Problem Affecting The Effective Use of Information And Communication Technology In Teaching And Learning of Mathematics In Selected Public Secondary Schools In Makurdi Metropolis, Benue State, Nigeria

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ABSTRACT

This study reviewed conceptual, theoretical and empirical literature on problem affecting the effective use of information and communication technology in teaching and learning of mathematics in secondary schools. Data was collected using questionnaire and analyzed using inferential statistics such as multiple regression analysis. The hypotheses of the study was tested using the probability values of the estimates. The result of the regression analysis shows that Lack of confidence among teachers during integration and lack of access to resources was negatively related to the Teaching and Learning of Mathematics in the selected Public Secondary Schools in Makurdi Metropolis of Benue State and the relationship is statistically significant (p<0.05). Lack of time for the integration, lack of effective training and facing technical problems while the software is in use was negatively related to Teaching and Learning of Mathematics in the selected Public Secondary Schools in Makurdi Metropolis of Benue State and the relationship are not statistically significant (p>0.05). Lack of personal access to ICT materials during lesson preparation was positively related to Teaching and Learning of Mathematics in the selected Public Secondary Schools in Makurdi Metropolis of Benue State and the relationship is statistically significant (p<0.05). The age of the teachers was positively related to Teaching and Learning of Mathematics in the selected Public Secondary Schools in Makurdi Metropolis of Benue State but the relationship is not statistically significant (p>0.05). It was concluded that in order to bring about the effectiveness of ICT in the teaching and learning of Mathematics in the study area, all the factors that are responsible and identified in this study to be responsible for the poor teaching and learning of Mathematics should be addressed. It was recommended among others that a strong commitment, dedication, and desire of all are must to address these problems and improve the quality and equity in mathematics teaching and learning.

Keywords*: ICT, Teaching, Learning, Mathematics, Secondary Schools, Benue, Nigeria.*

I. INTRODUCTION

Background to the Study

The shift from traditional teaching to use of Information and Communication Technology (ICT) in mathematics classrooms has been a major concern for many countries for the past two decades. Efforts from many developed and developing countries in ICT use in Mathematics have been documented. ICT policies have been developed to suggest that there is commitment to this endeavour. The term ICT stands for information and communications technologies, which describes the combination of computer technology (hardwares and softwares) with telecommunications technology (data, image and voice networks) that enable processing, exchanging and management of data, information and knowledge. These equipments allow users to access, retrieve, store, organize, manipulate and present information by electronic means. There are high expectations for ICTs usage in improving the teaching and learning of school Mathematics internationally by educational researchers.

According to Whitten and Bentley (2018), the use of ICT in Mathematics should emphasise employing ICT to meet the needs of the learners in Mathematics and not teaching technology skills, as the technology is supposed to support Mathematics teaching. However the ICT skills are needed to be able to manipulate the ICT resources available. Thus, a balance should be struck between ICT integration in teaching and learning and ICT literacy. According to Wilson (2010) appropriate uses of ICT tools can enhance Mathematics teaching and learning, support conceptual

development of Mathematics, enables mathematical investigations by learners and educators and influence how Mathematics is taught and learnt. Mathematical games and simulations help learners to apply mathematical ideas to problem situations. A comparative study done by Idris (2005), has revealed that countries such as Malaysia, Australia, Vietnam, India, Indonesia, and Philippines had developed their policies on ICT with the objective to upgrading mathematics teacher competencies to improving the quality of teaching and learning of mathematics.

Statement of Problem

Even with the mentioned benefits of ICTs in Mathematics teaching and learning, there is very little provision to support the acquisition of appropriate curriculum software in Mathematics. Most of the software found in schools are generic or basic and usually come with the hardware when purchased as a package. The relative lack of good quality software and associated courseware is well documented and is being attended to by software producers and educators throughout the world. Several problems seems to be associated with the poor utilization of ICT in the teaching and learning of mathematics. The problems associated with hardware were mainly a lack of it however there is still a major problem with the appropriateness of the hardware used. The use of inappropriate hardware, the lack of useful software and the difficulty in gaining adequate access to computer system were noted as major obstacles to the use of ICT by teachers and students. The choice and distribution of hardware and software are crucial to the success of computer use in schools. In the establishment of the computer's place in the school curriculum, the school needs to carefully consider the establishment of a library of software able to support the use of the ICT in ways established in the school's computing philosophy. Schools with a small computing resource would probably need to buy software likely to have wide use in the school. Many packages are of limited use and can only be used for a small number of functions within a limited age group. Some packages require individual access to be of use to the teacher. All these are the different factors that militates the use of ICT for effective teaching and learning of Mathematics in secondary schools.

