schools at National certificate examinations either West African School Certificate Examination (WASCE) or the National Examination Council (NECO) like other subjects whereas, this is not the case in private secondary schools. It is therefore necessary to investigate the factors that bring about this partial deterioration of computer education curriculum in Nigeria.

Curriculum is said to be partially deteriorated when the curriculum loses its effectiveness to a significant degree in some subgroup of the population for which the programme is intended [2]. This occurs when a curriculum continues to work well in some schools or some teachers and students but work less well in certain respects with other students and teachers. It has been observed that Computer education curriculum in Osun state is suffering from partial or differential deterioration. Since the same curriculum is working well in the private secondary schools but work less well in the public secondary schools.

However, it is a common knowledge that teachers are at the forefront of curriculum implementation of any school programme and it is also entrenched in the National Policy on Education that no education system may rise above the quality of its teachers [1]. If teachers will then implement computer education curriculum at the primary and secondary schools, then they need development in computer science education

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right from the colleges of education. In actual fact, computer was introduced into Basic Education system by the Federal Government of Nigeria during 32nd ministerial committee convention on education in 1987 [3]. After about two decades, she then integrated computer into the primary and secondary schools curricula in 2007 [4].

According to the United Nations Educational Scientific and Cultural Organization (UNESCO) [5] report which stated that keeping the pace with technological development and the changing competencies required both students and their teachers state-of-the-art curriculum and appropriate teacher development. To this end, availability of qualified computer science education teachers, computer facilities and the right attitude of the stakeholders towards the implementation of the subject in question are the germane factors to be considered.

In Jegede and Owolabi [3] who quoted a onetime Minister for Science and Technology, Professor T. Isoun, that the formulation of an information technology (IT) policy constituted only about 20% of the IT solution for the country, but the remaining 80% lies with implementation (2001). The Federal Government of Nigeria stated in the National Policy on Education [1], the prominent role of ICTs in the modern world. It was stated in the policy that "in recognition of prominent role of Information and Communication Technology (ICT)in advancing knowledge and skills necessary for effective functioning in the modern world, there is urgent need to integrate ICT into education in Nigeria" (N.P.E. 2004, p 12) .

To actualize this goal, the document states that government will provide basic infrastructure and training for teachers in the primary school. At the junior secondary school, Computer Education has been made a pre-vocational elective, and it is a vocational elective at the senior secondary school. It is also the intention of government to provide necessary infrastructure and training for the teachers in order to make it easy for smooth integration of ICTs in the secondary school system. The plan was to establish pilot schools and diffuse Computer Education innovation first to all secondary schools, and then to primary schools. Unfortunately, the project did not really take off beyond the distribution and installation of personal computers [6]. Recently, the Government of the State of Osun decided to deploy computer tablet called '*Opin Imo*' to all senior secondary school students. This was to enable the learners had access to courseware that are relevant to their studies. However, the students were not taught computer education in their elementary and junior secondary schools. How then will they be able to use the computer tablet successfully to achieve the objective the state government?

This study therefore seeks to investigate the factors responsible for the non implementation of computer education in the public elementary and secondary schools in Osun state of Nigeria. The specific objectives of the study therefore are to;

a. investigate the extent to which CSE curriculum had been implemented in Osun State public secondary schools;
b. determine the availability and quality of computer teachers in public secondary schools in Osun State;
c. determine the availability of computer facilities in public secondary schools in Osun State; and
d. examine stakeholders attitude towards the state of non-implementation of CSE curriculum in the public schools.

Consequently, five research questions were raised to direct the study. The research questions are as follows:

i. To what extent is Computer Science Education (CSE) being implemented in public secondary schools' in the state?
ii. Are computer education teachers available in the public secondary schools?
iii. Are the computer education teachers in public secondary schools of high quality?
iv. Are there computer facilities in Osun state public schools?
v. What is the attitude of the stakeholders to non-implementation of CSE curriculum in the public schools?

METHODS

Survey research design was employed for the study. All secondary school science teachers in Osun State public secondary schools constituted the population for the study. 60 teachers were randomly selected from the three senatorial districts of the State, that is, 20 teachers from each district. The 20 teachers were selected from four randomly selected local government areas in each districts and one school was selected from each local government then five teachers from each school. A questionnaire titled "Computer Science Education Implementation

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Questionnaire (CSEIQ) was used to collect data from the teachers to elicit relevant information on the extent of the implementation of computer science education in the state public schools. The data collected were analysed using simple percentages.

