

USE OF MULTIMEDIA AND HYPERMEDIA FOR ICT INSTRUCTIONAL DELIVERY IN UNIVERSITY OF TECHNOLOGY – BASED LIBRARY SCHOOLS IN NIGERIA

By

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ABSTRACT

The study investigated the use of multimedia and hypermedia instructions in teaching ICT courses in the Universities of Technology offering library and information science / technology in Nigeria. Research question and null hypotheses were formulated. Descriptive survey method was used with population comprises the ICT course lecturers and undergraduates in all the Universities of Technology offering Library and Information Science / Technology program in Nigeria. All ICT course lecturers were used for the study, while undergraduate students were selected for the study. Two set of questionnaire with four-point likert scale tagged: multimedia and hypermedia instructions questionnaire (MHIQ) was use in data collection. Percentage was used to find the response rate. Mean and standard deviation was also used in conjunction with the t-test statistical tool which was used to test the null hypotheses. Results showed variation in undergraduate ICT courses while undergraduate students' perception revealed that there was no significant difference in the use of multimedia and hypermedia instructions. There was no significant difference in the use of multimedia and hypermedia instructions based on the perception of ICT course lecturers. Recommendations were proffered such as the implementation of uniform curriculum, use of public address system, power point, projector in conjunction with the use of e-mail, teleconferencing, video conference, distance learning programme and internet services in the instructional delivery in Nigerian library schools.

Keywords: ICT, Multimedia and Hypermedia Instructions, Library Schools, Universities of Technology, Nigeria.

Introduction

The curriculum of any programme or institution is usually an out-planned course of instructions to be carried out in a specified period of time. Thus curriculum usually connect series of course or contents to be taught for a given programme. The designed curriculum can only be made meaningful if it is being developed and executed through one notable way i.e teaching or instruction. Effective teaching is carried out through various medium of instructions. In this modern age, teaching and instruction can be carried out by means of multimedia and hypermedia instructions. According to Hornby (2006) in Oxford Advanced Learner's Dictionary multimedia is defined as computing systems that include sound, picture and film in addition to text on a screen. It is also regarded as teaching using several ways of giving information or several different materials. Hypermedia according to the dictionary is also a computing system that link text to files containing image or video. The difference between multimedia and hypermedia instruction lies on the part of hypermedia linking text to files. According to Ugwu and Ozoma (2013), the modern communication technology- assisted instructions are teaching aids which include computers, audio resources, internet, projectors, and so on. The ICT courses in Nigerian library schools can effectively be taught with the use of these instructional media. However, it has been observed that these instructional medium are not effectively used in teaching ICT courses in Nigerian library schools as there is the need to shift from the traditional method of instructional delivery to the modern method of instructional delivery *i.e.* the use of ICT.

There are about 30 Nigerian universities offering library and information science programmes out of which six are specialized universities. These specialized universities include: Federal University of Technology, Minna; Abubakar Tafawa Balewa University, Bauchi, Moddibo Adama University of Technology, Yola, Enugu State University of Science and Technology, Enugu, University of Agriculture, Makurdi and Michael Okpara University of Agriculture, Umudike. However, some of these specialized universities run four or five year undergraduate programme. This study is concerned with Universities of technology offering LIS programmes both at undergraduate and postgraduate levels.

Statement of the Problem

Curriculum is designed and expected to be developed by way of teaching using varieties of media of instructions. With the introduction of ICT as innovation in all facets of human life including librarianship, teachers/lecturers use both multimedia and hypermedia means in instructional delivery more especially with the ICT courses. Researchers'

personal experiences showed that lecturers in institutions of higher learning lay emphasis on the use of common methods of delivering lecture, conducting practical lessons and use multimedia instruction, forgetting the use of hypermedia instruction. For over several decades traditional methods of teaching needed to be replaced with ICT for the library and information science practitioners and educators to be relevant in the scheme of national and global development (Akanwa, 2014). The study therefore investigate the available ICT courses and determine whether significant difference exist between the use of multimedia and hypermedia for instructional delivery in Universities of Technology offering undergraduate LIS/LIT programme.

