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EXTENT OF IMPROVISATION OF INSTRUCTIONAL MATERIALS FOR EFFECTIVE TEACHING AND LEARNING OF COMPUTER EUCATION IN JUNIOR SECONDARY SHOOLS IN ENUGU NORTH LOCAL GOVERNMENT AREA.

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ABSTRACT

The study investigated Extent of Improvisation of Instructional Materials for Effective Teaching and Learning of Computer Education in Junior Secondary Schools in Enugu North Local Government Area. The survey research design was adopted. 36 computer science teachers only in Junior Secondary Schools in Enugu North constituted the population of the study and were used as the sample. The research questions were answered using Mean. The major findings show that software components of the computer are being improvised at a low extent. Also, the hardware components of the computer are being improvised partially at a great extent and at a low extent. More so, the basic computer accessories are being improvised partially at a great extent and at a low extent. When there is no instructional material, there will be lack of interest of students towards computer Education, retention and transfer of learning in computer Education will no longer take place in the Junior Secondary school. The basic components can be improvised by the teacher, students or Local carpenters with the resources within the learners' environment. The improvised material provides opportunity for development of science attitudinal skills and practical skills needed to function effectively in the society. The study therefore, recommends among others, that Government should organize seminars, workshops, and conferences on improvisation to make the teachers resourceful

enough to improvise the instructional materials needed for Computer Education when the standard equipment is not readily available for effective teaching.

Keywords: Improvisation, Teaching, Learning, Computer and Education

Introduction

Improvisation is an act of using alternative materials locally made by the teacher, students or Educational agency in a state of emergency as a substitute and supplement to standard equipment (Omiko, 2015). According to Obiakor, (2021), Improvisation in science teaching refers to the act of using alterative materials and resources to facilitate instruction whenever there is lack or shortage of some specific first-hand teaching aids. Education is a very important instrument for harnessing the socio-economic and political resources of any Nation. The world has witnessed in the past, two major socio-economic revolutions; the agricultural revolution and the industrial revolution. Presently, there is another socio-economic shift, which is the arrival of computer is being witnessed. This stage of revolution in the society emphasized the production, storage and distribution of information in various forms (Akume, 2017). According to Obiakor (2010); Computer is an electronic drive or machine that is capable of accepting inputs or data through input devices, processes the inputs and generates appropriate results which are displayed through the output devices. Computer is an electronic machine used to record, store, process and recall data or information (Ezeliora, 2014). According to Mbam (2016); computer is a fast and accurate electronic machine, which is capable of accepting data as input, processes data and produces outputs under the influence of a stored program or instruction.

Computer Education can be seen as learning experiences with computer for the aim of achieving the set objectives of computer Education (Nwaibe, 2016).Consequently, Computer Education is aimed at making the learner computer literate. In Enugu North L.G.A, Computer Education is a welcomed development whereby the teaching of computer is being administered to all students regardless of the class they belong to in secondary schools but the problems faced here is that, they don't have all the necessary requirements needed for effective and successful teaching and learning of computer. These requirements includes; Computer Laboratories

and Libraries, Enough computer systems, Electricity supply and instructional materials for Computer Education. According to Igwe (2017), Instructional materials are those materials that are being used by teachers to facilitate teaching and learning processes. Some of these instructional materials are; printed and non- printed materials. Printed materials are any written materials that can aid the teacher in teaching; a typical example is a textbook. Non-printed materials are those materials that the student can see; it includes pictures, posters, chalkboard, and the use of computer. In Computer Education, instructional materials are used in teaching and learning processes to bring novelty to the lessons by making the topics being taught interesting. (Nwaibe, 2014). In Enugu North L.G.A, the instructional materials are not readily available at the reach of the teachers, thereby not making the teachers knowledgeable and resourceful enough to teach. Thus; arise, the need for improvisation.

