

ICTS IN NIGERIAN SCHOOL SYSTEMS SHIFTING FROM THEORY TO PRACTICE

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Abstract

Nigeria like any African country is under pressure by accelerated globalization. She is facing a dramatic dilemma of establishing a high quality system of education quickly or face development regression. Information and communication technology offers a rapid remedy. Nigeria as a nation has no specific policy for ICT education. In 2007, the Federal Ministry of Education created its ICT department and has since been collaborating with several government agencies and other stakeholders in the private sector to initiate ICT-driven projects and programmes to impact all levels of the education sector. Attempt has been made in this paper to review few of these initiatives and their objectives for establishment. Major challenges in the effective countrywide development of ICT in education are critically reviewed and strategies for shifting from theory to practice are discussed.

INTRODUCTION

Development in Science and Technology has brought to the lime light the indispensable role of the Information Communication Technology (ICT) tools in education. Today, computer technology in schools is one of the most far reaching and fast growing developments in education. Proprietors of private institutions use the number of computer systems they can afford to attract students. Parents also assess the quality of the school by the number of the available computer systems and their connectivity. For effective utilization of any ICT tool, one must be computer literate. As a matter of fact, it is essential that every lettered individual be computer literate. It is the right of every citizen to be able to read and write. In analogous to reading, a computer puts out messages that require interpretation by the learner (the reader) and in analogous to writing, the learner (the writer) generates messages that can instruct the computer on what to do. These are the two fundamental aspects of computer literacy.

Career opportunities and individual's welfare depend on these fundamental skills (reading and writing). In this age of information explosion, one's skill in the use of computer will largely determine one's value in the work force. Computer literacy will likely have such impact on career opportunities in the future just as the ordinary or conventional literacy has had in the past. Just as verbal and mathematical literacy gave one job freedom, so shall computer literacy in future. It is essential therefore that Nigerians are not unwittingly pushed out of global job market due to poor quality education.

Computer Literacy: A Sine Qua-Non For Effective

Utilization of ICTs

Information Communication Technology (ICT) uses a variety of media referred to in this paper as tools. Computer, radio receivers, television monitors, talking books mobile phones etc are examples of some of these tools. Computer is one indispensable ICT tool.

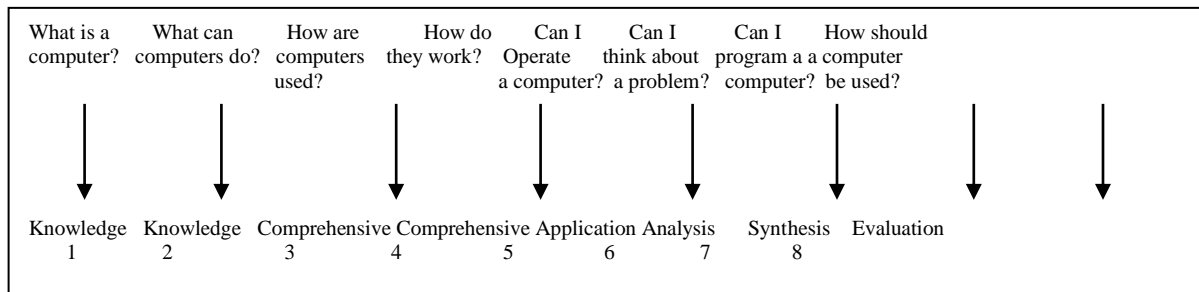
What exactly is computer Literacy?

Beekman and Rathswohl (1999) defined computer literacy as the ability to use computers. In Wikipedia (2010), it is regarded as the knowledge of computer and the ability to use them and technology; computer programmes and applications associated with computer.

In this paper, the concept is regarded as existing along a continuum from general awareness to the user's ability to write programmes. Computer literacy therefore involves:

- Mental knowledge of hardware, software, data processing, concepts, and application of computer,
- Attitudes towards computer (including a willingness to use it where appropriate in daily use situations without fear), and
- Skills (requisite skills to operate the system; modify existing programmes to suit daily instructional needs and programming new application, etc).

Computer Literacy On A Continuum



(Adapted from Heinich, et al 1989)

Knowledge of the use of computer generally has become so important in everyone's life. This is because the technology is known for its capacity to store and retrieve information accurately and with immediacy. Information, it is said, is power. The introduction of this particular tool of ICT into education and training in the 1950s marked the third revolution in education, the first and second being the introduction of printing and libraries respectively. The development of this technology has been so dynamic that nobody can pretend not to be aware of its existence. What one may not be able to say exactly is the knowledge of people's awareness of this technology and the possible roles or functions it is capable of performing.

Policy Frame Work on ICT in Education Sector

The Federal Executive Council established the National Information Technology Development Agency (NITDA) as the implementing body for ICT in the country. The National ICT policy of 2001 empowers

NITDA to enter into strategic alliances and to collaborate with the private sector for the purpose of realizing the nation's vision of making Nigeria an IT capable country in Africa. Specifically the policy's objectives were;

- To ensure that ICT resources are readily available to promote efficient national development,
- To guarantee that the country benefits maximally, and contributes meaningfully, by providing the global solutions to the challenges of the Information Age,
- To empower Nigerians to participate in software and ICT development,
- To encourage local production and manufacture of ICT components in a competitive manner,
- To establish and develop ICT infrastructure and maximize its use nationwide,
- To empower the youth with ICT skills and prepare them for global competitiveness,
- To integrate ICT into the mainstream of education and training,
- To create ICT awareness and ensure universal access in promoting ICT diffusion in all sectors of national life,
- To create an enabling environment and facilitate private sector (national and multinational) investments in the ICT sector,
- To encourage government and the private sector joint venture collaboration,
- To develop human capital with emphasis on creating and supporting a knowledge-based society, and
- To create a mass pool of ICT literate manpower using the NYSC, NDE, and other platforms as a train-the-trainer scheme for capacity-building.

A closer look at the three tier of Nigeria's education system reveals that no provision is made in the national policy of education for ICT exposure. Nigeria's objective for primary education for instance does not elicit the knowledge of ICT specifically. Rather, emphasis is on:

- Widening of access to basic education,
- Eliminating of inequalities in the enrollment between the urban and rural populations, and
- Ensuring greater retentions in schools and ensuring long-term permanent literacy for the graduate of the programme.

However, while ICT knowledge is not evoked in the vision set for primary school pupils, Agyeman (2007) reported that the government did order one million laptops for primary school pupils and some of the primary schools have computer laboratories especially those located in the high class zones of the big cities.

A non-profit organization called, 'School Net Africa' also created learning communities of educators and learners to use ICTS for enhancement of education collaborated with the Busy Net computer company in setting up ICT laboratories in four schools each in some states, (Fall, 2010).

The Vanguard of 8th February, 2007 also reported of another collaborative initiative by Zinox computers with Microsoft to revolutionize ICT usage in education from primary to university level. Zinox strategy targeted all-students, lecturers and their institutions.

The Zinox Company provided computer at very highly discounted prices to enhance Nigerian government in achieving its proposed 75% ICT application by 2010. This private computer company worked with the First Bank of Nigeria Plc in bankrolling the project. ICT laboratories are set up for schools to repay in two to three years. Lecturers were also given loans to purchase laptops and these are repaid in one year.

This ICT revolution has also registered corporate backing not only with the computer companies like Zinox but with financial houses. It is reported that over 80 schools have benefited from the Zenith Bank's ICT for Youth Empowerment Scheme which started few years ago. The scheme from inception has focused on assisting Nigerian Youth to bridge the 'digital divide' through an early introduction of ICT facilities. Each of the 80 schools received a minimum of 10 computers. To encourage the use of the systems, in addition to providing these computers, the bank organizes an annual ICT empowerment forum that attracts about 2000 secondary and tertiary level students. In 2006, the bank is said to have distributed 100 Personal Digital Assistants (PDAs) to the first 100 participants (students) who arrived at the venue. (Agyeman, 2007).

At the tertiary-level of education Okhiria (2007) noted that National Universities Commission (NUC) did prescribe that there should be atleast one computer to every four students and one Pc to every two lecturers below the grade of lecturer I, One Pc per senior lecturer and one notebook per professor/reader were equally recommended.

Majority of the Nigerian Universities have not achieved this ratio for their faculties, though some have made giant or notable strides in campus wide area networking and e-learning course deliveries. Institutions like:

- Obafemi Awolowo University (OAU) boasts of its best-developed ICT system in the country with a personal VSAT access to the internet and a campus wide intranet services.
- University of Jos which is blazing the trail for content development and e-learning in addition to the campus networking, (Liverpool et al, 2009).

Very few of Public Higher Institutions in the country are capable of meeting the ICT needs of their staff. Many of the lecturers have to go to commercial cyber cafés in town before they have access to a computer that is internet connected. The private universities seem to be better off since majority of them like Covenant University (CU), ABTI- American University of Nigeria (AAUN) have 24-hour internet connectivity in their campuses. At AAUN for instance, each student is provided a laptop with the cost factored into the fee structure. That of course will not be within the reach of too many students.

From the forgone review, it is evident that education sector has been fully sensitized with the gains of ICT in the development of that sector and in enhancing learning at the three levels of schooling. There is a wide

expectation that online learning or internet based educational technologies have the capability to improve the quality of education and its delivery system while costs are contained. The past decade has been characterized by theorization of issues, experimentation and exploration of opportunities, problems and solutions in ICT. There is great expectation from all the three levels of interactions for the development of educational system. Specifically, educators are now beginning to identify common factors associated with successful use of ICT in schools. These include:

- a. Pedagogical issues like the need to re-design courses for different delivery modes,
- b. Resourcing issues like class size, students and teacher preparation for the new modes of learning and teaching and for the use of associated technologies, provision of instructional support services to the teacher and maintenance of the technology, and
- c. Instructional issues like matching the instructional strategies and technologies to the learners and provision of incentives to motivate teachers to adopt the innovation.

United Nations has on several occasions admitted that it has achieved so much in rural and peri-urban development since the advent of ICT. ICT tools could equally be utilized in the education sector with great impact. So far, the ICT revolution is yet to attain that critical mass required for it to register the necessary impact in the teaching, student's learning and on the general public nationwide. While few of the institutions cited in this paper could be said to be in the vanguard, the majority of Nigerian Universities, Polytechniques, Colleges of Education, Schools of Nursing, Secondary Schools etc lack even stand-alone computers. With the activities of International donor agencies like UNESCO, DFID, and UNICEF, and national organizations like NITDA, ETF, School Net Africa and other stake holders as well as ICT partners (Microsoft, Zinox, HP etc), it is envisaged that Nigeria should be moving gradually towards the realization of its ICT vision. This dream can elude us if major challenges posing threats to shifting from theory to practice are not handled or urgently addressed.

