MANAGEMENT AND UTILIZATION OF ICT RESOURCES FOR EFFECTIVE TEACHING AND LEARNING IN VOCATIONAL SCHOOLS IN BAYELSA STATE

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Abstract

The paper focused on management and utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State. There are three research questions and three hypotheses formulated to guide the study. Design of the study was descriptive survey. Descriptive survey was employed for the study. The population of the study comprised 346 teachers (227 male and 119 female) in the vocational schools in Bayelsa State while 237 teachers (145 male and 92 female) were drawn as sample for the study using random sampling technique. The instrument used for data collection was a questionnaire which was face and content validated by three experts from the Department of Educational Management, University of Port Harcourt, Rivers State. The reliability of the questionnaire was determined using Cronbach alpha with an index of 0.92. Out of the 346 copies of questionnaire administered, 318 copies representing 91.9% were retrieved. The research questions raised were answered using mean and standard deviation while the hypotheses were tested using z-test statistics at 0.05 level of significance. The findings of the study that teachers accessed and utilized ICT resources for teaching and learning but the there was no adequate maintenance of these resources. It was recommended in line with the findings of the study that ICT resources in the school should be subjected to routine maintenance while obsolete devices should be replaced immediately for effective teaching and learning in these schools.

Keywords: Management, Utilization, ICT Resources, Teaching and Learning, Bayelsa State

Introduction

The world today is regarded as a global village because technology has made it possible for people across different location and system to communicate with one another within the shortest possible period of time as though they are merely centimetres away. This is why every sector of the global economy have embraced the use of technology for the attainment of efficiency and effectiveness not only in the area of service provision but also for the production of goods. The education sector is not left out of this advancement and teachers who are at the center of teaching activities in the school have also embraced the use of technology for effectiveness in teaching and learning activities so that the goals of education can be achieved. Information and Communication Technology (ICT) according to Srivastava (2016:40) "encompasses the range of hardware (desktop and portable computers, projection technology, calculators, data logging and digital recording equipment), software applications (generic software, multimedia resources) and information systems (Intranet, Internet) available in the teaching Institutes". ICT is essential to the attainment of the objectives of any organization including the school system.

The acceptance of ICT for teaching and learning cuts across all disciplines (Shamim & Raihan, 2016) and this is because the use of technology by teachers has the potential of making teaching and learning easy, fast and more goal- oriented irrespective of the area of discipline and level of education. Teachers who engage ICT devices in carrying out their teaching and learning activities tend to be more functional and productive than those who do not and as such any teacher who is not familiar or open to the use of ICT in the school may be left out of the scheme of events in the school irrespective of other qualities possessed by the teacher. There is advancement in ICT and this is shaping the way work is done across all levels significantly (Ogbomo, 2011) and no teacher can afford not to be well equipped on how to manage these devices.

The way ICT is managed in any school goes a long way to determine how well teachers will engage these devices in teaching and learning activities. Several studies have been carried out by educational researchers such as Palagolla and Wickramarachchi (n.d.) with its findings showing that the use of ICT cuts across different areas irrespective of age, location, tribe etc. Therefore, every teachers needs to be given a fair ground to engage available ICT devices in the discharge of their duties for the purpose of delivering quality educational outcomes.

In the management of ICT in schools, one areas that teachers have often found disturbing is the level of access to these devices which goes a long way to determine if teaching and learning activities will actually take place or not. Olatokun as well as Warschauer as cited in Uyouko, Wong and Ayub (2014:13) noted that "access can be defined in terms of physical access to an ICT device. The simplest, though most limited, way of thinking about ICT access is in terms

of ownership of a device". This means that a teachers access to ICT devices such as the internet, computers, printers etc. is measured by the ease at which teachers can get any or all of these devices when teaching and learning activities are about to take place. If teachers must deliver quality educational outcomes, they should possess personal ICT devices for the discharge of their duties and in the worse case; teachers should have access to these devices when needed.