Objectives of the Study

The main objectives of the study is to examine problem affecting the effective use of ICT in the teaching and learning of Mathematics in secondary schools. The specific objectives are:
i. Identify the role of ICT in teaching and learning Mathematics.
ii. Examine the problems facing the use of ICT in teaching and learning Mathematics.
iii. Examine the effect of these problems in teaching and learning Mathematics in the study area.
iv. Proffer solutions to the problems of use of ICT in the teaching and learning Mathematics.

Significance of the Study

The findings of this study are expected to give an insight on the effective utilization of information and communication technology in classroom situations in the study area. The research work will further provide useful information for policy makers for further development of the role ICT in teaching and learning of Mathematics in the study area. The result of this study will help consultants, researchers, entrepreneurs to understand the problem of deployment of ICT in the teaching and learning of Mathematics and thus come up with the best solutions to tackling the problem.

II. LITERATURE REVIEW

Conceptual Framework
Information and Communication Technology (ICT)
Information and Communications Technology (ICT) can be regarded as any equipment or interconnected system or sub-system of equipment, which is used for automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission or reception of data or information (Okwelle & Ayonmike, 2014). It is one of the forces that are responsible for changes in nations. It is also one of the great trends of the tail end of the last century. It is changing everything and will continue to change things in the present century. Information Communication Technology (ICT) has revolutionized all sectors of the economy including the educational sector where it has made huge impact and there is need for responsible nations to respond to such innovation. In the recent years, Information and Communications Technology (ICT) has been recognized across the globe as a veritable tool for massive job creation. This is possible through the appropriate use of various technologies embedded in ICT. Boritz (2011), claimed that no nation can grow economically if poverty, unemployment and under unemployment are

still persisted. However employment success, job attractiveness and salary level appear to be greater for individuals that possessed good knowledge and skills in ICT.

Theoretical Framework

This study is anchored on the radical constructivism theory and social constructivism theory.

Radical Constructivism Theory

We realized that students build their mathematical concepts of what they learn through active cognitive and adaptive process (Von Glasersfeld, 1995). According to this perspective, students should be involved in critical reflection on learning mathematics. The teaching and learning processes undergo through assimilation, accommodation, adaptation, and reconstruction. The students learn mathematics through active construction of the meaning of concepts they learn through individual re-organization, re-presentation, and re-construction and social negotiation with peers, elders, and teachers (Belbase 2016). ICT helps to robustly present this platform for students to achieve this. However, there are some major issues of radical constructivism in teaching and learning mathematics that arise from mathematically weak students, application of teacher-centered pedagogy, untrained teachers, the existing curricula, our diverse social and cultural context and general lack of hands-on resources for classroom practice. In our understanding, the theory of radical constructivism focuses on the cognitive process of learning and teaching mathematics which is entirely a mental process. For the success of teaching and learning mathematics in the classroom, students are trained to go through individual and collective mental processes to make sense of concepts they learn and build upon them further concepts.

Social Constructivism Theory

According to this theory, mathematics knowledge is constructed through social interaction. The mediation plays a significant role in learning mathematics. It focuses that child learn from other or society through active interactions and participation in activities in groups or peers. Scaffolding and guidance are necessary for learners. However, there are issues related to linguistic factor, cultural factor, traditional curriculum, conventional assessment system, inappropriate classroom size, passive learners, untrained teacher and disadvantaged learners while adopting social constructivism in teaching and learning mathematics. In our experience, it is a debatable issue because the social domain includes linguistic factors, interpersonal interactions such as peer interaction, and the role of instruction of the teacher. The term 'socialp constructivism' originated in sociology and philosophy that comes from two sources (Restivo, 1988). The first is the social constructivist sociology of mathematics of Restivo, in which he explicitly relates it to mathematics education. The second is the social constructivist theory of learning mathematics which it was used in different context, and it impacts on the development of individuals in some formative ways, with the individuals constructing meanings in response to experiences in social settings.

Nexus between ICT and Teaching and Learning of Mathematics

The literature reveals several ways of conceptualizing the way in which technology can impact on learning. These include: technology as a cognitive tool, the computer as a mental and computational device, the computer as a tool for teaching students, the way that the computer acts in the acquisition of cognitive skills and the use of computers as a tool for enhancing student learning (Schoenfield, 2017). In mathematics teaching and learning, teachers' beliefs about mathematics learning with or without using technology are considered to be important because it could influence teaching and learning, and curriculum reform. For example, Schoenfeld (2017) argued that mathematics teacher's beliefs can be thought of as individual perspectives on how one engages in mathematical tasks and pedagogical practices.