Major Factors Militating Against ICT Adoption in Nigerian School System Pedagogical Challenges

The understanding of ICTs in Nigerian school system is that ICT tools will be used to support the learning process. Whether the learning is offered from a distance (DLS) or computer-based (CAL) or provided online (e-learning) etc, all these systems will use a network of computers to deliver content and to support discussion and interactions. Thus, internet is the central component of the e-learning. With myriads of other national challenges, internet connectivity has not been achieved by most institutions of learning. Many contemporary programmes utilizing ICT tools in education have therefore resorted to using "Blended Learning System" – a system that combines both the traditional face to face learning opportunities with online learning. In this regard, the key challenge for this approach is how to design courses such that the best elements of classroom learning are harnessed to provide notable learning experiences. There is need therefore to train and retrain teachers in ICT skills for effective use of ICT in schools.

Presently, the low percentage of teachers who have ICT skills, Ekpo (2002, 2005); Agyeman, (2007) and the massive ICT education drive needed to correct and develop the required human resources based at the national state or institutional levels is worrisome.

Resource Issues

It would appear from the review of all the initiatives that resource issues have received greater attention. However, electric power supply has been very sporadic, and several urban cities lack electric power. Nigeria generates 3,500 megawatts of electricity as against a required minimum of 5,500 megawatts. That means only about 40% of the citizens enjoy electricity from the national grid. Proprietors of schools may find it cheaper to provide ICT tools like computers, radio receivers, television sets, and PowerPoint projectors in their schools but to afford a 24-hour alternative power source to operate the equipment could be a nightmare. About 57 of the 774 local government's headquarters in Nigeria are yet to be connected to the national grid. Rural communities are worse off because of the absence of other infrastructure. The lack of requisite telecommunications infrastructure capable of transporting multimedia message is another major challenge to utilizing ICT in schools.

Similarly, lack of or uneasy access to computer equipment and other accessories at close proximity to the use area both at institutional and personal levels is inhibitive.

Institutional Issues

In a unique presentation by the University of Jos, institutional issues as regards developing institutional support for national ICT initiatives were raised (Liverpool et al, 2009). Challenges of creating learning environments that can promote active learning, critical thinking, knowledge creation and collaborative learning are some challenging issues in the effective utilization of ICTs. Few teachers are still scared of innovations. They are probably worried about their identity, their tasks and the impact of the changes to come. There is also the challenge of encouraging faculty adoption of the innovations in teaching and learning with IT. Even at the institutional level, there is much politicking such that innovations are encouraged depending on the initiator's relationship with the management. Information is still being hoarded to the detriment of the national development.

Conclusion

It is impossible to guarantee a high quality education for Nigerian youth if they are disconnected from the rest of the world in this age of internet services. If it were a "physical shifting from theory to practice," most institutions of higher learning would have done so by now. Research scholars are quite conscious of what they lose by not being connected with the rest of the world. Once internet access is in place, the creation of digital local content stimulates the rapid use of ICT especially if this local content drives users to complimentary webs resources, at it frequently happen.

Nigerian school systems – primary to the tertiary system are sufficiently sensitized as to the gains of ICT in their teaching and learning. They are ready for e-learning as soon as computers and a network are put in

place and the pedagogical considerations are attended to. Until then, the ICT known to some Nigerian learning environments is the stand-alone-computers as found in most institutions of learning.

In the interim, every teacher should be encouraged to use as much of the available software in their daily class instructions. For instance, Microsoft Word, Excel, CorelDraw and PowerPoint programmes should be integrated into appropriate teaching/learning events. All teachers should endeavour to communicate with their pupils/students using e-mail. Course contents and class assignments should be sent online through such medium. This way, the students will learn to interact and collaborate with peers using blended learning strategy.

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INFRASTRUCTURE: MAKING ICT INSTRUCTION REAL FOR SCHOOLS IN RURAL COMMUNITIES

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Abstract

The potential of ICT act as a driver and innovator in Nigeria Schools is unquestioned. However, without vital infrastructure in place ICT cannot be utilized to its fullest potential. Nigerian society is inhabited by both the urban and rural dwellers, but the rural communities are inhabited by bulk of the nation's population. These people engage in primary activities that form the foundation of our economic development. Yet, there is absence of infrastructure which improves the quality of life. All students whether urban or rural dwellers are being trained for the same labour market, hence, ICT should be a universal service to them. This paper examines the digital dichotomy in ICT between urban and rural area in Nigeria, then present case study for innovative ICT in order to provide an enabling environment for students in rural communities so that they can become part of the global information age.

Introduction

Information and Communication Technology (ICT) has become within a very short time, one of the basic building blocks of modern society. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, along side reading, writing and numeracy. The infusion of technology in education is seen as a means to enhance and extend not only the instructional methods, but also the learning process in this 21st century.

The term infrastructure and communication technology has been variously defined. Zork20pzy (1990:12) described ICT as the:

collection, storage, processing dissemination and use of information.

It is not confined to hardware and software, but acknowledges the importance of man and the goals he set for his technology, the values employed in making these choices, the assessment criteria used to decide whether he is controlling the technology and is being enhanced by it

ICT in education simply means effective ways of passing academic instruction, storing, retrieving, coding and decoding information for better understanding of the learner and easy illustration and teaching by the teachers. However, infrastructure is central in achieving the goal of digital inclusion, enabling sustainable and affordable access to ICT (Wessels 2006).

The world has become so information conscious that people are no longer satisfied with second or third hand information. It is still in this age that learners in rural areas have to rely on the limited knowledge of family, friends, neighbors and teachers to provide information for school assignment.

Already Nigeria is almost two decades behind in embracing the use of computer in primary and secondary classrooms (Ezekute, 2000). Moreover, Afolabi (2001) affirmed that Nigeria ranks lowest among five prominent African in the use of ICT. The potential of ICT, to act as a driver and innovators in Nigeria schools is unquestioned. But this potential of technology, to enrich and to enhance the teaching and learning process is yet to be employed. Nigerian classrooms are bombarded with traditional patterns of teaching and instructional modes.

Nigeria has a population of about 140, million people living in 774 local government areas in the 36 states and the federal capital territory. More than half of people have a mobile phones, but internet use is lagging behind. One reason for this is that rural areas of Nigeria are inhabited by the bulk of the nation's population, these are excluded from participating in ICT global competitions, obviously, ICT should be a universal service to all.

Despite the fact that rural areas serve as the base for the production of food, and also the major services of capital formation of the country, yet, they are not attractive to live in. There is absence of infrastructure, which improves the quality of life. Usually, there is absence of portable water, electricity and good feeder's roads. The rural dwellers have low purchasing power and standard of living. And without infrastructure in place ICT cannot be utilized to its fullest potential.

Rural areas in developing countries particularly Nigeria, are confronted by many challenges when it comes to the use of information and communication technologies.

What ICT Infrastructure Entails?

Infrastructure availability is of great importance in preparing for the effective use of ICT in education; infrastructure refers to the hardware or equipment, software applications and services associated with ICTS, including telecommunications and electricity, grid networks (Gesci 2007). ICT infrastructure could further be categorized into: Hardware which comprises of telephones, computers, LAN network, hub, printer, scanner, television set, fax, codex. Camera, projectors, radio, video, CD, audio tape players, and microphone, software includes windows 2000 server, XP, 98MS Office and others (Akinsola, Marlien and Jacobs 2005).

Nigeria has really embraced ICT as an instrument to enhance the quality of education, accessibility to learning resources, creating. However, it is worthy to note that ICT infrastructure which include computer hardware and software, bandwidth with/access, connectivity are grossly inadequate, and have constituted constraints on its effective usage.

The major challenges facing ICT diffusion can be summarized under the following categories.

- a. Lack of private sector involvement (i.e ICT Manufacturers and operators) in designing ICTs suitable for rural poor context.
- b. The challenges of sustainable wired and wireless networks.
- c. Poor adaptation of ICT interventions due to high cost per person in rural context
- d. Security issues.
- e. Policy inconsistencies
- f. local capacity building for managing resources.
- g. Lack of effective coordination.

Indicators on ICT infrastructure And Access

- a. Fixed telephone lines per 100 inhabitants,
- b. Mobile cellular subscribers per 100 inhabitants
- c. Computers per 100 inhabitants
- d. Percentage of population covered by mobile cellular telephony.
- e. Percentage of localities with public Internet Access centers by number of inhabitant.

Telecommunications and Supporting Infrastructure

It is commonly understood that ICT infrastructure encompasses telecommunication networks, radio and TV Transmission systems, the internet and other multimedia delivery platforms. It should be generally acknowledged that transmission networks for radio, telephone, TV and internet are the basis for mass media development.

This is further enhanced by associated physical infrastructure such as roads, electricity and general utilities. With respect to ICT, lack of reliable, widely distributed and high capacity data network for data, sound and video has contributed to the low availability and penetration of ICT services as well as cost effective development of basic services in rural area.

All this has resulted in adequate or complete lack of Internet services, high start – up costs and long bureaucratic procedures for radio, especially community radio and TV broadcasting. The major emphasis here is to increase access and promote widespread deployment of ICT services through the expansion of the nation's telecommunication backbone infrastructure covering the remotest part of Nigeria.

The internet is a major driver of ICT in education. Bandwidth is a major issue in the deployment of e-learning. Bandwidth refers to the amount of information that can be sent or received at a point on a computer network. The greater the bandwidth, the greater the carrying capacity and speed of transmission. The higher the quality and quantity of audio, video interaction and processing tasks, the more sophisticated the communications technology required. In effect, the content and services that can be accessed through

internet are dictated by the bandwidth available. However, Bandwidth costs money, so there is financial imperative (Korte and Husing 2007), conducted a research, and found that in European schools there are some infrastructure barriers such as broadband access not yet being available. They concluded that one third of European schools still do not have broadband Internet access.

Status of ICT Infrastructure in Nigeria

It is observed that Internet facilities are springing up in many higher institutions. Akomolafe (2009) however observed that ICT infrastructures in higher institutions are grossly inadequate, she noted that much attention was paid to internet, while other essential equipment are lacking such a CD-ROM, radio, tape, television and others. 65% of respondents to Komolafe (2009) study confirmed that computers available for internet are grossly inadequate to meet the demand of people for its usage..