The amount of ICT devices that a teacher has access to will go a long way to improve the quality of teaching and learning activities that can take place in the school. Therefore, in the management of ICT devices in the school, teachers' access to these devices must be given adequate attention. Similarly, effort must be made by the teacher as well as school administrators to ensure that these devices are constantly kept in good working condition through proper maintenance. Such practice is important for sustainable teaching and learning in the school no matter the level of education. Kamilaris, Ngan, Pantazaras, Kalluri, Kondepudi and Wai (n.d.) mentioned some of the practices common to the maintenance of ICT to include taking inventory, following protocols, switching off unused devices among others. All of these are important in addition to replacing damaged or obsolete devices so as to ensure uninterrupted teaching and learning activities.

Similarly, teachers need to ensure that these devices are put to regular use to avoid damage and they must also be used for the right purpose. The utilization of available ICT devices by the teacher is essential for optimal performance both from the teacher as well as the students. Alberta Education as cited in Tella (2011:328) stated that "how to use technologies include using these technologies to present and deliver content, communicate effectively with others, find and secure information, research, word process, manage information and keep records". The utilization of these devices contributes to their longevity as well as promotes the sustainability of the quality of teaching and learning activities in the school.

Several studies have been carried out by researchers to determine if teachers really have access to ICT devices in their schools for teaching and learning activities. Study conducted by Aramide, Olaojo and Adekanye (2013) showed a low level access to laboratory based ICT devices. The study also showed a moderate positive relationship of r=0.438 and 0.374 between access and use as well as location and accessibility of ICT. This imply that access to ICT devices in schools is still at a very low level and this can have adverse implication on performance of teachers and students. In a related dimension, Chirwa (2018) reported in his study that 83.2% of respondents used the internet for academic purposes, 61.3% for searching news and 50% for communication while 52% used it for games and entertainments and 43% used it for social network. However, the study showed that the frequency of using internet for academic purposes is not convincing as only 12.5% of the respondents used it daily. All of these points to

the fact that access to ICT devices is still low and teachers no doubt bear the most consequence as this will affect the quality of their service delivery.

On the other hand, Ayeni and Ogunbameru (2013) pointed out from the findings of their study that poor maintenance is one of the constraints limiting the use of ICT facilities in the study area and a further study by Ele, Ajah, Bukie and Esin (2018) identified the need for ICT users in third world countries to improve on their ICT maintenance culture. It is therefore suggestive that maintenance of ICT devices in schools especially in Nigerian schools which is a third world country is still below expectation posing a threat to the ability of teachers to engage their students in meaningful teaching and learning in a digitally structured school environment.

It was also reported in the study by Onu and Ezhim (2019) that few available devices were not utilized because of non-functionality in most secondary schools in the study area while majority of the tools accessed were either slightly utilized or not utilized. In a related study, Siddiquah and Salim (2017) showed that ICT such as the computer and internet were basically used for teaching and recreational activities but some students use these ICT devices for other purposes aside academics. Based on this premise, it is important for teachers to both make rules and also be guided by school ICT policies in the use of ICT so as to streamline how these devices are used for meaningful teaching and learning to take place in the school and also contribute to the attainment of educational goals and objectives through the efficiency and effectiveness of the teacher in the use of these devices.

Statement of the Problem

Teaching and learning activities in vocational schools in Bayelsa State over time have not differed from what is obtainable in other regular schools. These vocational schools are supposed to train students to be vocationally inclined and also equipped on how to use emerging technology in their learning activities. However, some of these schools are not different from the regular schools as teachers appear to lack the required ICT tools needed for effective teaching and learning. This tends to pose a threat to the goals and objectives of vocational education in Bayelsa State. It is based on this premise that the study intends to investigate the management and utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State.