Just as teachers hold beliefs about mathematics that may influence how they teach or structure the learning environment, teachers also hold beliefs about the use of technology. For example, the studies conducted by Li (2007); Kynigos and Argyris (2004) on the nature of beliefs about technology use in the mathematics classroom portrayed some difficulties in the different aspects of learning situations in different ways, and the impact of using computers on their beliefs about teaching mathematics. Li's (2007) study reveals contrasting beliefs between students and teachers. For example, the students commented that they wanted to learn in a more effective, efficient and fun way, which suggests that technology, may help weak students by increasing their confidence levels. On the other hand, no teacher in the study considered the advantage of computer technology as an alternative to the traditional approach of teaching to improve weak students' learning. Kynigos and Argyris (2004) study established the complexity of issues that play a pertinent role in forming beliefs and practices in the aspects of teacher intervention in the classroom, the emerging social roles and the possible influences of the school and the educational system. Their study also revealed

that the type of intended innovation and the use of exploratory software played a major role in the kind of mathematical activity going on in the classroom.

ICTs can be used as a tool in provision of immediate and up to date resources using one or more media to a large number of educators and learners in an easy and cheap way. Changes made to resources are immediately available to educators and students without incurring major distribution costs. New technologies can also help in improving the quality of administrative activities and processes including human resource management, student registration and monitoring of students enrolment and achievement (Mugenda, 2006).

Factors affecting ICT in teaching and learning of Mathematics

Many studies have shown several obstacles that teachers experience in the integration of ICT in their classrooms. Jones (2014) found a number of barriers for the integration of ICT into lessons:
(i) lack of confidence among teachers during integration,
(ii) lack of access to resources,
(iii) lack of time for the integration,
(iv) lack of effective training,
(v) facing technical problems while the software is in use,
(vi) lack of personal access during lesson preparation and
(vii) the age of the teachers.

Snoeyink and Ertmer (2012) have identified these or similar variations as widespread barriers: lack of computers, lack of quality software, lack of time, technical problems, teacher attitudes towards computers, poor funding, lack of teacher confidence, resistance to change, poor administrative support, lack of computer skill, poor fit with curriculum, scheduling difficulties, poor training opportunities, and lack of vision as to how to integrate ICT in instruction. A study in Ghana among pre-service and in-service mathematics teachers explored the influence of computer attitudes, competencies and access of the teachers on their levels of ICT integration using the will, skill and tool concept. The study reported low levels of ICT integration levels as a result of low competencies and access levels of ICT. Furthermore, the study showed fairly high levels of positive computer attitudes and indicated among others to be a necessary condition to prepare teachers for new teaching methods which are flexible and involve appropriate use of ICT.

Empirical Review

Panthi & Belbase (2017) studied the Teaching and learning issues in mathematics in the context of Nepal. The study discussed the major issues of mathematics teaching and learning in Nepal. The issues coming from theories such as social and radical constructivism suggest that teachers are not trained to use such approach in teaching mathematics, and there is a lack of teaching aids and materials and technological tools. The issues related to social aspects are gender issues, language issues, social justice issues, and issues related to the achievement gap. The cultural issues are related to the diversity of language and ethnicity. The issues related to political aspects are equity and access, economic status, pedagogical choice, and professional organizations and unions. The issues related to technology include the technological skills, use of technology, and affordance. Finally, we suggest that all the stakeholders should pay attention to resolving these issues by improving the curriculum, training teachers, resourcing the classroom with locally made and new technological tools.

Chong, Sharaf & Jacob (2005) carried out a Study on the use of ICT in Mathematics Teaching in Malaysia. According to the study, The introduction of laptops in the teaching of mathematics and science in English under the Teaching and Learning of Science and Mathematics has been implemented by the Ministry of Education in the Country. The preliminary observations found that teachers are not fully utilizing these facilities in their teaching. A survey was conducted to study the barriers preventing the integration and adoption of information and communication technology (ICT) in teaching mathematics. Six major barriers were identified: lack of time in the school schedule for projects involving ICT, insufficient teacher training opportunities for ICT projects, inadequate technical support for these projects, lack of knowledge about ways to integrate ICT to enhance the curriculum, difficulty in integrating and using different ICT tools in a single lesson and unavailability of resources at home for the students to access the necessary educational materials. To overcome some of these barriers, this paper proposes an e-portal for teaching mathematics. The e-portal consists of two modules: a resource repository and a lesson planner.

The resource repository is a collection of mathematical tools, a question bank and other resources in digital form that can be used for teaching and learning mathematics. The lesson planner is a user friendly tool that can integrate resources from the repository for lesson planning.

Nwigbo and Madhu (2016) examined the Impact of ICT on the Teaching and Learning Process. According to the study, the impact of ICT for teaching and learning process has become pertinent as it facilitates teaching and learning process, create conducive learning environment, and help learners develop creative thinking and self confidence. This paper focuses on the use of ICT in schools by students and teachers to support the processes of learning and teaching. It describes the ways in which teachers could and/or should facilitate student use of computer systems and how they can progress. The use of information and communication technology in schools is taken very seriously by governments and educational systems around the world as it provides access to a variety of information sources, forms and types; help in the preparation of reports and the organization of events; helps to put down the barriers between information held on several systems, thus creating a borderless communication and information environment by allowing users to access different database, thus having access to millions of information at their finger tips. This paper thus suggests that effective introduction of ICT in the teaching and learning process is an indispensable means of improving it.