Research Question

The Research Question to guide the study is:

1. What undergraduate ICT courses are taught in Universities of Technology offering LIS/LIT Programme in Nigeria.

Research Hypothesis

The following null hypotheses were tested at 0.05 of significance:-

- HO₁ There is no significant difference in the use of multimedia and hypermedia instructions based on undergraduates' perception.
- HO₂ There is no significant difference in the use of multimedia and hypermedia instructions by ICT course lecturers

Literature Review

Ojokheta (2007) conducted a study to find out the efficacy of conducting teaching and learning through e-mail to 300 level students undergoing distance learning in programme in University of Ibadan. Questionnaire was used in data collection while the administration of the instrument was through face-to-face contact period. The result showed that if teaching and learning are carried out through electronic mail, there will be greater commitment on the part of students. Eteng and Ntui (2009) investigated the current status of e-learning in University of Calabar as it affects both students and lecturers. The study found that most e-learning facilities were available in University of Calabar and that both students and lecturers deploy ICT facilities (e-mail, electronic gadgets, conferencing) in teaching and learning,

On the availability and utilization of ICT in early childhood Education in Ilorin Nigeria, Soetan, Ogunlade, Fakomogbon and Bolaji (2011) reported that ICT tools were available and utilized by teachers. However, the study revealed that computer and cell phone were the most frequently used ICT

tools. Saleh (2011) studied the availability and adequacy of human and material resources in Nigerian library school. Part of the findings was that though the curriculum of undergraduate programme was adequate, some variations however existed in the curriculum.

In order to effect change to quality instruction and quality output, Ugwu and Ozoima (2013) studied the steps taken towards effective utilization of ICT – assisted instructions in library education programmes in government owned colleges of education in south west Nigeria. The study found that in Public Colleges of Education in South East Nigeria, educators use communication - assisted technology for personal research and academic enhancement. At Federal Polytechnic Offa, Igwe, Uzuegbo and Issa (2014) revealed the method of delivery as lectures, instructions and practical work. In a comparative study of undergraduates curriculum and education in University of Maiduguri, Modibbo Adama University of Technology, Yola and Abubakar Tafawa Balewa University Bauchi in Northeast region of Nigeria, Madu, Odenigbo and Isah (2014) reported that lecture, discussion and project or assignment method of teaching is common in the LIS departments. The findings showed that online discussion/project is not used due to non-compliance to ICT by undergraduates in teaching and learning. Online texts and assignments are not used currently.

Ikwe (2015) discovered different types of multimedia technologies applied for information services in the university libraries. These include text, audio, video, sound recordings and animation. None of the university libraries applied interactive audio and live interactive video for information service delivery.

In relation to Saleh (2011), Saka and Ahmed (2016) conducted a research entitled: "training the undergraduates in entrepreneurial ICT in Nigerian library schools". The study aimed at determining the entrepreneurial related ICT courses, use of physical resources in the acquisition of ICT skills. Eight university-based library schools in Nigeria were used for the study and questionnaire was used to collect data. Descriptive statistic (frequency count and percentages) was used to analyse the data of respondents' level of ICT use in undergraduate programme. T-test was used to test null hypotheses. The result showed that ICT courses offered were adequate to keep students to be job creators; though the library schools operate divergent curriculum.

Methodology

Descriptive survey research was used as it describes multimedia and hypermedia usage in University of Technology-based library schools in

Nigeria. Thus, the target population of the study comprises 23 ICT course lecturers and 1052 undergraduate students in the entire four Universities of Technology-based library schools in Nigeria. These universities are specialized and thus run five years undergraduate programme. The use of 23 ICT course lecturers and 1,052 undergraduate students is obvious owing to the fact that the lecturers are not only involved in the designing but also in the implementation of the curriculum through teaching. The undergraduate students are not only the beneficiaries of the curriculum but also they are prepared to face the realities of the 21st century i.e. the use of ICT in service delivery in library and non-library environment. The table below contains the subjects of the study; such as ICT course lecturers and undergraduate students in Universities of Technology-based Library Schools in Nigeria

DATA ANALYSIS

Table 1: Respondents by Institution

S/No	Univ. of Technology - based Library Schools.	No of ICT course Lecturers	No of Undergraduate students
1.	Modibbo Adama University of Technology, Yola	5	614
2.	AbubakarTafawa Balewa University, Bauchi	4	120
3.	Federal University of Technology, Minna	10	275
4.	Enugu State University of Science & Technology, Enugu	4	43
	Total	23	1,052

The population of 23 ICT course lecturers was adopted because of the small size of its manageable, Ibrahim (2013) opines that in a population with small size, a researcher can adopt all with complete enumeration. Furthermore, a sample size of 106 (10%) undergraduate students was used for the study. Only undergraduate students' population was randomly selected. According to Table 2 23 ICT course lecturers and 10% of 1,052 undergraduate students from the four university-based library schools. The total sample size for the study was 129 respondents. The derivation of number of undergraduate courses was based on 10% of 1,052 students from the four University-based library schools.

Table 2: Sample Table

S/N	ICT Course lecturers	Undergraduate Students	Total Sample
1.	5	61	66
2.	4	12	16
3.	10	28	38
4.	4	5	9
	23	106	129

Four point likert scale type of questionnaire (Strongly agree4, Agree3, Disagree2 and Strongly Disagree1) was designed by co-researchers and validated by lecturers in the Departments of Library and Information Technology, Science Education and Industrial and Technology Education respectively. Documentary sources of undergraduate courses were used to identify and extract ICT courses in the document analysis.