Purpose of the Study

The purpose of the study was management and utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State. Specifically, the objectives of the study were to:

1. determine the extent of access to ICT resources for effective teaching and learning in vocational schools in Bayelsa State

2. ascertain the extent of maintenance of ICT resources for effective teaching and learning in vocational schools in Bayelsa State
3. examine the extent of utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State

Research Questions

The following research questions were answered in the study:

1. What is the extent of access to ICT resources for effective teaching and learning in vocational schools in Bayelsa State?
2. What is the extent of maintenance of ICT resources for effective teaching and learning in vocational schools in Bayelsa State?
3. What is the extent of utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

1. There is no significant difference between the mean ratings of male and female teachers on the extent of access to ICT resources for effective teaching and learning in vocational schools in Bayelsa State
2. There is no significant difference between the mean ratings of male and female teachers on the extent of maintenance of ICT resources for effective teaching and learning in vocational schools in Bayelsa State
3. There is no significant difference between the mean ratings of male and female teachers on the extent of utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State

Methodology

Descriptive survey was employed for the study. Population of the study consisted of all the 346 teachers (227 males and 119 females) in the vocational schools in Bayelsa State out of which 237 (145 males and 92 females) were drawn as sample for the study using the Taro Yamane minimum sample size determination technique which is a formula used to estimate the sample that should be selected from any given population. The sampling technique used for the study was random sampling technique. Instrument used for data collection was a questionnaire tagged “Management and Utilization of ICT Resources for Effective Teaching and Learning Questionnaire” (MUICTRETLQ). The questionnaire had two sections which are Section A; used to collect demographic data on the respondents Section B which contained the 15 questionnaire items. The questions were responded to on a four point modified Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with weighted scores of 4, 3, 2 and 1. The questionnaire was face and content validated by three

experts from the Department of Educational Management, University of Port Harcourt, Rivers State. The reliability of the questionnaire was determined using Cronbach alpha with an average index of 0.92. Out of the 346 copies of questionnaire administered, 318 copies representing 91.9% were retrieved. Research questions raised were answered using mean and standard deviation while the hypotheses were tested using z-test statistics at 0.05 level of significance.

Results

Answer to Research Questions

Research Question One: What is the extent of access to ICT resources for effective teaching and learning in vocational schools in Bayelsa State?

Table 1: Mean and standard deviation on access to ICT resources for effective teaching and learning in vocational schools in Bayelsa State

S/No	Items	**Male Teachers n=206**		**Female Teachers n=112**		**Mean Set**	
		Mean X_1	**SD**	**Mean X_2**	**SD**	$X \square X$	**Decision**
1	There is an uninterrupted access to computers for school activities	2.77	0.93	2.99	0.71	2.88	High Extent
2	Smart boards are provided for teaching and learning	2.84	0.88	2.92	0.78	2.88	High Extent
3	There is provision for projectors for instructional delivery	2.99	0.81	2.97	0.73	2.98	High Extent
4	Audio devices are available for teacher-students communication	2.47	1.01	2.72	0.96	2.60	High Extent
5	Internet is adequately provided for discharge of teaching functions	2.24	1.08	2.85	0.82	2.55	High Extent
	Grand Mean and Standard Deviation	**2.66**	**0.94**	**2.89**	**0.80**	**2.78**	**High Extent**

Table 1 showed the responses of the male and female teachers sampled for the study to questionnaire items 1, 2, 3, 4 and 5. All of the items which were above 2.50 which was the criterion mean score used for decision making implied that the

respondents agreed to a high extent to the corresponding questionnaire items while the items responded to with mean score of 2.50 implied that the respondents responded to a low extent to the item raised. However, the grand mean score of
2.66 from the male teachers and 2.89 from the female teachers implied that the female teachers agreed to a higher extent than the male teachers on the extent of access to ICT resources for effective teaching and learning in vocational schools in Bayelsa State. Similarly, the average mean score of 2.78 indicated that averagely the teachers both had a high extent of access to ICT resources for effective teaching and learning in vocational schools in Bayelsa State.

Research Question Two: What is the extent of maintenance of ICT resources for effective teaching and learning in vocational schools in Bayelsa State?

