

EFFECTIVENESS OF MULTIMEDIA TECHNOLOGY RESOURCES IN INSTRUCTIONAL DELIVERY IN VOCATIONAL SUBJECTS IN EKITI STATE SECONDARY SCHOOL

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Abstract

The paper sought to examine effectiveness of multimedia technology resources in instructional delivery in Ekiti State Secondary School. It also sought to find out if the use of multimedia technology resources utilisation was gender sensitive. A descriptive research design of the survey type was adopted for the study. The population comprised all the teachers in Ekiti State secondary Schools. Simple random sampling technique was used to draw out a sample of 300 respondents from the population. A questionnaire titled 'Effectiveness of multimedia technology resources for instructional delivery' (EMTRID) was used to elicit information from the respondents for data collection. Expert judgment was used to ascertain the face and content validity. Data collected were analysed using descriptive statistics like frequency counts, simple percentage, mean and standard deviation while the hypotheses were tested using t-test. The result revealed that multimedia technology resources were not adequately available hence they were not adequately and effectively utilized by teachers in instructional delivery. The study also revealed that multimedia technology resources utilization enhances students' academic performance and teachers' effectiveness in instructional delivery. It was also discovered that the use of multimedia technology resources was not gender sensitive. Based on the findings, it was recommended among others that that multimedia technology resources should be adequately provided for teachers' use in instructional delivery and the teachers on the other hand should be adequately trained through organized workshops and seminars in the effective use multimedia technology resources in instructional delivery.

Keywords: Instructional delivery, Multimedia technology resources, Secondary Schools

INTRODUCTION

The growth of global economy and information-based society is said to have tremendous effect on educational system around the world. Hence increasing advocacy for the need to use multimedia technology resources to instruct students on knowledge and skills acquisition required to function in contemporary labour market. Globally, educational system is under increasing pressure to employ technology to impart knowledge and skills needed in the 21st century classroom instruction. Therefore, the challenge confronting our educational system is how to transform teaching and learning process to provide students with the skills to compete effectively in current labour market.

The introduction of technology into learning environment has brought about innovation into teaching and learning process which has resulted in new educational needs and teaching strategies (Oso, 2016). Ekiti State cannot be left out of the global technological revolution that has brought

innovation into the field of education. The National Policy on Education (2014 FRN) states that 'No nation's education system can rise above the quality of her teachers. Therefore her teachers have to be sound and be able to teach effectively with multimedia technology resources to enhance learning and students' performance. The National Policy on Education, Federal Republic of Nigeria recognizes the relevance of technology in both the teaching and learning process and acquisition of skills to prepare youths for global competitiveness. This explains why technology was introduced into both junior secondary schools as pre-elective vocational elective. The National Policy on Education, Federal Republic of Nigeria (FRN, 2014) as states that educational activities should be learner-centred for maximum self-learning, development and fulfillment.

Multimedia devices are electronic media devices used to store and experience multimedia content for teaching and learning processes. The combination of these resources

can assist learners and teachers to teach and learn in a unique way. The learning resources that can be used in a wide variety of ways to stimulate the five sense organs to sustain attention and retention of the subject matter during teaching and learning will definitely yield good result. Thamarana (2016) also opines that the use of multimedia technologies in teaching language is one of the best recent and technological approaches in learning language. It is often said, with voice you can communicate with about 70% efficiency, but with voice and video 90% efficiency.

The use of technology resources facilitates learner-centred learning. If a good number of secondary schools teachers employ multimedia technology resources in their instructional delivery, the students would probably have more interest in their studies thereby drastically reducing the problem of cheating and mass failures in examinations.