The former Executive Vice Chairman of Nigeria Communication Commission (NCC) Ernest Ndukwe described the level of Internet diffusion as very low attributing the cause to high cost of bandwidth, computers and Internet infrastructure as well as unreliable power supply.

Bandwidth that is available in many cyber cafes cannot meet the demand of users. A causal investigation of the Nigerian ICT terrain reveals that wireless network will grow faster than wired network. This fact is supported by the rapid increase in mobile telephone subscribers in recent times (Chiemeké and Longe, 2007).

Wireless Communication

Computer can be stand-alone machine that can perform various computing operations. It can also be a device for communication. STAN (2008) came out with three recent developments of communication: connectivity, interactivity and multimedia significance for teaching/learning. This is significance operated laptop computer that has wireless modem built-in communication is facilitated since one does not need hard system (Ely: Williams and Sawyer). With computing power, information access, storage facilities, and networking computers is much more facilitated. The network gives rise to the three-tier networks – clients, servers, and a mainframe.

The client (PC), that sits on the desk of users, the local server, and high- powered mid range computer that “serves” the clients personal computers. Servers of ten store powerful software programmes that can be run more effectively on servers than on an individual personal computer. Servers may also manage several printers that be used by hundreds of clients, store data files, and handle e-mail communications between clients. The client computer linked directly to the serves constitute a local area network (LAN). Within an organization there may be several LANS.

Strategies for Developing ICT Infrastructure in Rural Communities

Infrastructure development for ICT in education takes into cognizance the connectivity and computing requirements of the educational institution based on their educational objectives. The study and review of the existing infrastructure of ICT in education is significant in developing ICT infrastructure. The survey of national infrastructure is also important which covers the existing and planned telecommunication and electricity infrastructure networks within the country, a review of national ICT plans and policies infrastructure development and a review of the major infrastructure and service providers, their offerings and capabilities. The survey and review of all existing institutional and national ICT and connectivity infrastructure would determine the gaps between existing and required infrastructure.

When this has been done, modernizing existing infrastructures as well as building new ones in rural and remote areas is the key issues.

The following considerations are important in developing ICT infrastructures:

- a. They should be financially sustainable
- b. Systems should meet satisfactory equity criteria; and
- c. Maximum use of the infrastructures must be ensured.

ICT services generally are provided through communication lines, and it is essential to build or improve these facilities in underdeveloped areas. Telecommunication line construction in remote areas, however, although responding to the equity consideration will not financially sustainable, with costs much higher

than collectable service charges, given the low demand in such areas. Cheaper, complimentary methods should therefore be identified as basic infrastructures are developed step by step.

One would be to use satellites, which should cover as many areas as possible to ensure economies of scale and financial sustainability. Many countries use satellites as a major telecommunication infrastructure; they are particularly popular in Eastern Europe countries. Cellular-phone services, which do not require wires, offer another method. Wireless telecommunication services are rapidly replacing wired areas and are leading in the telecommunication markets.

The next issue concerns how to distribute efficiently the information/data received from the infrastructures. Individually receiving is too costly in remote areas. An alternative uses a collective method called a telecentre. A telecentre provides the public with access to information and communication technologies for personal, education, social and commercial/economic purposes. The first telecentre was established in the mid-1980s in a Swedish rural agricultural community (Brnjolfsson and Hitt, 1995).

Nevertheless, ICT infrastructure requires collaboration among many stakeholders. The effective adoption of ICTS in education will require that ministries of Education collaborate with other ministries and government bodies responsible for infrastructure and ICT development.

Conclusion

The use of ICT in the classroom is very important for providing opportunities to learn to operate in the information age. As government makes plans and policies on ICT integration in classroom, adequate provision should be for infrastructures and these be equitably distributed between urban and rural areas. It is only when the infrastructures are available that students can have access to the technologies. It is believed that once there is accessibility to ICTs, others challenges can easily be taken care of.

Government should acknowledge ICT as a path to ensure qualitative education, and be ready to spend money. Money is need in the procurement of various technologies, provision of supportive infrastructures, training and retraining of personal and regular maintenance of infrastructure provided.

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**ESTIMATING THE STATUS OF TEACHERS' APPLICATION OF INFORMATION AND
COMMUNICATION TECHNOLOGY IN SECONDARY SCHOOLS IN ENUGU STATE**

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Abstract

Educational systems in the developed and most developing countries strive to prepare competent and knowledgeable citizens to respond adequately to the challenges of the 21st century. To provide this, fundamental shifts from the conventional ways teachers teach and students learn should be evolved. Building this knowledge based society rely heavily on the introduction of Information and Communication Technology (ICT) in Education. The purpose of this study is to determine the status of application of ICT in the classrooms by teachers in the secondary schools in Enugu State. Three research questions guided the study. A 27-item instrument was constructed and validated to elicit responses from 500 teachers from five education zones of the state. Mean was used in analyzing the data. Results indicated non availability of ICT facilities and support services. Also teachers do not possess requisite ICT skills and therefore cannot apply them in instructions. Based on the findings, the paper recommends among others that, adequate provision of ICT facilities, training and re-training of secondary teachers to equip them with requisite skills.

Introduction

The development of any nation is usually determined by the quantity and quality of its educated citizens. This could explain why education is taken very seriously by any government that wants to develop. Education is central to the long-term well being of any society and individuals.

Traditional educational practices no longer provide prospective students with all the necessary skills to be able to survive economically in today's workplace. Educators (National Center for Vocational Educational Research, 2002 and Murdoch, 2001) believe that what is offered in the schools in the developing countries such as Nigeria is hopelessly inadequate to match the needs of the society and that of the individual students. Shank and Clearly (1995:9) put this succinctly when they state, "Today's schools are organized around yesterday's ideas, yesterday's needs, and yesterday's resources (and they weren't even doing very well yesterday)". An increasing number of educators (Schlechtly 1997, Mann, Shakeshaft, Becker and Kottkamp 1999) are sure that part of the solution is to provide better technology support for learning environments. Schank and Clearly (1995) believed that supporting learning with computer systems and their software allow children to experience activities at school that have been impossible or difficult and thus avoided in the past.

Information and communication technology [ICT] is a fusion of information technology and communication technology. It is the most potent force which is shaping the 21st century [Ayo, 2001]. It has shranked the world to a global village thus repositioning the social, economic, political and academic outlook of man (Chinwe, 2005). Accessibility to timely information is the determining factor towards all round success in different facets of life.

Different components of instructional process system, such as design, implementation, supervision and evaluation can be made more effective and efficient when they are facilitated by the use of ICT. ICT allows students to investigate more thoroughly the real world using up-to-date information. They can then use ICT tools (spread sheet, graphics etc) to analyze and interpret information, receive experts feedback, refine their understanding, build new knowledge from school to non school settings. The interactive multimedia and communication characteristics of ICT can be used to provide more motivating and challenging learning experiences that encourage students to be more engaged with their learning. ICT can be used to provide learning experiences when and where they are needed and allow the students to progress at their own pace. It increases collaboration and cooperation through computer-based networks. Teachers can use computer managed learning system to plan and monitor individual learning programmes. Physically challenged students can use modified keyboards and mouse-drivers to use regular software packages. In many ways computer can be used as simulation and motivation for a range of learning

activities and situations which are difficult to perform in other ways. According to Newhouse (2002) to provide courses such as in Mathematics, Social Sciences, Sciences, Arts, Business and communication and languages which do not incorporate ICT use, reduces the relevancy of the courses to the real world. The teaching areas of some of these courses tended to be very abstract while most students tend to operate on a concrete level. The use of concrete materials in some lessons is useful but often not convenient. The ICT can provide experiences with virtual concrete materials.

In more advance countries, there has been a staggering amount of research and publications related to Information and Communication Technology use for educational purposes during the past decade. Nearly everyone in the industrialized nations have gained access to ICT and the purchase of computers for school use in such nations as United States of America, Britain etc has been increasing in such pace that it is difficult to keep track of how many computer machines are now in their schools (Aduwa-Ogiegbaen and Iyamu, 2005). In these countries between 60 to 70 percent of fund made available to schools was spent on computer education. This is contrary to Nigeria where the budget for education is still below 8% and purchase of instructional materials such computers is regarded as a luxury.

Teachers and students need to adopt technologies that will address educational problems and /or improve productivity. There are dissatisfactions arising from poor performances of secondary school students across the subjects in external examinations when there are technologies that can be employed to provide effective educational opportunities for the students. This casts doubt on the availability of these resources and the extent they are effectively employed during instruction.

Teachers are a key component in the learning environment and therefore the impact of ICT on teachers and the strategies they employ to facilitate the environment are crucial. Teachers of this century have to be skilled in ICT usage to remain relevant to the system that has shifted from pedagogy to demagogy (Asogwa, 2007). The potentials of computer technology in the classroom can be determined by the ability to use the ICT pedagogic practices in instruction by the teachers. The possession of adequate knowledge of ICT skills opens for both the teachers and students a wide range of opportunities and possibilities (Offorma, Eze and Egbe, 2008

In 1988, in attempt to keep pace with development in computer education, Nigeria enacted a policy on computer education. According to Okebukola (1997), the plan was to establish pilot schools and thereafter diffuse the innovation, first to secondary schools and then to primary schools. Twenty-three years after and with the process of globalization gaining more momentum, it becomes imperative to determine the status of application of ICT by secondary school teachers in their classroom instructions in Enugu state.

To achieve this purpose the following research questions guided the study:

1. What are the available ICT facilities and support services in the secondary schools in Enugu state?
2. To what extent do teachers possess requisite ICT skills?
3. What is the extent of application of ICT pedagogic practices by secondary school teachers in Enugu State?

METHODS

This study utilized descriptive survey research design. Descriptive survey design was considered appropriate for this study because it concerned itself merely with finding and describing the events as they are without any manipulation of what is observed. The population of the study comprised of all the 3,506 senior secondary teachers in Enugu State. Through cluster sampling technique 50 schools were drawn, ten each from the five education zones of the state. From each school 10 teachers were randomly sampled. In all 500 teachers participated. Instrument for data collection was questionnaire. The 27 item instrument was divided into three clusters according to the research variables. Experts in Computer Education and Measurement and Evaluation validated the instrument. Each of the items was provided with a four point rating scale of very high extent (VHE) 4points, high extent (HE) 3points, less extent (LE) 2points and not available/applied (NA) 1 point. Mean was used to answer the research questions. Interpretations of the means were based on the limit of the real numbers presented below: 3.50 - 4.49 (VHE), 2.50-3.49 (HE), 1.50-2.49 (LE), 0.50-1.49 (NA).