Nwoke and Ikwuanusi (2016) examined the Impediments To Integration Of ICT In Teaching And Learning Of Mathematics In Secondary Schools in Imo state. Based on the objective of the study, two research questions and a hypothesis guided the study. A sample of 150 mathematics teachers comprising of 60 males and 90 females were used for the study. Descriptive survey research design was adopted in carrying out the research. A four point type Likert questionnaire instrument with reliability coefficient of 0.77 determined through test-retest method was used in data collection. Generated data was analyzed using mean, standard deviation and t-test statistical tools tested at 0.05 level of significance. The study revealed among other factors, teachers negative attitude, competence, and confidence, poor policy implementation, lack of time ,lack of personnel, etc, hindered the implementation of ICT in teaching and learning of mathematics in secondary schools. Based on the result, it was recommended among other things that, mathematics teachers should be exposed to workshops and seminars to develop positive attitude, build confidence and competence towards ICT in teaching and learning of mathematics in secondary schools in Imo State.

Kamau (2012) examined the constraints in the use of ICT in teaching –learning Processes in secondary schools in Nyandarua south district, Nyandarua county, Kenya. According to the study, Information communication technology (ICT) is a major drive in most world economies. It has been used in almost all the sectors of the economy. In developed countries like United States and Canada it has been incorporated in the education sectors as a tool for administration, management and in curriculum for both teaching and learning processes in most developing countries like Kenya, hence the study was geared towards secondary schools in Nyandarua south District, Nyandarua county, seeking to establish constraints in the use of ICT in teaching and learning processes in the area. It also sought to find out the level of ICT infrastructure establishment enhancing learning and teaching, to find out the extent to which teachers and students are endowed with ICT skills for used in teaching and learning process. The findings of the study will contribute information to the policy makers that could help them to formulate their teacher training programmes involving ICTs for education. The study sampled schools using purposive sampling technique using the criteria of the type of schools (boarding, day, mixed, boys or girls). Descriptive survey design was also used since it is concerned with gathering of facts. From the sampled schools an equal number of students, teachers and the principal were selected. Data was collected using questionnaires, interviews and observations. A pre-setting of research tools was carried out in one of the institutions.

Data collected was analyzed descriptively using chi square and pearsons' product moment correlation. Descriptive statistics was also used. The major findings showed that there were no adequate ICT facilities in most schools making it impossible to incorporate ICT in teaching and learning processes. Where ICT facilities were available there was no proper utilization of the facilities partly because of lack of staff. Most of the student seemed to engage in entertainment whenever they access computers rather than using them for academic benefits. Where facilities were available there was neither educational programmes nor the internet. It was also found out that most teachers lacked basic computer training hence they need to address this problem. Based on this finding the study recommended that the government should assist schools to have electricity, train more staff in ICT and post them in schools, and also facilitate the provision of more computers in all the schools.

III. RESEARCH METHODOLOGY

Research Design
This study used a survey research design. The population of the study is six secondary schools in Makurdi Metropolis purposively chosen from public secondary schools in Makurdi Metropolis. They are made up of junior secondary school students of Special Science Secondary School, Tilley Gyado Secondary School, Padopas Harmony Secondary School, Government Secondary School North Bank, Mount Carmel College and Government College, Makurdi with a purposively selected population of three hundred and forty (340) students and ten (6) Mathematics teachers was chosen to provide answers to the teacher specific questions.

The data for the study was collected using questionnaire, coded and analyzed using computer-based Statistical Package for Social Sciences (SPSS version 20.0 for Microsoft Windows). The validity and the reliability of the instrument was established using the factor analysis.

Validity of Instruments

Table 1: Kaiser-Meyer-Olkin and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.946
Bartlett's Test of Sphericity	Approx. Chi-Square	25.020
	df	28
	Sig.	.027

Source: SPSS 20.0 Result Output, 2020

A pilot test was conducted. The input variable factors used for this study were subjected to exploratory factor analysis to investigate whether the constructs as described in the literature fits the factors derived from the factor analysis. From Table 1, factor analysis indicates that the KMO (Kaiser-Meyer-Olkin) measure for the study's three independent variable items is 0.946 with Barlett's Test of Sphericity (BTS) value to be 28 at a level of significance p=0.026. Our KMO result in this analysis surpasses the threshold value of 0.50 as recommended by Hair, Anderson, Tatham, and Black (1995). Therefore, we are confident that our sample and data are adequate for this study.