Table 2: Mean and standard deviation on maintenance of ICT resources for effective teaching and learning in vocational schools in Bayelsa State

S/No	Items	**Male Teachers n=206**		**Female Teachers n=112**		**Mean Set**	
		Mean X_1	**SD**	**Mean X_2**	**SD**	X X	**Decision**
6	There is provision of back-up as well as support devices	2.49	1.02	2.42	1.03	2.46	Low Extent
7	Obsoletes devices are changed	2.38	1.06	2.24	1.05	2.31	Low Extent
8	Routine maintenance is carried out to prevent damages	2.42	1.04	2.07	1.06	2.26	Low Extent
9	Damaged ICT devices are repaired immediately	2.15	1.07	2.45	0.91	2.30	Low Extent
10	ICT facilities are kept in operational status	2.88	0.85	2.58	0.79	2.73	High Extent
	Grand Mean and Standard Deviation	**2.46**	**1.01**	**2.35**	**0.97**	**2.41**	**Low Extent**

Table 6 revealed the responses of the male and female teachers sampled for the study to items 6, 7, 8, 9 and 10 with items above the criterion mean score of 2.50 indicating a high extent to the questionnaire items while items below the criterion mean score implied that the respondents of the study agreed that there was a low extent to the questionnaire items raised. Furthermore, the grand mean score of
2.46 from the male teachers and 2.35 from the female teachers indicated a low extent of maintenance of ICT resources among the respondents. However, the male teachers with mean score of 2.46 did better in the area of ICT maintenance than the female teachers with grand mean score of 2.35. Summarily, the average mean score of 2.41 indicated that there was a low extent of maintenance of ICT resources for effective teaching and learning in vocational schools in Bayelsa State.

Research Question Three: What is the extent of utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State?

Table 3: Mean and standard deviation on utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State

S/No	Items	**Female Teachers n=112**				**Mean Set**	
		Male Teachers n=206					
		Mean X_1	**SD**	**Mean X_2**	**SD**	X X	**Decision**
11	ICT devices are frequently used for lesson preparation	2.61	0.97	2.90	0.71	2.76	High Extent
12	Teachers plan their classroom activities using available ICT tools	2.91	0.88	2.90	0.71	2.91	High Extent
13	Teachers surf the internet using technological devices for subject mastery	2.86	0.90	2.84	0.83	2.85	High Extent
				2.99	0.86	2.93	
14	Teachers on a regular basis send and received information using ICT devices			0.77		2.96	High Extent
15	Presentations of lessons is regularly carried out by the teachers using ICT tools						
	Grand Mean and Standard			2.95	0.88	2.95	
				0.76		2.95	High Extent
				2.86	**0.90**	**2.90**	
				0.76		**2.88**	**High Extent**

Deviation

Table 3 indicated that the male and female teachers sampled for the study responded to items 11, 12, 13, 14 and 15 with mean scores that were above the criterion mean score of 2.50 and this implied a high extent to the questionnaire items raised. The grand mean score of 2.86 and 2.90 also revealed that there was a high extent of utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State. The average mean score of 2.88 also summarized that the male teachers and female teachers both agreed to a high extent of utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State.

Test of Hypotheses

Hypothesis One: There is no significant difference between the mean ratings of male and female teachers on the extent of access to ICT resources for effective teaching and learning in vocational schools in Bayelsa State

Table 4: z-test analysis of no significant difference between the mean ratings of male and female teachers on the extent of access to ICT resources for effective teaching and learning in vocational schools in Bayelsa State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Teacher	206	2.66	0.94	316	2.30	1.96	0.05	Rejected
Female Teacher	112	2.89	0.80					

In table 4, it was revealed that at 0.05 level of significance and degree of freedom of 316, the value of z-crit. was 1.96 while the value of z-cal. was 2.30. Therefore, since the value of z-cal. of 2.30 was above the value of z-crit. of 1.96, the null hypothesis was rejected implying that there was a significant difference between the mean ratings of male and female teachers on the extent of access to ICT resources for effective teaching and learning in vocational schools in Bayelsa State.