Results

Table I: Availability of ICT facilities and support services

S/N	Item	Mean	Decision
1	Functional computers to take a stream at a time	1.43	NA
2	Closed-circuit television	1.34	NA
3	Local Area Networks	1.36	NA
4	Internet connected computers	1.25	NA
5	Audio player	1.95	LE
6	Video player	1.50	LE
7	Multimedia projector	1.21	NA
8	Electronic star board	1.20	NA
9	Screen	1.10	NA
10	ICT technical unit or help desk	1.41	NA
11	Stand-by- generators	1.23	NA

Table 1 shows that out of the eleven items on the availability of ICT facilities and support services, only audio and video players were available to a less extent.

Table II: Extent of possession of ICT skills by teachers

S/N	Item	Mean	Decision
12	Ability in and understanding of fundamental Computer operations and concepts	1.80	LE
13	Surfing the internet and locating useful information	1.95	LE
14	Developing lesson plan incorporating students' use of technology in the learning process.	1.45	NA
15	Evaluating and selecting appropriate software for a particular subject and per student need.	1.46	NA
16	Using a variety of programmes to accomplish learning tasks.	1.43	NA
17	Knowing when the system is hanged	1.49	NA
18	Knowledge of virus attack	2.56	LE

Table II indicates that teachers possessed skills of computer operations, Internet uses and knowledge of virus attack to a less extent. They do not possess the other essential ICT skills at all.

Table III: Extent of application of ICT pedagogic practices in the classrooms

N/s	Item	Mean	Decision
19	Investigate reality and build knowledge	1.35	NA
20	Promote active learning	1.26	NA
21	Engage students by motivation and challenge	1.13	NA
22	Provide scaffolding to support higher level of thinking	1.14	NA
23	Increase learner independence	1.30	NA
24	Increase collaboration and cooperation	1.06	NA
25	Provide tools to increase students productivity	1.37	NA
26	Tailor learning to the learner	2.27	LE
27	Overcome physical disabilities	1.24	NA

Table: III reveals that ICTs are not applied in all the pedagogic practices except tailoring learning to the learner that is applied to a less extent.

Discussion

The study showed that virtually all the ICT facilities and support services are not available. This is shown in table 1. There were no functional computers to take a stream at a time. Specially trained computer personnel to impart ICT skills do not exist in most cases. There were no stand-by generators even when rural schools are not connected to the grid. These revelations may not be peculiar to Enugu state; none could non availability of ICT facilities and support services limited to secondary schools only. According to Asogwa (2007), our tertiary institutions equally suffer the same fate. The few available computers are for administrative uses. There cannot be any head way for computer education when the necessary facilities do not exist.

The study also revealed that teachers do not posses requisite ICT skills to impart to the learners. Majority of the teachers did not undergo any serious computer programme in the course of their training. To be able to cope with the new information and communication technologies, they need to be re-trained because according to Okorn and Koko (2007: 2), “any reform within the educational system will not have desired effect without quality teachers to implement it”. It is only when the teachers are equipped with necessary skills that they can handle basic computer operations needed during instruction.

The study equally showed that ICT pedagogic practices are not applied by teachers in the classroom instructions. This is not surprising as the teachers don’t posses requisite ICT skills. With ICTs the teachers can make learning active by supporting students in being more active as participants in their own learning and learn by doing rather than just listing or reading. ICTs can assist the teachers in the quality presentations of graphics, sounds and video materials. Students can use ICT to analyze, organize and creatively represent real information in constructing knowledge (Bereiter, 1998). ICTs allow teachers to consider providing a range of activities to assist students to become critical thinkers, designers and problem solvers. The teacher can use ICT to provide motivating and challenging learning experiences that encourage students to be more engaged with their learning. Many computer applications provide the tools that support skills learning and productivity. In short, ICTs make teaching and learning easy, meaningful and interesting, increase learner independence, collaboration and cooperation, provide scaffolding to support high level thinking and overcome physical stability (Kulik, 1994, The Software Information Industry Association, 1999). That is why Newhouse (2002) maintained that to provide courses in Arts or Sciences which do not incorporate ICT use reduces the relevancy of the courses to the real world.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. A compulsory weekend/ holiday ICT programmes with substantial pay as motivation should be organized for teachers in the secondary schools to acquire skills in practical ICT applications.
2. Government in partnership with private individuals/organizations should strive to equip schools with adequate computers and necessary software.
3. Schools especially those in the rural areas should be connected to improved electricity supply as effective ICT use depends on the regular electricity supply. Stand-by generators should be supplied to schools in case of power of outage.

Conclusion

Recognizing the potentials of ICTs in educational development, it is obvious that secondary schools in Enugu state in particular and Nigeria in general have not been able to benefit much from the information revolution because facilities have not been made available.

The teachers need to possess necessary skills to integrate ICT into their classroom practices to improve the quality of secondary education and properly prepare the youths for jobs and other challenges of 21st century.

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IMPACTS OF INFORMATION TECHNOLOGY ON SOCIETY IN THE NEW CENTURY

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Introduction

In the past few decades there has been a revolution in computing and communications, and all indications are that technological progress and use of information technology will continue at a rapid pace. Accompanying and supporting the dramatic increases in the power and use of new information technologies has been the declining cost of communications as a result of both technological improvements and increased competition.

According to Moore's law the processing power of microchips is doubling every 18 months. These advances present many significant opportunities but also pose major challenges.

Today, innovations in information technology are having wide-ranging effects across numerous domains of society, and policy makers are acting on issues involving economic productivity, intellectual property rights, privacy protection, and affordability of and access to information. Choices made now will have long lasting consequences, and attention must be paid to their social and economic impacts.

One of the most significant outcomes of the progress of information technology is probably electronic commerce over the Internet, a new way of conducting business. Though only a few years old, it may radically alter economic activities and the social environment. Already, it affects such large sectors as communications, finance and retail trade and might expand to areas such as education and health services. It implies the seamless application of information and communication technology along the entire value chain of a business that is conducted electronically.

The following sections will focus on the impacts of information technology and electronic commerce on business models, commerce, market structure, workplace, labour market, education, private life and society as a whole.

Business Models, Commerce and Market Structure

One important way in which information technology is affecting work is by reducing the importance of distance. In many industries, the geographic distribution of work is changing significantly.

For instance, some software firms have found that they can overcome the tight local market for software engineers by sending projects to India or other nations where the wages are much lower.

Furthermore, such arrangements can take advantage of the time differences so that critical projects can be worked on nearly around the clock. Firms can outsource their manufacturing to other nations and rely on telecommunications to keep marketing, R&D, and distribution teams in close contact with the manufacturing groups. Thus the technology can enable a finer division of labour among countries, which in turn affects the relative demand for various skills in each nation. The technology enables various types of work and employment to be decoupled from one another.

Firms have greater freedom to locate their economic activities, creating greater competition among regions in infrastructure, labour, capital, and other resource markets. It also opens the door for regulatory arbitrage: Firms can increasingly choose which tax authority and other regulations apply.

Computers and communication technologies also promote more market-like forms of production and distribution.

An infrastructure of computing and communication technology, providing 24-hour access at low cost to almost any kind of price and product information desired by buyers, will reduce the informational barriers to efficient market operation. This infrastructure might also provide the means for effecting real-time transactions and make intermediaries such as sales clerks, stock brokers and travel agents, whose function is to provide an essential information link between buyers and sellers, redundant.

Removal of intermediaries would reduce the costs in the production and distribution value chain.

The information technologies have facilitated the evolution of enhanced mail order retailing, in which goods can be ordered quickly by using telephones or computer networks and then dispatched by suppliers through integrated transport companies that rely extensively on computers and communication technologies to control their operations.

Nonphysical goods, such as software, can be shipped electronically, eliminating the entire transport channel. Payments can be done in new ways. The result is disintermediation throughout the distribution channel, with cost reduction, lower end-consumer prices, and higher profit margins.

The impact of information technology on the firms' cost structure can be best illustrated on the electronic commerce example. The key areas of cost reduction when carrying out a sale via electronic commerce rather than in a traditional store involve physical establishment, order placement and execution, customer support, inventory carrying, and distribution. Although setting up and maintaining an e-commerce web site might be expensive, it is certainly less expensive to maintain such a storefront than a physical one because it is always open, can be accessed by millions around the globe, and has few variable costs, so that it can scale up to meet the demand. By maintaining one 'store' instead of several, duplicate inventory costs are eliminated. In addition, e-commerce is very effective at reducing the costs of attracting new customers, because advertising is typically cheaper than for other media and more targeted.

Moreover, the electronic interface allows e-commerce merchants to check that an order is internally consistent and that the order, receipt, and invoice match. Through e-commerce, firms are able to move much of their customer support on line so that customers can access databases or manuals directly. This significantly cuts costs while generally improving the quality of service.

E-commerce shops require far fewer, but high-skilled, employees. E-commerce also permits savings in inventory carrying costs. The faster the input can be ordered and delivered, the less the need for a large inventory. The impact on costs associated with decreased inventories is most pronounced in industries where the product has a limited shelf life (e.g. bananas), is subject to fast technological obsolescence or price declines (e.g. computers), or where there is a rapid flow of new products (e.g. books, music). Although shipping costs can increase the cost of many products purchased via electronic commerce and add substantially to the final price, distribution costs are significantly reduced for digital products such as financial services, software, and travel, which are important e-commerce segments.

Although electronic commerce causes the disintermediation of some intermediaries, it creates greater dependency on others and also some entirely new intermediary functions. Among the intermediary services that could add costs to e-commerce transactions are advertising, secure online payment, and delivery.

The relative ease of becoming an e-commerce merchant and setting up stores results in such a huge number of offerings that consumers can easily be overwhelmed. This increases the importance of using advertising to establish a brand name and thus generate consumer familiarity and trust. For new e-commerce start-ups, this process can be expensive and represents a significant transaction cost.

The openness, global reach, and lack of physical clues that are inherent characteristics of e-commerce also make it vulnerable to fraud and thus increase certain costs for e-commerce merchants as compared to traditional stores.

New techniques are being developed to protect the use of credit cards in e-commerce transactions, but the need for greater security and user verification leads to increased costs.

A key feature of e-commerce is the convenience of having purchases delivered directly. In the case of tangibles, such as books, this incurs delivery costs, which cause prices to rise in most cases, thereby negating many of the savings associated with e-commerce and substantially adding to transaction costs.