Table 2: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.818	22.723	22.723	1.818	22.723	22.723	1.792	22.406	22.406
2	1.662	20.776	43.500	1.662	20.776	43.500	1.669	20.861	43.267
3	1.357	16.967	60.467	1.357	16.967	60.467	1.376	17.200	60.467
4	.974	12.174	72.641						
5	.723	9.035	81.676						
6	.677	8.469	90.145						
7	.462	5.770	95.915						
8	.327	4.085	100.000						

 Extraction Method: Principal Component Analysis.
Source: SPSS 20.0 Result Output, 2020

The Total Variance Explained table shows how the variance is divided among the 8 possible factors. Three factors have Eigenvalues (a measure of explained variance) greater than 1.0, which is a common criterion for a factor to be useful. When the Eigenvalue is less than 1.0 the factor explains less information than a single item would have

explained. Table 2 shows that the Eigenvalues are 1.818, 1.662 & 1.357 are all greater than 1. Component one gave a variance of 22.406, Component 2 gave the variance of 20.861 while component 3 gave a variance of 17.200. The cumulative of the rotated sum of squared loadings section indicates that three components i.e component 1,2 and 3 accounts for 60.467% of the variance of the whole variables of the study. This shows that the variables have strong construct validity.
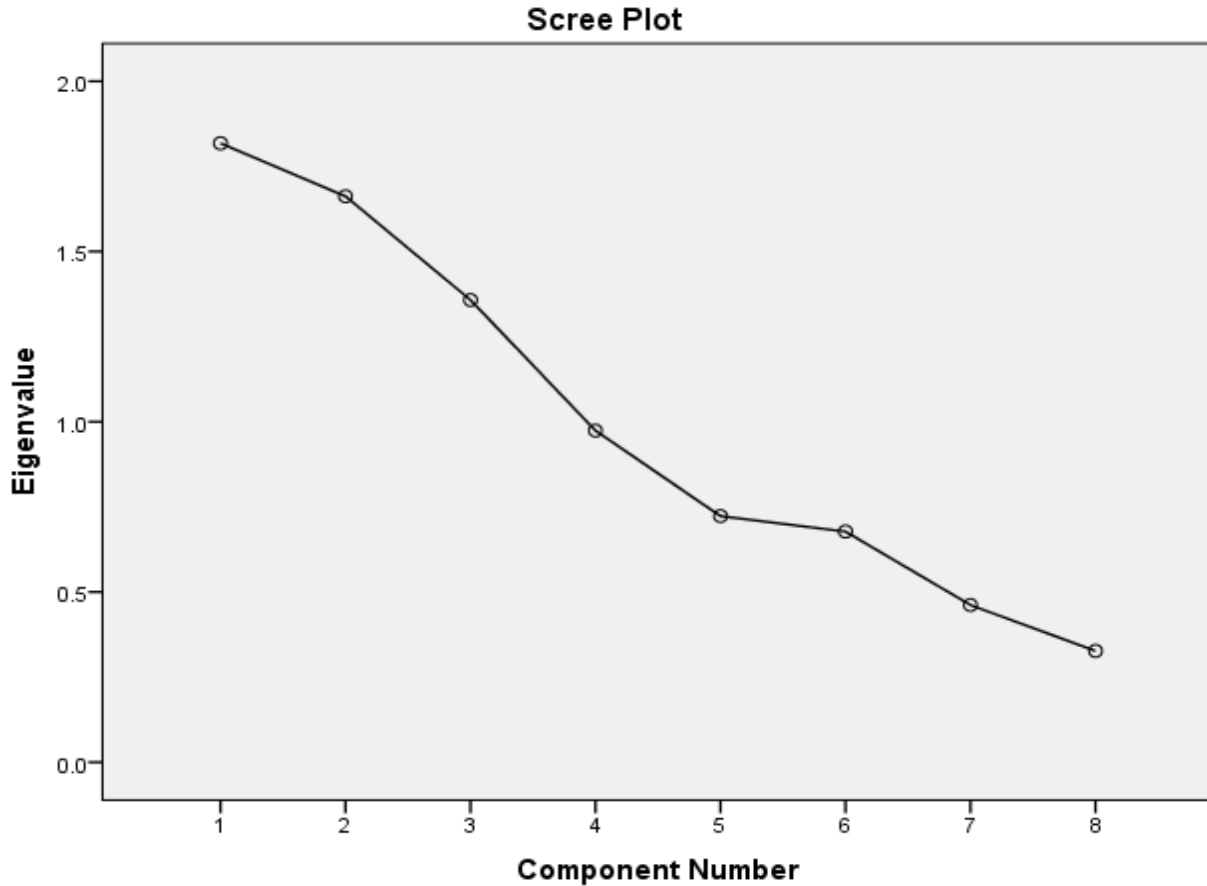
Figure 1: The Scree Plot
Source: SPSS 20.0 Result Output, 2020

The Scree Plot shows the initial Eigenvalues. Note that both the scree plot and the Eigenvalues support the conclusion that these eight variables can be reduced to three components. The scree plot also slopes downward after the third component. The Scree plot shows that after the first three components, differences between the Eigenvalues decline sharply (the curve flattens), and they are less than 1.0. This again supports a three-components solution.