RESULTS

i. **Research Question One:** To what extent is Computer Science Education (CSE) being implemented in public secondary schools' in the state?

To answer this research question, the responses of the teachers in item 1 to 6 of the questionnaire were analysed. The extent of the implementation is then given a descriptive analysis and result presented in Table 1.

Table 1. Extent of implementation of CSE curriculum in secondary schools

	Level	f	%
At what level is computer been taught in the school	JSS	21	35.50
	SSS	12	20.00
	Both	11	18.33
	None	16	26.67
	Total	60	100.0

The finding shown that 21(35.5%) of the respondents indicated that Computer is being taught only in the JSS classes in their schools, and 12(20.0%) of them is indicated that computer education is taught only at SSS classes while 11 (18.33%) stated that it is being taught at both JSS and SSS levels in their schools. However, 26.67% (16) of the teachers responded that computer in not being taught in their school at any level.

Taken between 0 to 39% as low extent of implementation, 40%-59.9% as average extent of implementation and 60% and above as good implementation. Then we can say from the result of this study that there was a low extent of implementation of computer education in all the schools.

ii. **Research Question 2:** Are computer education teachers available in the public secondary schools?

To answer this research question, the respondents' responses to the item in the questionnaire and were given a descriptive analysis and the result is presented in Table 2.

Table 2. Availability of Computer Science Education Teachers in Secondary Schools

		F	%
Are there computer subject teachers in your school?	Yes	47	78.30
	No	13	21.70
	Total	60	100.0

Table 3 showed that, 47 constituting 78.30% of the respondents indicated that they have computer subject teachers in their schools, while 13 (21.70%) of them did not have computer subject teachers in their schools.

iii. **Research Question 3:** Are the computer education teachers in public secondary schools of high quality?

To answer this research question, the respondents' responses to the item in the questionnaire on educational qualifications of computer science teachers in schools were analysed and the result is presented in the Table 3.

Result in table 3 showed that there were a good number of teachers with Computer Education qualification in the secondary schools. Teachers with B.Ed./B. Sc./ B.Sc.Ed constitutes 58.33%. While NCE Holders constitute 25.00%, HND 11.67% and even there were teachers with M.Sc/M.Ed degree 5.00%.

Table 3. Qualification of Computer Science Education Teachers in Secondary Schools

Teachers' Qualification	Category	F	%
Qualification of the computer subject teachers?	NCE	15	25.00
	ND	00	0.00
	HND	07	11.67
	B.Ed/B.Sc./B.Sc. Ed.	35	58.33
	M.Sc/M.Ed	03	05.00
	Total	60	100.0

iv. **Research Question 4:** Are there computer education facilities in Osun state public schools?

In order to answer this research question, the respondents' responses to item 14-20 in the questionnaire and were analysed using frequency counts and percentages and the result is presented in Table 4.

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Table 4. Computer facilities in the schools

	Categories	No Of teachers (f)	%
Are there computer systems in your schools?	Yes	25	41.67
	No	35	58.33
	Total	60	100.0
Do you have computer laboratory or room?	Yes	20	33.33
	No	40	66.67
	Total	60	100.0
How many computers are in your computer laboratory/ in your school?	1-5 computers	05	08.33
	6-10 computers	16	26.67
	16-20 computers	03	05.00
	20 or more	01	01.67
	None	35	58.33
	Total	60	100.0
Is there any projector in the school for teacher/students use?	Yes	13	21.67
	No	47	78.33
	Total	60	100.0
Do the school have Internet facilities for student use?	Yes	10	16.67
	No	50	83.33
	Total	60	100.0
Does the school have Public address system for use during general assembly and teaching?	Yes	19	31.67
	No	41	68.33
	Total	60	100.0
Is there a standby generator for the computer laboratory?	Yes	18	30.00
	No	42	70.00
	Total	60	100.0

Results in table 4 revealed that (25) 41.67% of the respondents have computer systems in their schools, while 35 (58.33%) did not have computer systems in their schools. 20 (33.33%) have computer laboratory/room in their school, while 40 (66.67%) did not have it in their schools. Result further showed that 01 (1.67%) of the respondents indicated that they have over 20 computer systems in their school. While 03 (5.00%) of the respondents have between 16-20 computers, and 35 (58.33%) which is the highest percentage did not have computer systems at all. Results also showed that 13 (21.675) have projector in the school for students' use, while 47 (78.33%) of the schools visited do not have.