With the Internet, e-commerce is rapidly expanding into a fast-moving, open global market with an ever-increasing number of participants.

The open and global nature of e-commerce is likely to increase market size and change market structure, both in terms of the number and size of players and the way in which players compete on international markets. Digitized products can cross the border in real time, consumers can shop 24 hours a day, seven days a week, and firms are increasingly faced with international online competition.

The Internet is helping to enlarge existing markets by cutting through many of the distribution and marketing barriers that can prevent firms from gaining access to foreign markets.

E-commerce lowers information and transaction costs for operating on overseas markets and provides a cheap and efficient way to strengthen customer-supplier relations.

It also encourages companies to develop innovative ways of advertising, delivering and supporting their product and services. While e-commerce on the Internet offers the potential for global markets, certain

factors, such as language, transport costs, local reputation, as well as differences in the cost and ease of access to networks, attenuate this potential to a greater or lesser extent.

Workplace and Labour Market

Computers and communication technologies allow individuals to communicate with one another in ways complementary to traditional face-to-face, telephonic, and written modes. They enable collaborative work involving distributed communities of actors who seldom, if ever, meet physically.

These technologies utilize communication infrastructures that are both global and always up, thus enabling 24-hour activity and asynchronous as well as synchronous interactions among individuals, groups, and organizations. Social interaction in organizations will be affected by use of computers and communication technologies. Peer-to-peer relations across department lines will be enhanced through sharing of information and coordination of activities.

Interaction between superiors and subordinates will become more tense because of social control issues raised by the use of computerized monitoring systems, but on the other hand, the use of e-mail will lower the barriers to communications across different status levels, resulting in more uninhibited communications between supervisor and subordinates.

That the importance of distance will be reduced by computers and communication technology also favours telecommuting, and thus, has implications for the residence patterns of the citizens. The consequences of such a shift in employment from the suburbs to more remote areas would be profound. Property values would rise in the favoured destinations and fall in the suburbs. Rural, historical, or charming aspects of life and the environment in the newly attractive areas would be threatened. Since most telecommuters would be among the better educated and higher paid, the demand in these areas for high-income and high-status services like gourmet restaurants and clothing boutiques would increase. Also would there be an expansion of services of all types, creating and expanding job opportunities for the local population.

By reducing the fixed cost of employment, widespread telecommuting should make it easier for individuals to work on flexible schedules, to work part time, to share jobs, or to hold two or more jobs simultaneously. Since changing employers would not necessarily require changing one's place of residence, telecommuting should increase job mobility and speed career advancement.

This increased flexibility might also reduce job stress and increase job satisfaction. Since job stress is a major factor governing health there may be additional benefits in the form of reduced health costs and mortality rates. On the other hand one might also argue that technologies,

by expanding the number of different tasks that are expected of workers and the array of skills needed to perform these tasks, might speed up work and increase the level of stress and time pressure on workers.

A question that is more difficult to be answered is about the impacts that computers and communications might have on employment. The ability of computers and communications to perform routine tasks such as bookkeeping more rapidly than humans leads to concern that people will be replaced by computers and communications. The response to this argument is that even if computers and communications lead to the elimination of some workers, other jobs will be created, particularly for computer professionals, and that growth in output will increase overall employment. It is more likely that computers and communications will lead to changes in the types of workers needed for different occupations rather than to changes in total employment.

A number of industries are affected by electronic commerce. The distribution sector is directly affected, as e-commerce is a way of supplying and delivering goods and services. Other industries, indirectly affected, are those related to information and communication technology (the infrastructure that enables e-commerce), content-related industries (entertainment, software), transactions-related industries (financial sector, advertising, travel, transport). Ecommerce might also create new markets or extend market reach beyond traditional borders.

Enlarging the market will have a positive effect on jobs. Another important issue relates to interlink ages among activities affected by e-commerce. Expenditure for e-commerce-related intermediate goods and services will create jobs indirectly, on the basis of the volume of electronic transactions and their effect on prices, costs and productivity. The convergence of media, telecommunication and computing technologies is creating a new integrated supply chain for the production and delivery of multimedia and information content. Most of the employment related to e-commerce involves around the content industries and communication infrastructure such as the Internet.

Jobs are both created and destroyed by technology, trade, and organizational change. These processes also underlie changes in the skill composition of employment. Beyond the net employment gains or losses brought about by these factors, it is apparent that workers with different skill levels will be affected differently. E-commerce is certainly driving the demand for IT professionals but it also requires IT expertise to be coupled with strong business application skills, thereby generating demand for a flexible, multi-skilled work force. There is a growing need for increased integration of Internet front-end applications with enterprise operations, applications and back-end databases. Many of the IT skill requirements needed for Internet support can be met by low-paid IT workers who can deal with the organizational services needed for basic web page programming. However, wide area networks, competitive web sites, and complex network applications require much more skill than a platform-specific IT job. Since the skills required for e-commerce are rare and in high demand, e-commerce might accelerate the up skilling trend in many countries by requiring high-skilled computer scientists to replace low-skilled information clerks, cashiers and market salespersons.

Education

Advances in information technology will affect the craft of teaching by complementing rather than eliminating traditional classroom instruction. Indeed the effective instructor acts in a mixture of roles. In one role the instructor is a supplier of services to the students, who might be regarded as its customers. But the effective instructor occupies another role as well, as a supervisor of students, and plays a role in motivating, encouraging, evaluating, and developing students. For any topic there will always be a small percentage of students with the necessary background, motivation, and self-discipline to learn from self-paced workbooks or computer assisted instruction. For the majority of students, however, the presence of a live instructor will continue to be far more effective than a computer assisted counterpart in facilitating positive educational outcomes. The greatest potential for new information technology lies in improving the productivity of time spent outside the classroom. Making solutions to problem sets and assigned reading materials available on the Internet offers a lot of convenience. E-mail vastly simplest communication between students and faculty and among students who may be engaged in group projects. Although distance learning has existed for some time, the Internet makes possible an large expansion in coverage and better delivery of instruction. Text can be combined with audio/ video, and students can interact in real time via e-mail and discussion groups. Such technical improvements coincide with a general demand for retraining and upskilling by those who, due to work and family demands, cannot attend traditional courses. Distance learning via the

Internet is likely to complement existing schools for children and university students, but it could have more of a substitution effect for continuing education programmes. For some degree programmes, high-prestige institutions could use their reputation to attract students who would otherwise attend a local facility. Owing to the Internet's ease of access and convenience for distance learning, overall demand for such programmes will probably expand, leading to growth in this segment of e-commerce.

As shown in the previous section, high level skills are vital in a technology-based and knowledge-intensive economy. Changes associated with rapid technological advances in industry have made continual upgrading of professional skills an economic necessity. The goal of lifelong learning can only be accomplished by reinforcing and adapting existing systems of learning, both in public and private sectors. The demand for education and training concerns the full range of modern technology. Information technologies are uniquely capable of providing ways to meet this demand. Online training via the Internet ranges from accessing self-study courses to complete electronic classrooms. These computer-based training programmes provide flexibility in skills acquisition and are more affordable and relevant than more traditional seminars and courses.

Private Life and Society

Increasing representation of a wide variety of content in digital form results in easier and cheaper duplication and distribution of information. This has a mixed effect on the provision of content. On the one hand, content can be distributed at a lower unit cost. On the other hand, distribution of content outside of channels that respect intellectual property rights can reduce the incentives of creators and distributors to produce and make content available in the first place. Information technology raises a host of questions

about intellectual property protection and new tools and regulations have to be developed in order to solve this problem.

Dealing with indecent material involves understanding not only the views on such topics but also their evolution over time. Thus, if censorship does not appear to be an option, a possible solution might be labeling. The idea is that consumers will be better informed in their decisions to avoid objectionable content.

The rapid increase in computing and communications power has raised considerable concern about privacy both in the public and private sector. Decreases in the cost of data storage and information processing make it likely that it will become practicable for both government and private data-mining enterprises to collect detailed dossiers on all citizens. Nobody knows who currently collects data about individuals, how this data is used and shared or how this data might be misused. These concerns lower the consumers' trust in online institutions and communication and, thus, inhibit the development of electronic commerce. A technological approach to protecting privacy might be cryptography although it might be claimed that cryptography presents a serious barrier to criminal investigations.

It is popular wisdom that people today suffer information overload. A lot of the information available on the Internet is incomplete and even incorrect. People spend more and more of their time absorbing irrelevant information just because it is available and they think they should know about it.

Therefore, it must be studied how people assign credibility to the information they collect in order to invent and develop new credibility systems to help consumers to manage the information overload.

Technological progress inevitably creates dependence on technology. Indeed the creation of vital infrastructure ensures dependence on that infrastructure. As surely as the world is now dependent on its transport, telephone, and other infrastructures, it will be dependent on the emerging information infrastructure. Dependence on technology can bring risks. Failures in the technological infrastructure can cause the collapse of economic and social functionality. Blackouts of long-distance telephone service, credit data systems, electronic funds transfer systems, and other such vital communications and information processing services would undoubtedly cause widespread economic disruption. However, it is probably impossible to avoid technological dependence. Therefore, what must be considered is the exposure brought from dependence on technologies with a recognizable probability of failure, no workable substitute at hand, and high costs as a result of failure.

Conclusions

The ongoing computing and communications revolution has numerous economic and social impacts on modern society and requires serious social science investigation in order to manage its risks and dangers. Such work would be valuable for both social policy and technology design. Decisions have to be taken carefully. Many choices being made now will be costly or difficult to modify in the future.

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CONCEPT MAPPING TEACHING STRATEGY, ACHIEVEMENT AND RETENTION OF SS II ENGLISH LANGUAGE STUDENTS IN RIVERS STATE

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Abstract

This study was on Concept Mapping Teaching Strategy, Achievement and Retention of SS II Students in English Language in River State. The poor academic performance of students in this subject area has been attributed in part to obsolete teaching strategies by researchers and educational critics. Two objectives were set for the study. The population for the study was all the students in senior secondary II in Obio/Akpor and Ikwerre Local Government Areas of Rivers State. An experimental research design, specifically the non-randomized control group pretest-posttest design with an intact class was used for the study. The sample consisted of a total of 202 students, made up of 124 males and 78 females. Two types of instruments: English Achievement Test (EAT) and English Retention Test (ERT) were used. The test items in the instrument were validated by the researchers' colleague in the Department of Educational Technology/Library Science. A reliability coefficient of 0.87 for both instruments by Kuder Richardson formular 21. The subjects were pre-tested before exposure to the two different teaching strategies, and posttest administered to the groups. The data collected from the pretest and posttest were statistically analyzed using t-test. The results obtained showed that significant difference exist in the achievement and retention of subjects in English language taught with concept mapping strategy and those taught with lecture method. The application of Multiple Classification Analysis (MCA) showed that students in English language taught with concept mapping strategy achieved and retained significantly better than those taught with lecture method. Based on the finding, the paper submitted that concept mapping teaching strategy is the more effective in the enhancement of students' academic achievement and retention in English language. The study recommended that, the teaching strategies of English language teachers should be very flexible to incorporate new strategies. Concept mapping teaching strategy should be adopted and integrated into the secondary school curriculum

Background to the Study

The performance of any school organization is predicated on the extent to which that school achieves her objectives. The achievement of these objectives among others can be determined and measured by the students' academic achievement. Hence, the educators and indeed the government lay emphasis on the scrutiny and overall blending of the products of our school organization.