The modified instrument tagged; "Multimedia and Hypermedia Instructions in Nigerian Library Schools" were administered on the respondents through colleagues in the library schools investigated. T-test was used to test the two formulated null hypotheses at 0.05 level of significance.

FINDINGS:

In terms of Respondents, the percentage of 129 sample population was 12% i.e. 23 ICT course lecturers and 106 undergraduate students giving a total of 129 respondents was achieved. Out of 129 copies of the questionnaire administered on respondents, 66 copies,(that is 54 undergraduate students and 12 ICT course lecturers respectively) were completed, returned and found valid for the analysis. The analysis of data by inferential statistics was based on the number of returned copies of the questionnaire.

Research Question: What undergraduate ICT courses are taught in Universities of Technology offering LIS/LIT programme in Nigeria?

Table 3: List of Undergraduate ICT Courses in Universities of Technology Offering LIS/LIT Programme in Nigeria.

ESUTECH, Enugu	ATBU Bauchi	Fed. Univ. of Tech., Minna	MAUTECH, Yola
LIS 315: Multimedia process, equip. & material production. LIS 403: Management of Information System LIS: 404 Inf. Com. In Lib & Info centers LIS 409: Data base Design & Mgt LIS 416: Inf Networks	LIS 113: Digital Libraries LIS 115: Lib. Appl. Pack CIS 142: Intro Computers LIS 222: MIS/ services LIS 327: Software Tech LIS 522: Data base design & Mgt.	CPT 111: Intro. to Computer Operation CPT 221: Info. Programming CPT 211: Object-Oriented Programming I LIT 213: Intro. to Computer Systems LIT 222: Inf. Technology & Society LIT 318: Data Communications & Networks CPT 313: Operating System I CPT 221: Object-Oriented Programming II LIT 312: Inf. Technology & Libraries CPT 316: System Analysis & Design CPT 325: Database Design & Mgt CPT 413: Systems Operation Research CPT 416: Software Engineering & Computer Ethics LIT 513: Inf. & Retrieval Systems LIT 514: Implication of Inf. Technology CPT 519: Advanced Database Systems LIT 522: Lib. Automation & Digitalization LIT 525: Electronic Publishing	CS 101: Intro. to Computer Science I TT 101: Intro. to Inf. Technology CS 102: Intro. to Computer Science II TT 106: Digital Technology CS 201: Computer Programming I LS 204: Intro. to Telecommunication CS 202: Computer Programming LS 303: Inf. & Comm Technology CS 303: Operating System I CS 311: System Analysis & Management TT 304: Data Communication & Networking Application LS 401: Data processing in Lib. & Inf. Centres LS 411: Computer in Inf. Work TT 403: Computer Security LS 501: Automation in Libraries & Info. Centres TT 505: Web Publishing & Programming CS 510: Computer in Society TT 512: Telecommunication

Source: Document Analysis

Table 4 revealed that the library schools listed run divergent curricula in ICT. For example, document analysis of conventional universities such as University of Nigeria, Nsukka (2010/2014), University of Maiduguri (2011), University of Ibadan (2011/2017), Ahmadu Bello University, Zaria (2014/2017) indicates lack of streamlining of the curricula in ICT courses. This situation also exists in the library and information science courses. (core courses). Based on the document analysis and as contained in Table 4, ESUTECH, Enugu and ATBU, Bauchi offer fewer number of undergraduate ICT courses when compared with those of MAUTECH, Yola and FUT, Minna. This is inexpedient with instructional professional objectives of ICT integration with library services. The issue of fewer number of ICT courses and divergent nature of the curriculum in Nigerian library schools is most likely to affect the degree of attainment of educational objectives in both ICT and core courses.

Table 4: Summary of t-test analysis of the use of multimedia and hypermedia instruction based on the perception of undergraduate students in Nigerian Universities of Technology-based Library Schools

Group	N	df	Mean	SD	t-value	p-value
Multimedia Instruction	54	106	64.19	13.99	.018	0.025
Hypermedia Instruction	54		57.16	18.02		

Table 5: shows the t-test analysis of perception of undergraduate students in the use of multimedia and hypermedia instructions in Nigerian Universities of Technology Library Schools. The analysis showed that (t-value = 0.018, df=106, P-value < 0.05) which signifies that there was no significant difference meaning null hypothesis one was accepted. This implies that undergraduate students have the same perception on the use of multimedia and hypermedia instruction. It is beneficial that multimedia and hypermedia instruction are used the same way in the library schools. The t-value of 0.018 is less than P-value 0.025 implying that there was no significant difference between the use of multimedia and hypermedia instruction based on undergraduates' perception.