On the availability of internet facilities in the public schools, 10 (16.67%) have internet facilities in their school for student's use, while 50 (83.33%) did not have internet facilities for students use. Also, on the use of public address system 19 (31.67%) of the respondents have public addressing system for use during general assembly and for use during teaching, while 416(68.33%) did not have at all. These results indicated a gross inadequacy of computer facilities in the public schools in Osun state.

v. **Research Question 5:** What is the attitude of the stakeholders to non-implementation of CSE curriculum in the public schools?

To answer this research question, the respondents' responses to item 8-11 in the questionnaire were analysed using a descriptive statistics and the result is presented in Table 5.

From the result presented in the table 5 above, it revealed that 40.00% of the respondents agreed that their principals proffer solution to some challenges facing teaching of computer education while 36.67% said their principals did nothing and 23.33% were undecided.

On the efforts of the principals of schools in proffering solution, 07 (29.2%) indicated that their principals had provided adequate power supply, 10 (41.7%) said their principals had seen to the provision of computer systems, 01 (4.2%) had proposed to get funds from government, 02 (8.3%) had requested for the employment of Computer teachers, 02 (8.3%) says their on proper maintenance of resources available, 8.3% (2) was seeking for government intervention in the proper implementation of Computer Science Education.

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Table 5: Attitudes of Stakeholders to Challenges of Computer Science Education

	Categories	Frequency	Percentages
Do the principal of your school proffer solution to some of the challenges facing teaching computer subject in your school?	Yes	24	40.00
	No	22	36.67
	Undecided	14	23.33
	Total	60	100.0
Can you mention some of the solutions that have been proffered in the present time?		7	29.2
a. Adequate power supply		10	41.7
b. Provision of computer facilities		1	4.2
c. Proposals to get funds from government		2	8.3
d. Employment of Computer Teachers			
e. Proper maintenance of resources available		2	8.3
f. Seeking of government intervention in Computer Science Education		2	8.3
Is there any plan from the ministry of education to proffer solution to some of the challenges facing teaching computer subjects in the schools?	Yes	10	16.67
	No	31	51.57
	Undecided	19	31.67
	Total	60	100.0
If yes, what plan?		3	30.0
a. Employment of more Computer Teachers	No with yes		
b. Provision of Computer systems	answer	7	70.0

On the plans of the State ministry of education to proffer solution to these challenges, 30% of the respondents revealed that the ministry of education is planning to employ more computer education teachers while 70.0% responded that there is plan for provision of computer systems.

DISCUSSION

On the first research question that says to what extent is Computer Science Education (CSE) being implemented in public secondary schools' in the state? The result of our finding indicated that the extent of Computer Science Education curriculum implementation in the study area was very low. This result is in accord with that of the study conducted by Jegede and Owolabi [3]. They found out that Computer Education was restricted to Federal Unity Secondary Schools and that the subject was hardly offered in any of the state secondary schools which make up more than 80% of Nigerian schools. It also agrees with the investigation of Toscany Academy [7], and they found out that the teaching of Computer Education in the Federal Government schools was restricted to JSS levels alone. It further stated that although a small number of private schools teach Computer Education at the Senior Secondary School (SSS) level and approximately 80% of the junior school students claimed that they could not manoeuvre computers.

On the second question that states that, are computer education teachers available in the public secondary schools? The finding showed that, there are available and qualified computer subject teachers in the schools. However, some studies conducted before now revealed that there was inadequacy of manpower to teach the subject [8]. According to Arenyeka [9], some Nigerian students have only been in a computer classroom when their school is privileged to have qualified NYSC members for the one year national youth service. Also, on the issue of quality, result indicated that there were a good number of teachers with Computer Education qualification in the secondary schools. Teachers with B.Ed./B. Sc./ B.Sc.Ed constitutes 58.33%. While NCE Holders constitute 25.00% and there are also HND holders.