The Nigeria educational system today has adopted the 9-3-4 educational policy as against the former 6-3-3-4 educational policy (NERDC, 2007). This means:

- 3 years of lower basic, 3 years of middle basic (where pupils are introduced to the basic of reading, writing and arithmetic, which are fundamental for communication and interaction in the society and 3years of upper basic.
- Three years of senior secondary school
- Four years in the University.

The three years of senior secondary school is to provide opportunities for continuing education. It also facilitates the process of adjustment to adult social roles. It is this level that prepares the individual for life in the dynamic society.

The general academic achievement of students at senior secondary school level, particularly in the external examination (West African School Certificate Examination (WASCE) has been deteriorating. Ekpo (1992) predicted that the trend has been for the failure rate to keep increasing yearly, resulting in untold hardship to the parents and frustration to the unsuccessful candidates.

Table 1: WASC gradual failure rate (%) of rivers state students by year of examination in English

Year	Total number of students	Scores in english language: (percentage failure)
2003	12654	41.21%
2004	14849	43.44%
2005	25653	47.35%
2006	36510	47.67%
2007	43911	50.47%

Source: Zonal Office – West African School Certificate Board – Port Harcourt. (2008)

Table 1 shows the gradual failure rate of English language students in Rivers State from their senior school certificate examination released by the West African Examination Council (WAEC) between 2003 to 2007. This result depicts the percentage failure of students in English Language.

Ibe-Bassey (2004) noted that there has been general dissatisfaction among different groups of people in our society: parents, students, government, workers, etc, about the decreasing performance in our institutions of learning. Job (1996) reported that English Language is the only medium of communication in our schools, and that, it is the medium through which other subject areas are taught, and a yardstick to judge the products of the school in the wider society.

The poor academic achievement of students, particularly in English Language has attracted public condemnation (Job, 1996; Akah, 2002; Ibe-bassey, 2004). This poor academic achievement of students has resulted in the restructuring of the curriculum by the government (NERDC, 2007). The reviewed curriculum places greater emphasis on the activities and skills of the learner, while relegating the teacher to the background. The learner now becomes the centre of instructional design, learning activities and instructional materials. These changes in the curriculum have particularly been extended to English Language as a subject, and have resulted in the expansion and inclusion of oral English in the senior secondary schools' curriculum.

The public and indeed educators have blamed the government for failing to provide basic infrastructural materials necessary for learning, and much of the learning environment, they observe, does not motivate learners. The dearth or dilapidation of school buildings, non provision of facilities such as tables, desks, textbooks and laboratory equipment, are evidence of this ground for condemnation. The federal and state governments, over the years have embarked on infrastructural development in the various tiers of our educational institutions. Fewer school buildings are erected with insufficient libraries and laboratory equipment. The welfare packages as they relate to the salaries, leave bonuses and promotion of the teachers and non-teachers in the school organization are not positively addressed.

The general implication of this is that the achievement of the English Language students has not reflected the expected improvement in the learning environment, and the goal of education. This situation has encouraged research works to be carried out using variables that can either enhance or inhibit student academic achievement. Such variables may include the – design of instruction, attitude of students to studies, lack of motivation, qualification and competency of teachers as well as teaching strategies.

Ekpo (1992) attributed the poor academic performance partly to poor teaching methods and evaluation in most of the subjects taught in schools. Most educators and research finding support this opinion that the quality of instruction depends on the teaching strategy adopted by the teacher (Okorie, 1996; Okworo, 2008). This shows that the efficiency of teaching depends on the teachers' ability to manage and use instructional resources and materials. The attainment of this goal depends on the provision of an effective, efficient and meaningful instructional communication between the instructor and the learner (Ibe-Bassey, 2004).

The teaching of English Language has been limited to the use of traditional methods of lecture and textbook-based approaches (Job, 1996). Unfortunately these approaches are at variance with individualized instruction, use of effective learning strategies and other methods for improved academic performances (Job, 1996). Research findings by Ekpo (1992), Ibe – Bassey (2004) and Bayim (2004) have supported alternative teaching strategies. Concept mapping teaching strategy is one of such strategies. Concept mapping teaching strategy when effectively used can influence effective, efficient and meaningful learning (Novak, 2002). It is a technique of representing the relationships among different concepts visually (Novak, 1990). Concept mapping teaching strategy has the capability of harnessing the power of the vision of learners to understand complex information at a glance.

Concept mapping teaching strategy can be used to stimulate the generation of ideas and consequently aids creativity. This concept has its origin in the constructionist theory, and was developed by Novak and Gowin (1984). The authors reported that meaning must be constructed to show how all elements interact when we construct new meaning (Novak and Gowin, 1984).

Goldsmith, Johnson and Acton (1991) observed increased performance of students using concept maps to judge similarities between pairs of concepts. Shavelson and Stanto (1975) cited in Duru (2006), noticed increased performance of students in categorization. Concept mapping strategy can illicit clarity of meaning and integration of crucial details. It encourages retention and recall of what is learnt, because it involves mental process and activity. Novak (2002) and Okebukola (1990) reported meaningful learning of concepts by students using concept mapping to learn genetics and ecology. Asiyal (2005) stressed the importance of the use of concept mapping teaching strategy in chemistry, while Duru (2006) extended concept mapping teaching strategy to integrated science.

This research study is therefore being carried out to investigate the effectiveness of concept mapping teaching strategy in bringing about retention and recall in English Language. Duru (2006) opined that concept mapping teaching strategy has been established to enhance performance both in the quality of procedures used to solve the problems and accuracy of the solutions. These have only been recorded in the science subjects.

Statement of Problem

One observes from the WASC Examiners report, a gradual decline in students performance in English language examinations as illustrated from 2003/2007 WASC as shown in Table 1. Stakeholders in the educational sector are worried since English language is a major requirement for entering into universities and other tertiary institutions. Various reasons as non provision of adequate materials, poor teaching strategy, unqualified teaching staff has been attributed as probably cause for these decline in students academic performance in the English language. However, not much attention have been given to alternative teaching strategies in the teaching/learning environment. One strategy that has shown some success in the sciences is concept mapping. If adopted in the teaching of English language one wonder if the success achieved by students in the sciences could be duplicated in English language. In other words, can the use of concept mapping teaching strategy influence the academic performance of English language students?

Research work concluded on concept mapping teaching strategy in other subjects, particularly the sciences have shown that concept mapping as teaching strategy has achieved meaningful learning in these subject areas. Can the use of concept mapping teaching strategy influence the academic achievement and retention of students of English language? This study will attempt to answer this question.

Objectives of the Study

The objectives of this study are to:

1. compare the academic performance of students in English Language taught with concept map teaching strategy and those taught with lecture method.
2. compare the retention of students in English Language taught with concept map teaching strategy and those taught with lecture method.

Research Questions

The following research questions are developed to guide the study:

1. Is there a difference in academic performance between English Language students taught with concept mapping teaching strategy and those taught with the lecture method?
2. Is there a difference in retention between English Language students taught with concept mapping teaching strategy and those taught with lecture method?

Hypotheses

The following null hypotheses are formulated for the study.

1. There is no significant difference between the academic performance of students in English Language taught with concept mapping teaching strategy and those taught with lecture method
2. There is no significant difference in retention of English Language students taught with concept mapping teaching strategy and those taught with lecture method.

Significance of the Study

It is expected that the findings of this study will primarily enable teachers to take appropriate decision on the best approach in teaching, to improve academic achievement of English Language students. This inevitably will reduce failure and the lack of interest in this vital subject.

The findings will also assist instructional designers, curriculum planners, curriculum developers and other educators on further innovations in teaching strategy. Hence, instructional materials could be developed to adequately match the concept map teaching strategy.

It will also assist in making students give more attention to the study of English Language, since it is practically oriented, hence, improve learning. It will inspire further researches on concept mapping teaching/learning strategy as it relates to the achievement and retention of English Language students.

Delimitation of the Study

This study concern itself with the academic achievement of English Language students as a result of the use of concept map as a teaching strategy. It will also concern itself with academic achievement of male and female English Language students taught with concept map teaching strategy. It will also look at the retention of English Language students when taught with concept map teaching strategy etc. The study will also be delimited to SS II students in public senior secondary schools in Rivers State.

Research Design

An experimental research design was used for this study. Specifically the non-randomized control group pretest-posttest design with an intact class was used. This is due to the homogeneity and size of the classes under study.

Population

The population for this study included all the students in Senior Secondary II (SS II) class in Obio/Akpor and Ikwerre Local Government Areas of Rivers State. There are 12 public secondary schools in Obio/Akpor Local Government Area and eight in Ikwerre Local Government Area with 3,654 SSII students altogether in the year 2008 (Rivers State Post primary School's Board (RSPPSSB).)

Sample and Sampling Technique

The sample consisted of a total of 202 students. It was made up of 124 males and 78 females.

Criterion – sampling technique was used to select schools from the target population. The criteria include:

- i. The year of establishment of school
- ii. The number of graduate teachers in the subject area
- iii. The population of SS II students in the school.
- iv. Use of intact class.

Instrumentation

There were two types of instruments used in this study. The English Achievement Test (EAT) and English Retention Test (ERT). The first set of multiple-choice questions in the English Achievement Test consisted of items from noun as part of speech. These include:

- Proper nouns – names of persons, places and things examples: James, Mary and Uyo
- Common nouns – general common names for a class of persons places or things. Examples: girl

- man and tree.
- Collective noun – A common noun which though used in the singular form has a plural sense – example – committee, crowd.
 - Abstract noun – The name for a quality such as thought or emotion which does not have physical existence – example – Goodness, honesty.