Hypothesis Two: There is no significant difference between the mean ratings of male and female teachers on the extent of maintenance of ICT resources for effective teaching and learning in vocational schools in Bayelsa State

Table 5: z-test analysis of no significant difference between the mean ratings of male and female teachers on the extent of maintenance of ICT resources for effective teaching and learning in vocational schools in Bayelsa State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Teacher	206	2.46	1.01	316	0.96	1.96	0.05	Not Rejected
Female Teacher	112	2.35	0.97					

Table 5 showed that at 0.05 level of significance and degree of freedom of 316, the value of z-crit. was 1.96 while the value of z-cal. was 0.96. Since the value of z-cal. of 0.96 was less than the value of z-crit. of 1.96, the null hypothesis was not rejected indicating that there was no significant difference between the mean ratings of male and female teachers on the extent of maintenance of ICT resources for effective teaching and learning in vocational schools in Bayelsa State.

Hypothesis Three: There is no significant difference between the mean ratings of male and female teachers on the extent of utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State

Table 6: z-test analysis of no significant difference between the mean ratings of male and female teachers on the extent of utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Teacher	206	2.86	0.90	316	0.44	1.96	0.05	Not Rejected
Female Teacher	112	2.90	0.70					

In table 6, it was revealed that at 0.05 level of significance and degree of freedom of 316, the value of z-crit. was 1.96 while the value of z-cal. was 0.44. Furthermore, since the value of z-cal. of 0.44 was less than the value of z-crit. of 1.96, the null hypothesis was not rejected meaning that there was no significant difference between the mean ratings of male and female teachers on the extent of utilization of ICT resources for effective teaching and learning in vocational schools in Bayelsa State.

Discussion of Findings

Access to ICT Resources for Effective Teaching and Learning in Vocational Schools in Bayelsa State

It was revealed from the responses of the teachers that there was a high extent of access to ICT resources for teaching and learning in vocational schools in Beyalsa State. This finding was at variance with the outcome of a related study conducted by Aramide, Olaojo and Adekanye (2013) which reported a low level of access to some ICT resources in the school. Responses from the male and female teachers equally supported the assertion that these teachers usually access ICT resources for teaching and learning. The difference in access to ICT resources therefore appear to vary from school to school. Teachers and school administrators therefore need to collaborate to ensure that every teacher can easily access any ICT resources that will be required for effective teaching and learning in these vocational schools.

There are different ICT resources that teachers require for the discharge of their teaching duties but the teachers sampled for the study revealed in their responses that they had access to computers, smart boards and projectors for teaching and learning. This implies that most of the teachers in these vocational schools can access some of these ICT resources for the discharge of their duties. This suggests that these teachers can easily access some of these resources when they need them. Such ICT resources are essential as they make the teachers tasks simplified especially when the teacher has to attend to a large number of students or deal with difficult teaching tasks.

Furthermore, the male teachers revealed that there was a low extent of access to audio devices and the internet while the female teachers agreed otherwise. Chirwa (2018) conducted a study which equally showed that although some of these resources are available, they are not accessed and used in some cases. This finding suggests that there are some ICT resources that may not be readily accessible to the teachers and as such there may be need for the intervention of the government or school administrator. There is no doubt that in some cases, teachers are compelled to use their personal ICT resources for teaching and learning and this may account for the difference in the extent to which these resources are accessible. However, effort need to be made by the government and the school management to ensure that teachers have uninterrupted access to ICT resources during teaching and learning as this is essential to the quality of service delivered by these teachers.

Maintenance of ICT Resources for Effective Teaching and Learning in Vocational Schools in Bayelsa State

The maintenance of ICT resources in schools is essential for sustainable teaching and learning in vocational schools but the responses of the teachers revealed that there was a low extent to which ICT resources are maintained for teaching and

learning. This finding agrees with the outcome of a related study by Ayeni and Ogunbameru (2013) which showed that poor maintenance is one of the impediments to the use of ICT in the study area. In fact, there was an agreement between the respondents that in the maintenance of ICT resources, there was no provision for back-up to protect educational information. Similarly, it was revealed that there was a low extent to which obsolete ICT resources were replaced as a maintenance strategy. This means that some of these vocational schools still use obsolete ICT resources since they are not frequently changed as a maintenance strategy.