On the question on availability of computer facilities in the public secondary schools, the finding revealed that computer facilities were grossly inadequate in the schools. This was corroborated in studies of Chattel [10], Adomi and Kpangban [8], Fakeye [11], Chang [12]. This low rate of ICT adoption and application in Nigerian secondary

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schools is attributable to several factors like limited/poor information infrastructure, lack of/inadequate financial backing from the government, frequent electricity interruption and many more. Aboderin and Solomon [13] finding revealed that few ICT components especially computers supply to the schools are not sufficient to go round the students and this deny the students of complete access to them.

Finally, the study revealed that the attitude of stakeholders to CSE curriculum implementation is poor. According to Abdul-Salaam [14], the Federal Ministry of Education launched an ICT-driven project known as SchoolNet, which was intended to equip all schools in Nigeria with computers and communication techniques. Studies still revealed that there is poor management on the parts of school administrators and government [8].

CONCLUSIONS AND RECOMMENDATION

The study concludes that a lot of factors are responsible for the low implementation of Computer Education in the public secondary schools in Osun state of Nigeria. The major factor is the non provision of Computer facilities in the public schools for teaching and learning despite the government knowledge of the importance of computer science education in fostering technological advancement of the state and the nation at large. The implementation of computer education curriculum all the secondary schools in Nigeria will afford the learners the fundamental capability to develop their future career because virtually all processes in life nowadays had been tied to knowledge of computer. It is therefore recommended that graduates of computer science education who had both teachers' and computer science qualification should be employed to teach the subject. The schools should be equipped with modern computer facilities that will create enabling environment for teaching of the subject. Relevant computer science education books should be available at the school library for teachers and learners use.

REFERENCES

[1] Federal Republic of Nigeria (2004). *National Policy on Education*, Abuja, Nigerian Educational Research and Development Council

[2] Lewy, A. (1977). *Handbook of Curriculum Evaluation*. New York, Longman Inc. 151-152.

[3] Jegede, P.O & Owolabi, J.A. (2003) Computer Education in Nigerian Secondary Schools: Gaps Between Policy and Practice. *A Middle School Computer Technologies Journal Volume 6, Issue 2.*

[4] Hooker, M, Mwiyeria, E & Verma , A (2011). Teacher Development for the 21st Century (TDev21) Pilot. A National Commission for Colleges of Education Nigeria, World Bank and GESCI Initiative. *ICT Competency Framework for Teachers in Nigeria Retrieved*

[5] United Nations Educational Scientific and Cultural Organisation (UNESCO) (2002). Information and Communication Technology in Education. A curriculum for schools and programme of Teacher Development.

[6] Okebukola, P. (1997). Old, New, and Current Technology in Education. *UNESCO Africa 14* (15): 7-18.

[7] Toscany Academy, (2012). Computer Education in Nigeria Secondary Schools. www.toscanyacademy.com

[8] Adomi, E.E., Kpangban, E., (2010). Application of ICTs in Nigerian Secondary Schools. *Library Philosophy and Practice 2010*, ISSN 1522-0222**.** Retrieved on 23 April, 2014 from http://www.webpages.uidaho.edu/~mbolin/lpp2010.htm

[9] Arenyeka, L., (2013, January, 24). Forgotten aspects of education (1). Vanguard News. Retrieved on 27 April, 2014 from http://www.vanguardngr.com/2013/01/forgotten-aspects-of-education-1/

[10] Chattel, R.G. (2002). New Technology, New Literacy: Creating a Bridge for English Language Learners. *The New England Reading Association Journal 38(3)* 45-49.

[11] Fakeye, D (2010). Assessment of English Language Teachers' Knowledge and use of Information Communication Technology (ICT) in Ibadan Southwest Local Government of Oyo State. *American-Eurasian Journal of Scientific Research 5(4);* 270-276

[12] Chang, Y. (2003). The Effect of Web Based Instruction on Chinese EFL Students, Learning Outcomes. *Dissertation Abstracts International 62 (2).*

[13] Aboderin and Solomon O. (2014). Factors Militating against the Implementation of Computer Education in Secondary Schools in Ondo State South West, Nigeria. *Global Journal of Human Social Science Volume XIV Issue II Version I*

[14] Abdul-Salaam, A.O. (2007). The Role of Information Communication and Technologies in Nigeria Educational System. *Journal of Science and Science Education. Vol 1, No. 1 & 2,* 177-186.