The second part of multiple-choice questions – 11 – 20 of the English Achievement Test consisted of items from the various plural formation of the types of nouns. Each question had four options (A – D). The posttest and retention test contained the same question in the pretest arranged in reordered form. The total number of test items were 20. The first administration of the test items was to determine the students' knowledge on the various types of nouns and their plural formation. While the second administration was to determine the retention ability of the students.

Validity of Instrument

The pretest and posttest items in the instrument were validated using face validity. Therefore general expression criterion standardization of items and the coverage of items were validated by the researcher's colleagues in the Department of Educational Technology/Library Science. All the validators examined the appropriateness of the items in terms of general expression, standardization, coverage, corrections and comments. These inadequacies were effected in the final form of the instrument. The pretest and posttest items were face, criterion and content validated by the researcher's colleagues.

Reliability

The researcher conducted a trial test on 50 students. The 20 multiple-choice test items were administered to the students who were not part of the main study, but were equivalent in all respect to the students in the study. These students were taken from one of the schools that met the criteria for sampling but not used for the main study. The result obtained in this administration was tested using Kuder Richardson formular 21. The result revealed a reliability coefficient of 0.87. The two instruments had same reliability index which are considered to be highly reliable.

Procedure for Data Collection

The researchers obtained a written permission from the Head of Department of Educational Technology and Library Science, University of Uyo. This permission was presented to the principals of the secondary schools that were used for this study.

English language teachers used as assistants in the research study were trained in the concept mapping teaching strategy for one week. These assistants who had specific instruction on the concept mapping teaching strategy taught both the experimental and control groups. Pretest was given to both groups (experimental and control groups). The two groups were further exposed to the two different teaching strategies. The test items were administered to all the groups as posttest, after the treatment. Three weeks after the posttest, retention test was administered to the two groups (experimental and control groups), in which the test items were reordered.

Method of Data Analysis

The data collected from pre-test and post-test were statistically analyzed using t-test, to determine the difference in means of the samples. The two hypotheses were tested at .05 level of significance.

Research Question One

Is there a difference in academic performance between English language students taught with concept mapping teaching strategy and those taught with lecture method?

Table 2: Mean and standard deviation scores of students' pretest and posttest achievement classified by teaching strategy

Teaching strategy	n	Pretest		Posttest		Mean gain
		\bar{X}	SD	\bar{X}	SD	
Concept mapping	103	26.20	6.36	52.19	9.53	25.99
Lecture method	99	25.45	7.11	45.10	5.89	19.65

As shown in Table 2, the mean gain scores of students taught with concept mapping teaching strategy is 25.99, while those taught with lecture method has a mean gain score of 19.65. The result therefore shows that the mean gain score of students taught with concept mapping teaching strategy is greater than the mean gain score of students taught with lecture method. The implication therefore is that students taught with concept mapping teaching strategy performed better than those taught with lecture method. Hence, the t-test analysis was used to ascertain, if the difference was significant.

Research Question Two

Is there a difference in retention between English Language students taught with concept mapping teaching strategy and those taught with lecture method?

Table 3: Mean and standard deviation scores of students' pretest and retention test classified by teaching strategy

Teaching strategy	n	Pretest		Posttest		Mean gain
		X̄	SD	X̄	SD	
Concept mapping	103	26.20	6.36	37.2.3	7.56	11.03
Lecture method	99	25.45	7.11	33.03	4.09	7.58

As shown in Table 3 the mean gain score of students taught with concept mapping teaching strategy is 11.03, while that of those taught with lecture method is 7.58. These results indicate that students taught with concept mapping teaching strategy had a better retention ability than those taught with lecture method. Hence, the t-test analysis was used to ascertain if the difference was significant.

Hypothesis One

There is no significant difference between the academic performance of students in English language taught with concept mapping teaching strategy and those taught with lecture method.

Table 4: t-Test distribution of mean scores and standard deviation of students' post test achievement by teaching strategy

Teaching strategy	n	X̄	SD	DF	t- cal	t-crit.	Decision
Concept map	103	52.19	9.53	2.00	6.34	2.92	*
Lecture method	99	46.10	5.89				

* = significant at .05 alpha level

An examination of Table 4 reveals that the t-calculated (6.34) is greater than the critical t-value of 2.92 at 0.05 alpha level. This result shows that the HO1 that there is no significant difference between the academic performance of students in English language taught with concept mapping teaching strategy and those taught with lecture method is rejected. The alternative hypothesis is accepted-that there is a significant difference between the academic achievement of students taught with concept mapping teaching strategy and those taught with lecture method.

Consequent upon the significant difference, the Multiple Classification Analysis (MCA) was considered in order to ascertain the relationship between strategy and academic achievement of students, and the level of contribution of strategy on students' academic achievement.

Table 5: Multiple classification analysis of achievement of students classified by strategy

Variable + Category	n	Unadjusted		Adjusted for factor and covariates			
		X̄	Dev'n	Eta	X̄	Dev'n	Beta
Teaching strategy				.41			.40
Concept map	103	52.19	3.48		52.16	3.44	
Lecture method	99	45.10	-3.62		45.14	-3.58	
Regression coefficient (R) = 0.417							
Regression coefficient squared (R ²) = 0.174							

The result in Table 5 shows that teaching strategy had an index of relationship (Beta) of .40 with students' academic achievement. The Table also shows a regression of 0.417 and regression squared of 0.173. This implies that 17.4% of the total variation in students' academic achievement can be attributable to the influence of teaching strategy.

Hypothesis Two

There is no significant difference in retention of English language students taught with concept map teaching strategy and those taught with lecture method.

Table 6: t-Test distribution of mean scores and standard deviation of students' intention by teaching strategy

Teaching strategy	n	\bar{X}	SD	DF	t- cal	t-crit.	Decision
Concept Map	103	37.33	7.56	2.00	4.34	2.92	*
Lecture Method	99	33.03	4.09				

* = significant at .05 alpha level

An examination of Table 6, reveals that the t-calculated (4.34) is greater than the critical t-value of 2.92 at 0.05 alpha level. This result shows that the HO2 that there is no significant difference in retention of English language students taught with concept mapping teaching strategy and those taught with lecture method is rejected. The alternative hypothesis is accepted-that is: there is a significant difference between the retention of English language students taught with concept mapping teaching strategy and those taught with lecture method.

Based on this difference, the Multiple Classification Analysis was used in order to ascertain the relationship between teaching strategy and students' retention and the level of contribution of teaching strategy on students' retention, as shown in Table 7.

Table 7: Multiple classification analysis (MCA) of retention test score of students by teaching strategy

Variable + Category	n	Unadjusted		Adjusted for factor and covariates			
		\bar{X}	SD	Eta	\bar{X}	SD	Beta
Teaching strategy				.33			.31
Concept map	103	37.23	2.06		37.10	1.93	
Lecture method	99	33.03	-2.14		33.17	-2.00	
Regression coefficient (R) = 0.501							
Regression coefficient squared (R ²) = 0.251							

The result in Table 7 shows that teaching strategy had a relationship (Beta) of 0.31 with the retention of students. It also shows a regression coefficient (R) of 0.501 and a regression coefficient squared (R²) of 0.251. This implies that 25.1% of the total variation in students' retention can be attributed to the influence of teaching strategy.

The Academic Achievement, Retention of Students in English Language taught with concept mapping strategy and those taught with lecture method

The primary objectives of this study is to compare the academic achievement, retention of students in English language taught with concept mapping strategy and those taught with lecture method.

The results of the investigation as shown in Tables 3 and 4 indicated that a significant difference was found to exist in the achievement in English language students taught with concept mapping strategy and those taught with lecture method. Multiple Classification Analysis (MCA) showed that 17.4% of the total

variation in the enhancement of students' achievement in English language is attributable to the influence of teaching strategy of concept mapping.

The result of the investigation as shown in Tables 6 and 7 also showed that a significant difference was found to exist in the retention of students in English language taught with concept mapping strategy and those taught with lecture method. Multiple Classification Analysis (MCA) showed that 25.1% of the total variation in the enhancement of students' retention in English language is attributable to the influence of teaching strategy of concept mapping.

The findings could be due to the pictorial presentation of concept mapping strategy which ignites the intrinsic motivation of the students and keep them glued to their work until the perfect understanding of the concepts are achieved. The result could also be due to the hierarchical representation of idea and concepts through the concept mapping strategy, which assist students assimilate new information more quickly and effectively. The findings could also be due to the creative liberality of concept mapping strategy which allows each student the freedom to create their own version of the learning concept and compare it with others and effect corrections where necessary, hence higher retention.

The findings of this research study support those of earlier studies by Novak and Gowin (1984), Trochin (1986), Jonassen and Yacci (1993) Okebukola (2002), Duru (2006) and Strangman, Hall and Meyen (2008) that concept mapping strategy harnesses the power of vision of students to understand complex information "at-a-glance". That concept mapping goes beyond the typical outline because it shows relationship between concepts which is a representation of cognitive structure. The findings of this study also support the studies of Grocia (1992) and Gaines and Shaw (1993) that concept map strategy is effective tool for making the structure of knowledge explicit, more accessible and easily integrated by the learners, and boosts their motivation.

The findings of this study support the findings of Sharvelson, Baxter and Pine (1991) that concept mapping is used to check learning and to identify misconceptions since it assists teachers in evaluating the process of teaching. The study supports Canas and Fords (1992) that concept map strategy is of great assistance to knowledge creation due to its intuitive nature and brain storming in new areas.

The findings of this study also support the findings of Ibe-Bassey (1988) that instructional media which has the same visual effect with concept map, could offer a reality of experiences which stimulates self-activity on the part of the learner and provide experiences not easily obtained through materials and contribute to the efficiency, depth and variety of learning. The study also supports the findings of Berth (1991) that instructional media are worth a thousand words when they are used to suggest an idea, convey or correct a wrong impression, increase retention, enrich reading and encourage observation and critical thinking. The study is in agreement with Okworo (2008) that effective use of instructional media would bring about the expected improvement in the quality of learners, since it helps them understand the lesson very clearly as they combine the sense of sight, hearing and touching while learning.