Basically, the Computer system is made up of two main components namely; hardware components and software components. Then we have the basic computer accessories that enable them function properly. The hardware component refers to the physical part of the computer that can be seen and touched which includes the input and output devices. Examples include; monitor, keyboard, Central Processing Unit (C.P.U), mouse, printer, scanner and diskette (Ezeliora, 2014). The software component is a step-by-step instruction given to a computer in order to perform a specific task. Examples are programs and application packages (Alo, 2010). Computer Accessories are other equipment attached to the computer system to enable it carry out its task effectively (Ogeh, 2017). Examples include: batteries, cables and connectors, cleaning suppliers, keyboard drivers, monitor stand, power cord, uninterrupted power supply, mouse pad. In computer Education, the hardware, software and basic computer accessories can be improvised. (Igwe, 2017). The teacher should look for resources or materials beyond the classroom, for the sole reliance on the inadequate instructional materials of the school will create undesirable class participation. According to Igwe (2017), the following components can be improvised for effective Computer Education in our schools; Monitor: A monitor can be substituted using a carton-squared shaped with the face of the carton covered with nylon material to represent the screen of the monitor, or by using a television.

Keyboard: The keyboard can be substituted using carton, plywood, foam, small squared pieces of carton sheet or cardboard paper to produce improvised keyboards.

Printer: it can be substituted with the use of plywood or carton to produce a look alike with a standard printer.

Charts: this can be improvised by drawing on the chalkboard or on a cardboard sheet with the aid of using the pencil or marker to make the drawing of the components of computer clearer to the students. All the component of computer can be drawn on the white or black board to enhance better understanding of the concepts in Computer Education to the students as well as improve their performance in computer Examinations.

Judging from the above improvisation act, we can conclude that lack of standard equipment is no excuse for not providing a suitable learning environment for Computer Education.

Meaning of Improvisation

Improvisation is an act of using alternative materials locally made by the teacher, students or educational agency in a state of emergency as a substitute and supplement to standard equipment (Ogeh, 2017).

Improvisation has also been defined according to Akusoba (2013) as the "choice of the best instructional materials which enables the teacher to achieve some carefully specific educational objectives". Osuagwu (2011) also defines improvisation as the provision of materials locally made by the teachers, students or an educational agency to represent the original material or equipment. According to Enaiayeyu (2015), "Improvisation in science teaching refers to the act of using alternative materials and resources to facilitate instruction whenever there is lack or shortage of some specific first hand teaching aids". Generally, improvisation could be regarded as the act of using alternative materials or equipment obtainable from the local environment or constructed by the teacher or with the help of local personnel to facilitate instruction. In this content, the term "local materials" refers to those materials easily obtainable from the immediate environment irrespective of where they are produced.

Types of Improvisation

Basically, two forms of improvisation can be identified.

According to Igwe (2011); the first is described as "Role substitution". Role substitution is when the original item generally requires little or no modification before it can be used to fulfill the new functions in an experimental setting, examples are; kerosene stove as a burner, a glass tumbler as a beaker, and such

will reduce the cost for production. Computer monitor and central processing unit of a computer can be substituted using carton and polythene sheets. The second type of improvisation is described as "Role stimulation". In this case, actual construction of the apparatus or equipment is undertaken as an emergency measure either because the needed equipment is too expensive or not really available. An example is the use of local carpenter to construct computer keyboard. Other instructional materials that can be improvised include; imported charts, it can be substituted using cardboard sheet to draw the diagrams of the equipment not available with the aid of pencil or markers (colored). With specific reference to Nigeria, science curriculum emphasizes activity-based learning and student-centered learning.

Raw materials that are available in the locality are explored and modified to produce instructional materials, by so doing we make science teaching more meaningful and lovely to both teachers and students (Omiko, 2010).