Simultaneous delivery by multiple media for communicating messages and content increases the delivery efficiency, the message impact and the multisensory experience. Multimedia increases learners' knowledge and understanding if appropriately used. Computer Technology Research of 2006 states that "People retain only 20% of what they see and 30% of what they hear but remember 50% of what they see and hear. They remember 80% of what they see, hear and do simultaneously" Robert & Siller (2002), hence the need to apply multimedia materials in teaching every subject. Multimedia technology resources is beneficial to teachers in that they allow teachers to integrate text, graphics, animation, and other media into one package to present comprehensive information for their students to achieve specified objectives. They allow the demonstration of complicated processes in a highly interactive and animated fashion. They provide learners with an alternate means of acquiring knowledge designed to enhance teaching and learning through various media that allows learners to learn at their own pace and gives teachers the ability to observe the individual needs of each learner. They are highly motivating, interactive, engaging through the use of animation and audio visual materials. Gobaye (2015) opines that the use of multimedia technology resources has improved students' attention and assimilation level hence resulting in high retention.

Multimedia-based instruction can be effective in teaching and learning process (UWB 2018) in that it can support self-paced learning, and employ video/audio production, thereby enhancing a learner's interaction with the course material through engagement of multisensory channels. In addition, multimedia supports learner autonomy through self-regulated instruction that shifts the responsibility for learning from the instructor to the student. Dale cone of experience research reveals that 'action-learning' techniques results in up to 90% retention as the more sensory channels interact with multimedia technology resources, the more students learn from them. It is therefore imperative that teachers design instructional activities with multimedia technology resources to build upon more real-life experiences. Classrooms of the 21st century need to be re-

organized so as to allow students become more active and independent learners.

Nwafor and Eze (2014) emphasized that multimedia technology enable teachers to communicate ideas with ease as they appeal to many sensual modalities and can also reduce instruction time. The performance of students in Ekiti State though has improved greatly but it could be better if there is a paradigm shift in teaching strategy employed by the teachers. Oso (2016) observes that today's students spend a lot of time on social media. It is the duty of the teachers as facilitators of instruction to redirect their curiosity to something positive through the use of technology to reduce boredom in learning. Internet and computer games form integral part of students' lives, teachers should therefore endeavour to use them in their teaching and learning processes. On the internet, many websites are available freely which can be utilized by students and teachers to develop reasoning, critical thinking, analysis and problem solving thereby helping them in sharing ideas. Multimedia technology resources account for learning resources that can be used in a wide variety of ways to stimulate the five sense organs to sustain attention and retention of the subject matter during teaching and learning.

The quality of education is directly related to the quality of instruction in the classroom. Though the professional qualification of the teachers and knowledge of the subject matter competence, skills and commitment of the teachers have effective impact on the teaching and learning process but if the resources to demonstrate the competence are not there, there is no way the teachers teach effectively. They also take care of the population of students' learning and help develop strong academic skills thereby enhancing their performance.

STATEMENT OF THE PROBLEM

A close look at most secondary school classrooms in Ekiti State reveal that teachers still rely heavily on conventional methods of teaching. The implication is that students are being denied the benefits of current development in the use of multimedia technology. According to Heinich, Molenda and Russel (1985) technology facilitates learning. Modern media are assisting students to employ all their senses in learning. Media like computers, mobile phones, videos, and slides have taken over the chalkboard in the contemporary 21st classroom. Multimedia technology build up the confidence in the teachers and consequently enhance teachers' effectiveness and boost their efficiency in the act of teaching. Multimedia technology is interactive and enables students develop diversified skills needed for a knowledge- based economy.

Prensky (2001) reported that students spend over 10,000 hours on video games and 5,000 hours on reading. Hence, if teaching and learning is made attractive through the use of multimedia technology resources, the classroom will be attractive to the students and the increased engagement can improve performance. However, teachers' ability to

utilize the materials also has to be considered. Though Ekiti state government has on several occasions exposed her teachers to technology resources use trainings through organized workshops, the question of whether they are able to effective use these multimedia technology resources has not been explored. In addition, it has been previously assumed that gender can play important roles in both the technology adoption and selection by individuals, hence, this study will also explore this possibility among Ekiti state teachers.