Reliability of Instruments

Table 3: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.880	.968	8

Source: SPSS 20.0 Result Output, 2020

As shown by the individual Cronbach Alpha Coefficient the entire construct above falls within an acceptable range for a reliable research instrument of 0.70. The Cronbach Alpha for the individual variables is 0.880 and is found to be above the limit of acceptable degree of reliability for research instrument.

Table 4: Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
TLM	270.6800	398.727	.462	.273	.594
LCT	267.1600	464.973	.608	.269	.565
LAR	260.4400	487.840	.711	.147	.492
LTI	266.3200	528.893	.483	.394	.357
LET	263.8000	569.333	.389	.319	.209
TEP	263.2800	437.543	.471	.260	.629
LPA	259.2000	392.000	.713	.240	.725
AOT	264.5200	393.343	.683	.230	.533

Source: SPSS 20.0 Result Output, 2020

As shown in Table 4, an item-total correlation test is performed to check if any item in the set of tests is inconsistent with the averaged behaviour of the others, and thus can be discarded. A reliability analysis was carried out on the variables of the study. Cronbach's Alpha showed the questionnaire to reach acceptable reliability, $\alpha = 0.880$. All items appeared to be worthy of retention, resulting in a decrease in the alpha if deleted. There is no exception to this in all the variables of the study as none of the items if deleted will improve the overall Cronbach alpha statistics. As such, none of the variables was removed. A correlation value less than 0.2 or 0.3 indicates that the corresponding item does not correlate very well with the scale overall and, thus, it may be dropped.

Models Specification
The functional relationship between the variables of the study, the model is expressed in implicit and explicit function as shown below:
TLM = f (LCT, LAR, LTI, LET, TEP, LPA, AOT)   -   -   -   -   -   - (1)
Where,
TLM = Teaching and Learning of Mathematics
LCT = lack of confidence among teachers during integration,
LAR = lack of access to resources,
LTI   = lack of time for the integration,
LET = lack of effective training,
TEP = facing technical problems while the software is in use,
LPA = lack of personal access during lesson preparation,
AOT = the age of the teachers.
In explicit form, the functional relationship between the variables of the study can be shown below:
TLM = $b_0 + b_1LCT + b_2LAR+ + b_3LTI + b_4LET + b_5TEP + b_6LAP + b_7AOT + U_t$ -   - (2)
Where,
b_0 = Regression constant
$b_1 - b_7$= coefficients of independent variables.
U_t is the error term
A priori expectations
$b_1<0, b_2 <0, b_3 <0, b_4<0, b_5< 0 \ b_6<0, b_7>0$
The multiple regression analysis was used to assess the nature and degree of relationship between the dependent variable and a set of independent or predictor variables. However, the probability value of the estimates was used to test the seven hypotheses of this study. *Decision rule:* The following decision rules were adopted for accepting or rejecting hypotheses: *If the probability value of b_i [p (b_i) > critical value] we accept the null hypothesis, that is, we accept that the estimate b_i is not statistically significant at the 5% level of significance. If the probability value of b_i [p (b_i) < critical value] we reject the null hypothesis, in other words, that is, we accept that the estimate b_1 is statistically significant at the 5% level of significance*
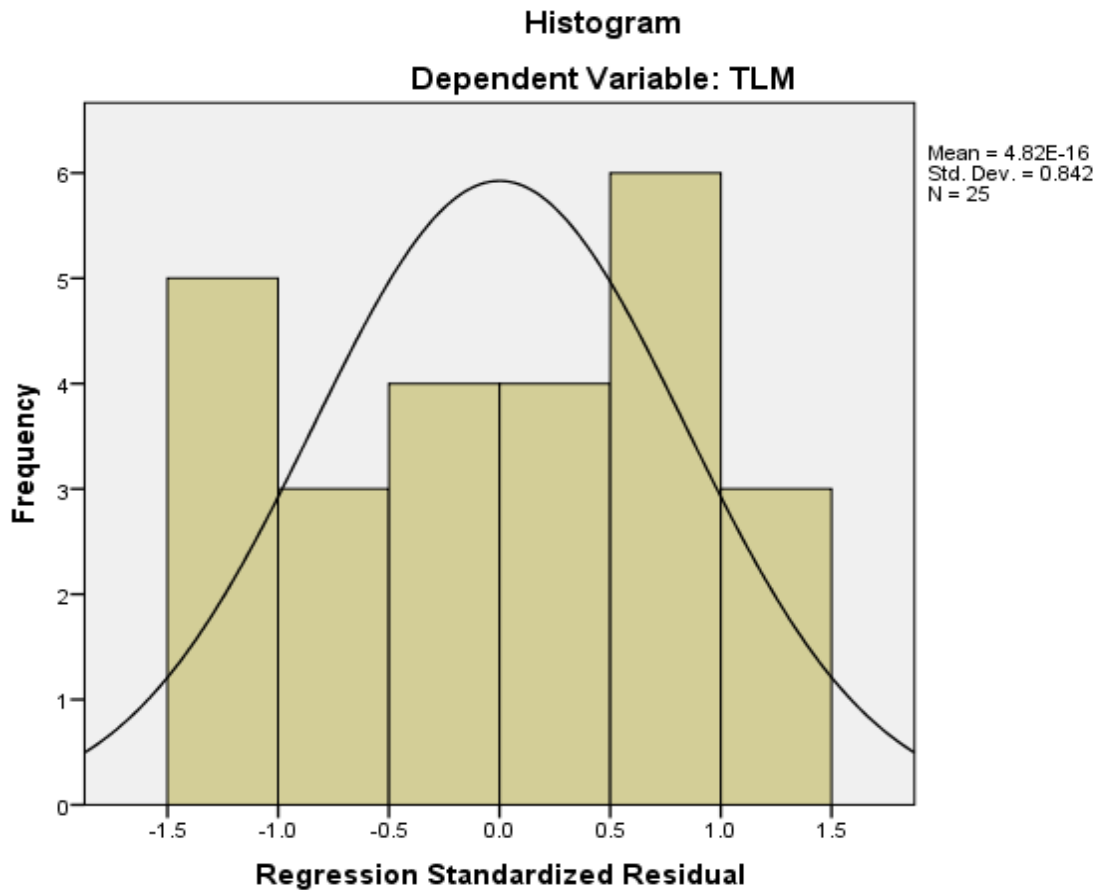
IV. RESULTS AND DISCUSSION