Rationale for Improvisation

The need to improvise some materials or substitute for other is as old, as experimental science itself. According to Ogeh (2017); rationales for improvisation include the following:

1. It contributes to the achievement of our education objectives by providing opportunity to develop necessary science skills, attitudinal and practical skills needed to function effectively in the society as professional scientists, technologists or generalists.
2. Improvisation undertaken by the teacher enables him to rethink and research for cheaper, better and fosters methods of making the teaching or learning process easier for the students. This implies that it promotes creativity and self-reliance.
3. To some extent, improvisation fills the vacuum created by lack of shortage of science equipments by providing a frame of reference in which students can key their attention during classroom activities.
4. Improvisation provides a cognitive bridge to lead students from abstraction and its attendant "mental indigestion" to a nodding acquaintance with reality, other writers refers to this as giving students the "bread of

living" experience rather than the stone of abstract theory.

5. Situations where equipment are available but not affordable and/or where technical expertise for saving or repairing equipment is lacking, or spare parts and replacement items are not readily obtainable, clearly score the need for improvisation.

Based on the above rationale, the educational benefits of improvisation of instructional materials for computer education cannot be farfetched. Ideally, no effective science education program can exist without instructional materials. Improvisation provides a framework of references on which pupils key their attention during classroom activities.

Statement of the Problem

During my teaching practice at New Layout Secondary School, in Enugu North L.G.A, I observed that the Junior Secondary classes are highly populated. I taught the J.S.S.1 class that was populated with sixty-five (65) students and, no computer system was provided by the school to undergo the teaching and learning process of computer. Consequently, students' performance in their previous years' exams was very poor. This is in line with Obiakor (2019), when he said that Computer Education cannot be effectively taught and learnt without the use of relevant Instructional materials. During the teaching task, it was tedious and enormous one because I made sure that each of the student experienced the computer by going to classes with my laptop in order to meet with the specific objectives made me to use more than the required time to teach the students.

Purpose of the Study

The purpose of this study is to assess the extent of improvisation of instructional materials for effective and learning of Computer Education in Junior Secondary Schools in Enugu North Local Government Area.

Specific Objectives;

1. To determine the extent of improvisation of hardware components of the computer in teaching and learning of computer studies in Junior Secondary Schools in Enugu North Local Government Area.
2. To ascertain the extent improvisation of software component are the class and how students understand the teaching of the computer in Junior Secondary Schools in Enugu North Local Government Area.

Research Questions

The following research questions are constructed to guide the study;

1. To what extent does improvisation of hardware components of the computer improvised in Junior Secondary Schools in Enugu North Local Government Area?
2. To what extent does improvisation of software components of the computer improvised in Junior Secondary Schools in Enugu North Local Government Area?

Methodology

Research Design

The research design adopted for the study was descriptive survey research design.

The study was carried out in some Junior secondary schools in Enugu North Local Government Area comprising of Private and Public schools.

The population of the study was randomly selected from the secondary school teachers which comprised of thirty six (36) teachers in the nine (9) secondary schools.

The whole thirty six (36) teachers were used for the study. Four (4) teachers each were used in the nine (9) secondary schools visited.

The instrument used was questionnaire, which contains a section for the teachers only.

Three experts validated the instrument; two from educational foundation and one from Measurement and Evaluation department.

Cronbach Alpha was used to calculate the internal consistence of the instrument which gave co-efficient scores of 0.60, 0.64 and 0.71 for questions A, B and C respectively. These scores confirmed that the instrument is reliable.

Data was collected personally by the researcher using questionnaire.

The data collected were analyzed using mean scores. Based on the four (4) point scale, the acceptance level for the mean score was 2.50 and above and anything below 2.50 was rejected. The null hypothesis used for the formulation of the study was 0.05 level of significant.

Result

Research Question 1

To what extent are the hardware components of the computer improvised in Junior Secondary Schools in Enugu North Local Government Area?