RESEARCH QUESTIONS

1. Are multimedia technology resources available for teachers to use for teaching and learning in secondary schools in Ekiti State?
2. Are multimedia technology resources accessible for teachers to use for teaching and learning in secondary schools in Ekiti State?
3. Do teachers’ effectively use multimedia technology resources in instructional delivery in Ekiti State secondary schools?
4. Is there any significant gender effect on teachers’ effective use of multimedia technology resources in teaching and learning process in Ekiti State Secondary Schools?

males in technology adoption and use, a relevant hypothesis will be tested as follows:

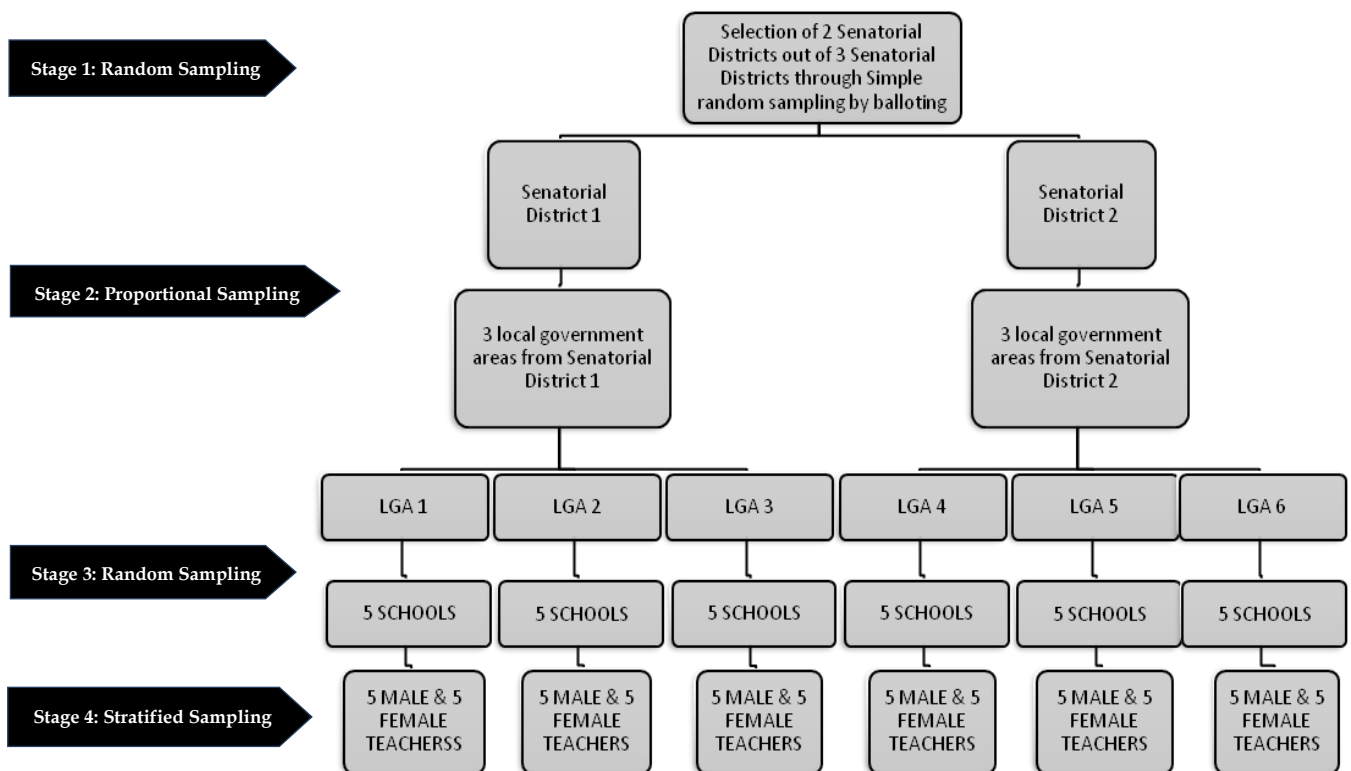
H₀: There is no significant difference in the effect of gender on teachers’ effective use of multimedia technology resources in Ekiti State Secondary Schools.