The teachers equally agreed that there was a low extent to which routine maintenance is carried out on available ICT resources and damaged ICT resources were not repaired or replaced as at when due. This is not surprising as Ele, Ajah, Bukie and Esin (2018) also found out in their study that general maintenance culture in schools in third world countries is poor even in the handling of ICT resources. These findings suggest that there is a poor maintenance culture in the handling of ICT resources which no doubt can affect the quality of teaching and learning if not adequately handled. The teachers sampled for the study only admitted that available ICT resources are kept operational to a high extent as a maintenance strategy to avoid collapse. It is therefore important for the authorities and government to put in measures for the regular maintenance of ICT resources for the purpose of effective teaching and learning. This is important in vocational schools where the acquisition of technical skills is important as part of the objectives of teaching and learning in these schools.

Utilization of ICT Resources for Effective Teaching and Learning in Vocational Schools in Bayelsa State

It was revealed in the findings of the study that there was a high extent to which teachers utilized ICT resources for teaching and learning in vocational schools in Bayelsa State. This finding aligns with the outcome of a similar study carried out by Onu and Ezhim (2019) which reported that teachers in the study area ensure that they utilized available ICT resources in the school except for those that are not functional. The male and female teachers agreed that they utilized these ICT resources for the preparation of their lessons. In today's technological world, teachers need to be familiar with the use of ICT tools for everything that has to do with the preparation of lessons in order to achieve quality educational objectives. Similarly, the respondents agreed that they use ICT resources available at their disposal for planning activities. This is important for the scheduling of the tasks assigned to the teacher in and outside the classroom as this will contribute to the administration of the school. There was also an agreement among the respondents that the extent to which they use ICT resources to surf the internet was very high. Siddiquah and Salim (2017) equally observed in their study that the internet was frequently used although some times for non-academic purpose such as recreation.

This suggests that these teachers have the required resources whether personal or official to source for information from the internet for the discharge of their duties. There was also a unanimous agreement between the respondents that they make use of their ICT resources for sending and receiving information as well as for presentations. There is no doubt that from the findings of the study, it is clear that if these teachers have access to more ICT resources in these vocational schools, they will put them to more use for the goals and objectives of the school to be achieved. The government as well as administrators in these vocational schools have a lot to do in ensuring that the right quality and quantity of ICT resources are provided for these teachers as this will greatly contribute to the quality of teaching and learning carried out in these schools for the goals and objectives of vocational education to be achieved Bayelsa State.

Conclusion

The study concludes as follows:

ICT resources in vocational schools in Beyalsa State are accessed and utilized by teachers but not adequately maintained for effective teaching and learning. Furthermore, there was no difference in the opinion of the teachers on the management and utilization of ICT resources for effective teaching and learning in these schools.

Recommendations

In line with the findings of the study, the following recommendations were made:

1. Teachers in vocational schools should be assisted by the government to own personal ICT resources which can be used regularly for teaching and learning for the goals and objectives of vocational education to be achieved in Bayelsa State.
2. School administrators should ensure that regular maintenance exercise is carried out on all ICT resources available in the school at specific intervals so as to keep them in good working condition for the effective teaching and learning.
3. ICT policies should be formulated in these schools so as to guide the ownership, utilization and care for ICT resources available in the school by teachers, students and other school personnel who make use of these devices in the school for sustainable teaching and learning.
4. Teachers in vocational schools in Bayelsa State should be trained on regular basis on how to use some of the ICT resources available in the school. Seminars and conferences should be organized to also educate teachers on the importance of utilizing available ICT resources for teaching and learning as this will help improve on the attainment of the goals and objectives of vocational education in Bayelsa State.

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