Table 1: Mean responses of respondents on the extent teachers improvise hardware components of computer for Computer Education in Junior Secondary Schools Enugu North Local Government Area. N = 36

S/N	ITEM DISCRIPTION	VGE 4	GE 3	LE2	NE1	X	DECISION RULE
1	Monitor is usually improvised	80	36	8	0	3.4	G.E
2	Keyboard is always improvised	32	30	28	4	2.6	G.E
3	Central processing unit is always improvised	16	24	32	8	2.2	L.E
4	Mouse is normally improvised	24	12	8	20	1.8	L.E
5	Printer is always improvised	0	0	8	32	1.1	L.E
6	Scanner is always improvised	0	0	0	36	1.0	L.E
7	Diskette is usually improvised	48	18	4	16	2.4	L.E

From the table 1 above, it is observed from items 1, 2 that hardware components such as monitor and keyboard are being improvised at a great extent but hardware components in items 3, 4, 5, 6, 7 are improvised at a low extent.

Research Question 2

To what extent are the software components of the computer improvised in Junior Secondary schools in Enugu North Local Government Area?

Table 2: Mean responses of respondents on the extent teachers improvise software components of computer for Computer Education in Junior Secondary Schools in Enugu North Local Government Area. N = 36

S/N	ITEM DESCRIPTION	VGE 4	GE 3	LE 2	NE 1	X	DECISION RULE
8	Operating system is always improvised	0	0	0	36	1.0	L.E
9	Program (instruction) is usually improvised	24	6	0	28	1.6	L.E

10	Microsoft word package is always improvised	0	0	16	28	1.2	L.E
11	Spread sheet package is always improvised	0	0	0	36	1.0	L.E
12	Corel draw package is always improvised	0	0	0	36	1.0	L.E

From table 2 above, it is observed from items 8, 9, 10, 11, 12 that software components of computer are being improvised at low extent.

Discussion of Findings

The findings of this study, which had been summarized earlier in the last chapter, are further discussed here.

The findings on the research question 1: show that software components of computer for Computer Education are difficult to improvise due to the low extent at which they are being improvised when there are no readymade ones available for the teachers to use during the teaching and learning process of computer. According to Ezelioria (2014), software is the working part of the computer. Without the software, the physical computer equipments cannot function just like without the programs, the television set cannot function or be of use. Specifically, the software components that are improvised at low extent included both the system software (operating system) and the application software (word processor: micro software package, spreadsheet package and core draw package). The most particulate reason why they are scarcely improvised is because the computer software cannot be seen vividly and touched. Inyiama (2010).

Table 2 for research question 2: shows that the hardware components of computer for computer Education are partially improvised at a great extent and at a low extent. It is seen that, there are much efforts and enthusiasms toward improvisation of hardware components of computer. This is due to the fact that, hardware components of computer are the physical devices of the computer system. Mbam (2016). The hardware components of computer can be seen vividly; hence it creates room for improvisation.

Educational Implication of the Study

The results from the tables 1, and 2, showed that improvisation of the hardware component, software component and basic accessories of the computer system are not being improvised effectively and it is done at a low extent due to the teachers feeling reluctant to improvise and not being knowledgeable about improvisation.

Thus, when there is no instructional material, there will be lack of interest of students towards computer Education, retention and transfer of learning in computer Education will no longer take place. Students will not perform academically well in computer studies as a result of no improvisation of hardware component, software component and basic accessories of the computer.

Conclusion

It is concluded from this findings of the study that, Junior Secondary Schools in Enugu North Local Government Area improvise instructional materials for Computer Education at a low extent and partially at a great extent on the part of the hardware components and the basic computer accessories.

Recommendations

The following recommendations have been made based on the findings of the study:

1. The government of Enugu North Local Government Area should organize seminars, workshops, and conferences on improvisation to make the teachers resourceful enough to improvise the instructional materials needed for Computer Education when the standard equipment is not readily available for effective teaching. The instructional material includes the hardware component, software component and basic accessories of the computer.
2. Teachers should be encouraged to improvise by making resources available. Laboratories, storage areas should be built in schools i.e. the government should make money available for any school that toned want to set up resource center for improvisation in their premises.

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