RESEARCH METHOD

The research design of the study was of survey type. The population for the study comprised all the teachers in Ekiti State secondary schools. Multi Stage Sampling Technique was used to select the samples. The samples were drawn in four stages as shown in the flowchart in Figure 1.

The instrument used to collect data for the study was questionnaire titled ‘Effectiveness of multimedia technology resources Utilisation for instructional delivery’ (EMTRU-ID). It consisted of 38 items in four sections. Section A items consisted of the demographic data of the respondents like sex, and qualification, the focus on section B & C were on response of agree or disagree to the items available and accessible in the schools like projectors, internet facilities while D was on teachers’ effective use of multimedia technology resources in instructional delivery.

Based on the perceived difference between males and fe-



The responses format sections B&C was dichotomous (Agree or Disagree) while section D employed a 4-point Likert-like format including 'Very effectively used', 'Effectively used', 'Not effectively used' and 'Undecided'.

Data collected were analysed using frequency counts, while the hypotheses was tested using t-test at 0.05 level of significance.

RESULTS

Research Question 1: Are multimedia technology resources available for teachers for teaching and learning in secondary schools in Ekiti State?

Table 1: Summary of result showing Availability of multimedia technology resources in teaching and learning in Secondary Schools in Ekiti State.

S/N	ITEMS	Agree		Disagree	
		F	%	F	%
1	Projectors	166	55.3	134	44.7
2	Computers	258	86.0	42	14.0
3	Audio and video recorders	91	30.3	209	69.7
4	Graphics Materials	110	36.7	190	63.3
5	DVD /CD	80	26.7	220	73.3
6	Slides	112	37.3	188	62.7
7	Internet facilities and connectivity	204	68.0	96	32.0
8	Audio visual materials	155	51.7	145	48.3

As seen from Table 1, only items 1, 2, 7 and 8 has frequency scores above the median point (50%). This implies that projectors, computers, internet connectivity facilities and audio visual materials were types of multimedia technology resources adequately available for teaching and learning in secondary schools in Ekiti State whereas, audio and video recorders, graphics materials, CD/DVD, and Slides are not.

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Research Question 2:

Are multimedia technology resources accessible for instructional delivery in Ekiti State secondary schools?

Table 2: Summary of result showing Accessibility of multimedia technology resource in instructional delivery in Ekiti State Secondary school.

S/N	ITEMS	Agree		Disagree	
		F	%	F	%
1	Projectors	176	58.7	124	41.3
2	Computers	155	51.7	145	48.3
3	DVD /CD	105	35.0	195	65.0
4	Graphic materials	110	36.7	190	63.3
5	Audio and video recorders	88	29.3	212	70.7
6	Slides	123	41.0	177	59.0
7	Internet facilities and connectivity	201	67.0	99	33.0
8	Audio visual materials	174	58.0	126	42.0

In a similar manner, Table 2 shows that only items 1, 2, and 7 have frequency scores above the median of 50%, implying that projectors, computers and internet connectivity

facilities were the types of multimedia technology resources accessible to teachers for teaching and in Ekiti State secondary schools.

Research Question 3

Do teachers’ effectively use multimedia technology resources in instructional delivery in Ekiti State secondary schools?

Table 3: Summary of result showing teachers’ effective use of multimedia technology resources in instructional delivery in Vocational Subjects in Ekiti State Secondary Schools.