2. There is no significant difference in the use of multimedia and hypermedia instructions by ICT Course Lecturers in Nigerian Universities of Technology -based Library Schools.

Table 5: Summary of t-test analysis on the use of multimedia and hypermedia instruction by ICT Course lecturers in University of Technology-based Library Schools

Group	N	df	Mean	SD	t-value	p-value
Multimedia Instruction	12	22	63.33	15.11	0.527	0.760
Hypermedia Instruction	12		61.39	15.73		

Table 6 shows the t-test analysis of perception of ICT course lecturers in the use of multimedia and hypermedia instructions in University of Technology library schools with (t-value = 0.527, df=22, P-value <0.05) which was not significant as such the null hypothesis two was retained. The mean score of the multimedia instruction was 63.33 and standard deviation was 15.11, while the mean score of hypermedia instruction was 61.39 and the standard deviation was 15.73. This implies that ICT course lecturers used hypermedia instruction the same as multimedia instruction with higher mean scores in favour of multimedia. It was discovered that the t-value (0.527) is less than p-value of 0.760 which implies that there was no significant difference between the use of multimedia and hypermedia in the instructional delivery in library schools investigated based on the perception of ICT course lecturers.

Discussion of Results

Result of research question showed that the undergraduate ICT courses were offered, though are divergent in nature. This finding is similar with findings in Saleh (2011); Saka and Ahmed (2016) where disparity was discovered in the undergraduate curriculum in library schools.

The null hypothesis one was tested and found that (r-value 0.018 is less than p-value 0.025) undergraduate students' perception revealed that there was no significant difference in the use of multimedia and hypermedia instructions in Universities of Technology-based library schools. The null hypothesis was thus accepted meaning that multimedia instruction was not used more than the hypermedia instruction. This finding disagrees with the findings of Soetan et al (2011) and Ugwu and Uzoima (2013). Soetan, Ogunlade, Fakomogbon and Bolaji (2011) found that computer and cell phone were the most frequently used ICT tools, Ugwu and Uzioma (2013) found that little of modern technology – assisted instruction was practiced in classroom teaching

Hypothesis two was tested and found that the t-value 0.527 is less than the p-value 0.760 showing that there was no significant difference in the use of multimedia and hypermedia instruction in the survey schools as perceived by ICT course lecturers. The null hypothesis was retained. This finding disagree with the findings of Ojokheta (2014) and Igwu, Uzuegbo, Isah, Aliyu and Adebayo (2014).but agreed with that of Soetan et al., (2011) and that of Madu, Odenigbo and Isah (2014). Ojokheta (2009) discovered that if electronic mail was used in distance learning programme there will be greater commitment on the part of tutors. Igwe, Uzuegbo, Isha, Aliyu and

Adebayo (2014) submitted that the method of delivery will involve lecturer/ instructions and practical work. Soetan et al, (2011) reported availability and use of ICT tools by teachers but mostly used ICT tools were computer and cell phone. Madu, Odenigbo and Isah (2014) revealed that there was noncompliance to ICT in teaching and learning especially in the use of tests and assignments.

The findings from the test of the two null hypotheses disagree with that of Ikwe (2015) as the researcher discovered that none of the university libraries in the Northern region used applied interactive audio and live interactive video for information service delivery. The findings from the two null hypotheses which indicated no significant difference in the use of multimedia and hypermedia instructional delivery corroborates the findings of Eteng and Ntui (2009). The co-researchers discovered that both students and lecturers used most ICT facilities in teaching and learning respectively.

Conclusion

In this study, an attempt has been made to project multimedia and hypermedia as instructional delivery. The multimedia instruction seems to be the cheapest and traditional form of instructional delivery in Universities of Technology Library Schools. Research question one was answered by listing out the various undergraduate ICT courses offered in Enugu, Bauchi, Minna and Yola library schools. There was variation in the ICT courses particularly in terms of non-harmonization. The two hypotheses were tested and found no significant difference in the use of multimedia and hypermedia based on undergraduate students and ICT course lecturers' perception respectively. However the expensive nature of the hypermedia instruction might likely scare ICT course lecturers from using it more in instructional delivery in this modern age. Instructional delivery in library schools had been expected to be more of hypermedia.

Recommendations

The study therefore recommends that:

1. In addition to other agencies more suited to review library schools' curricula, proposed uniform curriculum by the LRCN when fully approved should be strictly followed and implemented.
2. While ICT course lecturers use projector, video, power point and public addresses system in instructional delivery, they should equally use e-mail, teleconferencing, distance learning programme, video conferencing; internet services, etc in the delivery of lectures.

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