Figure 1: Regression Standardized Residual

Source: SPSS 20.0 Result Output, 2020

Figure 1 above shows a histogram of the residuals with a normal curve superimposed. The residuals look close to normal, implying a normal distribution of data. Here is a plot of the residuals versus predicted dependent variable of Teaching and Learning of Mathematics (TLM). The pattern shown above indicates no problems with the assumption that the residuals are normally distributed at each level of the dependent variable and constant in variance across levels of Y.

Table 5: Statistical Significance of the model

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1108.905	7	158.415	.912	.021[b]
	Residual	2953.335	17	173.726		
	Total	4062.240	24			

a. Dependent Variable: TLM

b. Predictors: (Constant), AOT, LTI, LAR, LPA, TEP, LCT, LET

Source: SPSS 20.0 Result Output, 2020

The result of the statistical significance of the model is presented in Table 5. The F-ratio in the ANOVA table above tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predicts the dependent variable F $(7, 17) = 0.940$, $p = 0.021^b$ (i.e., the regression model is a good fit of the data)

Table 6: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.852ª	.730	.638	13.18050

a. Predictors: (Constant), AOT, LTI, LAR, LPA, TEP, LCT, LET

b. Dependent Variable: TLM

Source: SPSS 20.0 Result Output, 2020

Table 6 shows the model summary. The coefficient of determination R^2 for the study is 0.730 or 73.0%. This indicates that 73.0% of the variations in the model can be explained by the explanatory variables of the model while 27.0% of the variation can be attributed to unexplained variation captured by the stochastic term.

Table 7: Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	58.462	39.021		1.498	.152		
	LCT	-.988	.336	-.276	-3.940	.025	.792	1.263
	LAR	-828	.321	-.222	-2.580	.032	.906	1.104
	LTI	-.365	.375	-.252	-.975	.343	.640	1.562
	LET	-.201	.322	-.155	-.625	.540	.696	1.436
	TEP	-.207	.313	-.158	-.664	.516	.759	1.318
	LPA	.856	.348	.353	2.460	.013	.874	1.145
	AOT	.152	.310	.115	.492	.629	.781	1.281

a. Dependent Variable: TLM

Source: SPSS 20.0 Result Output, 2020

As shown by the result of the multiple regression, lack of confidence among teachers during integration (LCT) and lack of access to resources (LAR) was negatively related to the Teaching and Learning of Mathematics (TLM) in the selected Public Secondary Schools in Makurdi Metropolis of Benue State and the relationship is statistically significant ($p<0.05$) and in line with *a priori expectation*. This means that a unit decreases in confidence among teachers during integration (LCT) and lack of access to resources (LAR) will result to a corresponding decrease in the Teaching and Learning of Mathematics (TLM) in selected Public Secondary Schools in Makurdi Metropolis of Benue State by margin of 27.6 % and 22.2% respectively. Using the probability value of the estimates, p (b_1 & b_2) < critical value at 0.05 confidence level. Thus, we reject the null hypothesis. That is, we accept that the estimates b_1 & b_2 are statistically significant at the 5% level of significance. This implies that lack of confidence among teachers during integration lack of access to resources has a significant effect on Teaching and Learning of Mathematics (TLM) in the selected Public Secondary Schools in Makurdi Metropolis of Benue State. This findings is in tandem with that of Chong, Sharaf & Jacob (2005) carried out a Study on the use of ICT in Mathematics Teaching.