S/N	ITEMS	Very effectively used	Effectively used	Not effectively used	Undecided
1	Multimedia technology resources enhance learning in the classroom	86 (28.7%)	36 (12.0%)	101 (33.7%)	77 (25.7%)
2	Multimedia technology resources assist teachers’ and students’ mastery of the subject matter	75 (25.0%)	72 (24.0%)	92 (30.7%)	61 (20.3%)
3	The use of televisions in the classroom for instruction is exciting	41 (13.7%)	9 (3.0%)	102 (34.0%)	148 (49.3%)
4	Video recorders helps students and teachers store educational information	28 (9.3%)	19 (6.3%)	105 (35.0%)	148 (49.3%)
5	Projectors motivates teachers and students’ learning in the classroom	63 (21.0%)	36 (12.0%)	97 (32.3%)	104 (34.7%)
6	Video clips help explain abstract concept	48 (16.0%)	17 (5.7%)	124 (41.3%)	111 (37.0%)
7	Pictures and charts help in students retention of the subject matter	97 (32.3%)	57 (19.0%)	83 (27.7%)	63 (21.0%)
8	Internet facilities add to students’ and teachers’ learning resources.	84 (28.0%)	45 (15.0%)	76 (25.3%)	95 (31.7%)
9	Audio and video instructional materials aid students understanding and make teaching exciting	78 (26.0%)	27 (9.0%)	104 (34.7%)	91 (30.3%)
10	Software tools are easily used by teachers for instructional delivery	106 (35.3%)	73 (24.3%)	77 (25.7%)	44 (14.7%)

Using the median point as the cutoff point, only items 2, 7 and 10 have frequency scores above the cutoff point. This implies that teachers were not positively disposed to the use of multimedia technology resources in teaching and learning in junior secondary schools in Ekiti State.

Research 4: Does gender have any effect on teachers’ ef-

fective use of multimedia technology resources in teaching and learning of vocational subjects in Ekiti State Secondary Schools?

Table 4: Effect of gender on the use of multimedia technology resources in teaching and learning of vocational subjects

S/N	ITEMS	GENDER	SA	A	D	SD	MEAN	SD
1	There are adequate multimedia resources in my school	M	37 (43.0)	8 (9.3)	20 (23.3)	21 (24.4)	2.71	1.254
		F	49 (22.9)	28 (13.1)	81 (37.9)	56 (26.2)	2.33	1.099
2	Power is adequately provided for teachers and students' use	M	10 (11.6)	22 (25.6)	26 (30.2)	28 (32.6)	2.16	1.016
		F	65 (30.4)	50 (23.4)	66 (30.8)	33 (15.4)	2.69	1.066
3	There are adequate televisions in the classroom for instruction	M	5 (5.8)	1 (1.2)	32 (37.2)	48 (55.8)	1.57	0.790
		F	36 (16.8)	8 (3.7)	70 (32.7)	100 (46.7)	1.91	1.084
4	Video recorders are adequately provided for teachers' use for instruction	M	5 (5.8)	5 (5.8)	25 (29.1)	51 (59.3)	1.58	0.847
		F	23 (10.7)	14 (6.5)	80 (37.4)	97 (45.3)	1.83	0.961
5	Projectors are adequately provided for teachers' use in the classroom	M	17 (19.8)	2 (2.3)	30 (34.9)	37 (43.0)	1.99	1.122
		F	46 (21.5)	34 (15.9)	67 (31.3)	67 (31.3)	2.28	1.123
6	Adequate videos are provided for teaching students in my schools	M	6 (7.0)	1 (1.2)	36 (41.9)	43 (50.0)	1.65	0.823
		F	42 (19.6)	16 (7.5)	88 (41.1)	68 (31.8)	2.15	1.077
7	Pictures and charts are adequately used by teachers in teaching in my schools	M	22 (25.6)	13 (15.1)	25 (29.1)	26 (30.2)	2.36	1.167
		F	75 (35.0)	44 (20.6)	58 (27.1)	37 (17.3)	2.73	1.117
8	Internet facilities are adequately provided for students and teachers' use in the school	M	25 (29.1)	13 (15.1)	21 (24.4)	27 (31.4)	2.42	1.212
		F	59 (27.6)	32 (15.0)	55 (25.7)	68 (31.8)	2.38	1.196
9	Audio and video instructional materials are adequate in my school	M	38 (44.2)	1 (1.2)	19 (22.1)	28 (32.6)	2.57	1.342
		F	40 (18.7)	26 (12.1)	85 (39.7)	63 (29.4)	2.20	1.062
10	Software tools are adequately provided for teachers' use	M	48 (55.8)	18 (20.9)	12 (14.0)	8 (9.3)	3.23	1.014
		F	58 (27.1)	55 (25.7)	65 (30.4)	36 (16.8)	2.63	1.057

M=Male, F=Female, Percentage responses are enclosed in parentheses

Table 5 presents the utilization of multimedia technology resources based on teachers' gender. The result shows that male teachers had slightly higher positive scores on items 7, 8 and 9 than their female counterparts. However, female

respondents had higher scores on majority of the items (1, 2, 3,4,5,6 and 10) than their male counterparts. This implies that there may be a slight difference in teachers' use of multimedia technology resources based on gender. However, the significance of this difference cannot be ascertained based on only frequency scores. To confirm this, we

tested the following hypothesis:

H₀: There is no significant difference in the use of multimedia technology resources instructional delivery of Vocational Subjects in Ekiti State Secondary Schools on gender basis.

Table 5: Summary of t-test result showing utilization of multimedia resources in teaching and learning of Vocational Subjects in Ekiti State Secondary Schools on gender basis.

Sex	N	Mean	SD	Df	T	P
Male	86	22.24	5.48	298	1.130	0.259
Female	214	23.12	6.30			

p>0.05

Table 6 shows that female teachers had slightly higher mean score of 23.12 on the utilization of multimedia resources in teaching and learning than their male counterparts with a mean score of 22.24. The result further shows that there is no significant gender difference in the use of multimedia technology resources in teaching and learning (t=1.130, p>0.05). The null hypothesis is accepted.

DISCUSSION

This finding showed that projectors, computers, internet facilities and audio visual materials are types of multimedia technology resources available and accessible for instructional delivery in secondary schools in Ekiti State. The findings of the study also revealed that projectors, computers, internet facilities and audio visual materials are the multimedia technology resources effectively used by teachers for instructional delivery in Ekiti State secondary schools. The findings on teachers' effective use of multimedia technology resources as shown in table 5 agrees with the studies of Hung & Khine (2006), that multimedia technology resources build up the confidence in the teachers and consequently enhance teacher' effectiveness and boost their confidence in the act of teaching. This finding agrees Vaughan. (2010), that using multimedia materials help improve teachers' effectiveness in teaching and learning processes, make instructions real and spice the teaching and learning processes as well as provide a rich variety of sensory experiences. The finding also corroborates the assertion of IJEDICT (2007) that proper use of multimedia technology could increase pedagogical effectiveness in schools, enhance critical thinking, independent learning, expand individual exploration thereby bringing out a paradigm shift in learning out of the classroom and create an exciting learning environment.

The study further revealed that there is no significant gender difference in the use of multimedia technology resources. The finding showed further that the use of multimedia is not gender sensitive though not significant. The

finding disagrees with the studies carried out by Czaja, Charnes, Fisk, Hertzog, Noir and Rogers (2006) that reveals that males have higher computer self- efficacy than their female counterparts.

CONCLUSION

Projectors, computers, internet facilities and audio visual materials were types of multimedia technology resources available and accessible for instructional delivery in secondary schools in Ekiti State and also effectively used. Effective utilization of available and accessible multimedia technology resources will go a long way to stimulate students' interest thereby enhancing their academic performance so adequate multimedia technology resources has be available for teachers to use.

RECOMMENDATION

1. The State Ministry of Education in collaboration with the management of Junior Secondary Schools should embark on routine and unscheduled supervision of instructional process in schools in order to enhance teachers' effective utilization of multimedia technology resources.
2. Relevant seminars and workshops should be organized by schools for teachers on effective utilization of multimedia technology resources to promote the development of students' positive attitude to learning and their academic performance.

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