Lack of time for the integration (LTI), lack of effective training (LET) and facing technical problems while the software is in use (TEP) was negatively related to Teaching and Learning of Mathematics (TLM) in the selected Public Secondary Schools in Makurdi Metropolis of Benue State and the relationship are not statistically significant ($p>0.05$) but in line with *a priori* expectation. This means that a unit increases in Lack of time for the integration

(LTI), lack of effective training (LET) and facing technical problems while the software is in use (TEP) will result to a corresponding decrease in the Teaching and Learning of Mathematics (TLM) in selected Public Secondary Schools in Makurdi Metropolis of Benue State by margin of 25.2%,15.5% and 15.8% respectively. Using the probability value of the estimates, p (b_3, b_4 & b_5) > critical value at 0.05 confidence level. Thus, we accept the null hypotheses. That is, we accept that the estimates b_3, b_4 & b_5 are statistically significant at the 5% level of significance. This implies that Lack of time for the integration (LTI), lack of effective training (LET) and facing technical problems while the software is in use (TEP) have no significant effect on Teaching and Learning of Mathematics (TLM) in the selected Public Secondary Schools in Makurdi Metropolis of Benue State. These findings are in line with the findings of Panthi & Belbase (2017) studied the Teaching and learning issues in mathematics in the context of Nepal.

Lack of personal access during lesson preparation (LPA) was positively related to Teaching and Learning of Mathematics (TLM) in the selected Public Secondary Schools in Makurdi Metropolis of Benue State and the relationship is statistically significant (*p<0.05)* and but not in line with *a priori* expectation. This means that a unit increases in Lack of personal access during lesson preparation (LPA) will result to a corresponding decrease in the Teaching and Learning of Mathematics (TLM) in selected Public Secondary Schools in Makurdi Metropolis of Benue State by margin of 35.3%. Using the probability value of the estimates, p (b_6) < critical value at 0.05 confidence level. Thus, we reject the null hypothesis. That is, we accept that the estimates b_6 is statistically significant at the 5% level of significance. This implies that Lack of personal access during lesson preparation has a significant effect on Teaching and Learning of Mathematics (TLM) in the selected Public Secondary Schools in Makurdi Metropolis of Benue State. The age of the teachers (AOT) was positively related to Teaching and Learning of Mathematics (TLM) in the selected Public Secondary Schools in Makurdi Metropolis of Benue State but the relationship is not statistically significant (*p>0.05)* but in line with *a priori* expectation. This means that a unit increases in The age of the teachers (AOT) will result to a corresponding increase in the Teaching and Learning of Mathematics (TLM) in selected Public Secondary Schools in Makurdi Metropolis of Benue State by margin of 11.5%. Using the probability value of the estimates, p (b_7) > critical value at 0.05 confidence level. Thus, we accept the null hypothesis. That is, we accept that the estimates b_7 is not statistically significant at the 5% level of significance. This implies that the age of the teachers has no significant effect on Teaching and Learning of Mathematics (TLM) in the selected Public Secondary Schools in Makurdi Metropolis of Benue State. The findings of this study is in line with those of Nwoke and Ikwuanusi (2016) who examined the Impediments To Integration Of ICT In Teaching And Learning Of Mathematics In Secondary Schools in Imo state

V. CONCLUSION AND RECOMMENDATIONS

In order to bring about the effectiveness of ICT in the teaching and learning of Mathematics in the study area, all the factors that are responsible and identified in this study to be responsible for the poor teaching and learning of Mathematics should be addressed. The use of ICT in teaching mathematics can make the teaching process more effective as well as enhance the students' capabilities in understanding basic concepts. Nevertheless, implementing its use in teaching is not without problems as numerous barriers may arise. The types of barriers have been identified in the study. We highlighted different issues of teaching and learning mathematics and the idea of resolving them in a practical way. We have suggested different measure in addressing these matters. However, we might not be dealing with these issues wholly, or we may not be able to achieve the goal right away because these are the emergent issues depending on the emergent situations. In our opinion, the depth studies in each of these issues may give more feasible ideas to solve them. We would like to suggest to the government, academic institutions and different stakeholders such as curriculum planners, policy makers, experts, teachers, students and parents to be serious and aware of these issues and their consequence. It needs a collective effort of all to resolve them. A strong commitment, dedication, and desire of all are must to address these problems and improve the quality and equity in mathematics teaching and learning.

Information and Communication Technology (ICT), impacts on educational standards only when there is fertile background for making efficient use of it. Further research has shown that the effectiveness in the use of ICT to support learning is a function of the curriculum content and the instructional strategy such that when appropriate content is addressed using appropriate strategies students and teachers will benefit. ICT can enhance teaching by enhancing what is already practiced or introducing news and better ways of learning.

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