Summary

The purpose of the study was to compare the academic performance and retention of SS II students in English language taught with concept mapping strategy and those taught with lecture method. The research design adopted for the research was the non-randomized control group pretest, posttest design with an intact class. The population of the study included 3654 senior secondary two (SS II) students in English language in the two Local Government – Obio/Akpor and Ikwerre in Rivers State. A criteria sampling technique was used to select schools from the largest population. six schools (3 urban and 3 rural) met the criteria, through balloting and were randomly assigned to treatment and control group as both urban and rural schools had experimental and control groups. One intact class was randomly selected in each school. Two instruments were used in gathering data for the study:

- i. English Achievement test (EAT); and
- ii. English Retention test (ERT)

The instruments were developed by the researcher and validated by the researchers' colleagues in the Department of Educational technology/Library Science. Kuder Richardson formular 21 was used to

establish the reliability coefficient of the English language Achievement Test (EAT). The reliability coefficient of EAT is 0.87. Descriptive statistics and t-test were used in the analysis of data.

The results obtained showed that significant difference exist in the achievement and retention of students in English language taught with concept mapping teaching strategy and those taught with lecture method. The application of Multiple Classification Analysis (MCA) showed that students in English language taught with concept mapping teaching strategy achieved and retained significantly better than those taught with lecture method.

Conclusions

The following conclusions are arrived at based on the findings from this study:

1. Teaching strategies enhance students' academic achievement and retention in English language.
2. concept mapping teaching strategy is the most effective in the enhancement of students' academic achievement and retention in English language as compared with lecture method.

Recommendations

The following recommendations are advanced for consideration based on the findings of the study:

- The teaching strategies of English language teachers should be very flexible to incorporate new strategies in the teaching of the subject in senior secondary schools.
- Concept mapping teaching strategy should be adopted and enshrined into the curriculum by the planners of curriculum development.

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EFFECT OF GENDER ON THE USE OF COMPUTER IN THE TEACHING LEARNING PROCESS

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Abstract

This study investigated the effect of gender on the use of computer in the teaching learning process and effect on the academic performance of students in Oral English. It was an experimental study and used a pre-test, treatment-control, post-test design. The experimental group was taught the Oral English lessons on Monothong, Diphthong and Consonants with computer while the control group was taught without computer. Two research questions and two null hypotheses guided the study. One researcher-made instrument of 20 - item multiple choice questions was used for both pre-tests and post-tests. Data collected were analyzed using both mean scores and t-tests. Results show that gender had no significant effect on the use of computer as shown by the performance of the boys and girls. However, the use of computer in teaching improved the academic performance of the students.

Introduction

The use of computer has become an indispensable tool for every aspect of human endeavours. In the school system, it has become an important medium in instructional delivery and instructional management. The recognition of the value of computer in the teaching learning process in the contemporary world engendered the introduction of computer education into the Nigerian school curriculum in 1989.

For meaningful teaching of computer education and dissemination of computer knowledge, the National Commission for Colleges of Education (NCCE) (1996) is of the opinion that there is the need to produce seasoned professional teachers in computer education in order to accomplish the following objectives:

- to teach computer studies at the Primary and Secondary school levels.
- To program and process given data with maximum speed and accuracy and
- To demonstrate reasonably high level of competence for further studies in computer education and allied disciplines.

With the introduction of computer into the educational system, it has been discovered that teaching could be developed in a more flexible way through computer – Assisted Instruction (CAI) in order to make it more responsive to student's learning. According to Babalola (1998), the most important feature in computerized instruction is that it permits a high degree of individualization. This in effect means that students can proceed at their own pace, following a path through the curriculum as suited to their particular interest and talent.

However, the introduction of computer in the last couple of years has had little or no impact on the traditional daily activities within the school system (Yusuf, 1998). Accordingly, the full potentials of computer in assisting or managing instruction are yet to be exploited. A lot of factors have been identified as hindrances to the use of computer in schools. Among these are cost of purchase, epileptic electricity supply, computer illiterate teachers and gender attitudes. Studies have shown differences in the attitudes of male and female students to the use of computer in schools. According to the study carried out by Spotts, Bowman & Mertz in USA on gender and use of instructional technologies males rated their knowledge and experience with some innovative technologies higher than did females. For frequency of use, no significant differences were found with the exception of video, where females indicated slightly more frequent use. Both rated technologies as important to instruction. The other factors influencing technology use include time to learn a technology, increased student learning, ease of use, training and available information in discipline.

The research conducted by Mitra, Lenzmeier, Steffensmeir, Avon, Qu, & Hazen (2000) on gender and computer use in an academic institution explored the nature of the relationships between gender, categories of computer use and attitudes toward computers in a computer enriched environment where all students were provided with network access and laptop computers over a four year period. The results indicate that

women were less positive about computers than men and the use level of computers by women were less frequent than for men. This change in the relationship is a throwback to the earlier days of computing when research had indicated that men were more positively disposed toward computers than women.

Shashaani (1997) using a sample of 202 College students also in USA, found that females were less interested in computers and less confident than males; males were more experienced. Further analysis of the students' responses showed that one semester of computer training improved their attitudes towards computers.

This study therefore investigated not only the effect of gender on the use of computer but also the effect of computer use on students' academic performance.

Research Questions

Two research questions guided this study and they are:

1. Does the use of computer instruction affect the academic performance of students in teaching learning process?
2. Does gender affect the use of computer in the learning process?

Hypothesis

Two null hypotheses were also propounded thus:

Ho₁ – There is no significant difference between the academic performance of students in the experimental group and those in the control group.

Ho₂ – There is no significant difference between the academic performance of males and females in the experimental group.

Methodology

This was an experimental research. It adopted a pre-test, treatment-control, post-test design. Intact classes were used for the study. The experimental group was taught the English lessons on Monothong, Diphthong and Consonants with computer while the control group was taught without computer.

The study was conducted in Pope John Paul II Model Secondary School in Mbaise of Imo State. Out of the three classes in SS2, two (SS2B & 2C) were randomly selected for this study. SS2B was used as the experimental group while SS2C was the control group. They were 30 students in each class.

One researcher- made instrument that was used for data collection in this research is a 20-item multiple choice questions. This was used for both the pre-test and post-test. The questions were drawn from the three topics taught in Oral English. These topics were taught for three weeks.

A test retest method was used to ascertain the reliability of the instrument. SS2 students from Comprehensive Development Secondary School, Owerri were used. The scores were correlated using Kuder Richardson correlation analysis which yielded a coefficient of 0.76.

Mean scores and t-tests were used for analysis of data collected. Mean scores were used to answer the research questions while t-tests were used to test the hypotheses.

Findings

Research Question 1 – Does the use of computer in instruction affect the academic performance of students in the teaching learning process?

Table 1.1

Group	No of Students	Mean Score
Control	30	15.1
Experimental	30	17.1

From the table above, students taught with computer had a mean score of 17.1 while those taught without computer had a mean score of 15.1. This shows that those taught with computer performed better than those taught without computer.

Research Question 2

Does gender affect the use of computer in the learning process?

Table 2.1 Mean scores of male and female students.

Gender	No of Students	Mean Score(s)
Male	15	17.7
Female	15	16.5

From the table, the mean score of the males (17.7) was higher than that of the females (16.5) showing that the males performed better than the females. But this difference in performance was not significant.

Hypothesis One (Ho₁)

There is no significant difference between the academic performance of students in the experimental group and those in the control group.

Table 3.1

Group	No of Students	Mean score x	Df	Probability level	Std. deviation	t.cal	t.critical	Decision
Control	30	15.1	29	0.05	1.87	7.38	2.66	Reject
Experimental	30	17.1	29	0.05	1.17			

From the table above the t-calculated was 7.38 which is more than the t-critical of 2.66. This shows that the experimental group performed better than the control group. Based on this, the null hypothesis was rejected meaning that there is a significant difference between the academic performance of the experimental group and the control group. This difference can be attributed to the use of computer in the teaching since all other conditions were same for both groups.

Null Hypothesis two (Ho₂)

There is no significant difference between the academic performance of males and females in the experimental group.

Table 4.1

Gender	No of Students	Mean score x	Std. deviation	Df	Probability level	t.cal	t.critical	Decision
Males	15	17.7	0.88	14	0.05	2.39	2.763	Accept
Females	15	15.9	2.95	14	0.05	2.39	2.763	

From the table above, the t-calculated of 2.39 was less than the t-critical of 2.763 therefore the null hypothesis was accepted meaning that there is no significant difference between the academic performance of males and females in the experimental group. This study shows that gender has no effect on the use of computer in the learning process.

Discussion

The results of this study showed that the use of computer in the teaching of Oral English enhanced the performance of the students. This was proved by the difference in the scores of the control and experimental groups with the latter group performing significantly better. This finding is in line with Miller (2002) in Eshiet (2009) who observed that computer aided learning ensures students motivation and differentiates between students' capability levels. Also the study carried out by Warschauer (2006) as cited by Akpan & Abia (2009) showed that student taught with new technologies did not regress on outcome assessments. He further asserts that when new technologies are integrated into teaching and learning, there is greater student engagement in learning, and greater engagement equals to higher achievement.

The study also shows that there is no significant difference in the performance of the boys and girls in the use of computer in the learning of Oral English. In other words, gender does not affect the use of computer in the learning process. This finding agrees with that of Anulobi (2009). In his study of Fine Arts with Video Compact Disc Instructional Package (VCDIP), he found out that gender did not have any impact because both the boys and girls performed basically the same.

Conclusion and Recommendations

The study showed that the use of computer just like any other new technologies improved the academic performance of students in the teaching and learning of Oral English. Gender has no effect in the use of computer among the students.

Based on these findings the following recommendations were made:

1. The government along side with parents and philanthropists should equip our schools from Primary to tertiary levels with computer and new technologies to enhance learning and make teaching easier.
2. There should also be provision for regular supply of electricity to schools at all times.
3. Teachers in schools should be given free computer training by the government (State and Federal) to enable them use these new technologies when supplied to schools.

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DEVELOPMENT OF INSTRUCTIONAL MATERIALS FOR TEACHING FAMILY LIFE AND EMERGING HEALTH ISSUES (FLEHI) ON HIV/AIDS EDUCATION IN NIGERIAN SCHOOLS AND COLLEGES

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ABSTRACT

This paper started with an introduction and briefly dwelt on HIV/AIDS Education in Nigeria, it defined instructional materials, outlined the need for instructional AIDS in the teaching of FLEHI. Some samples of materials were mentioned. It discussed factors to consider in the Development of the instructional materials for teaching FLEHI course. It listed some tips for Effective Development of the materials, conclusion and recommendation.

Introduction

Teachers are parents or grand parents, guardians and counsellors to their students and so a teacher should be able to play the roles of parents in moulding or changing the behaviour of the learner(s) positively. A good teacher should be able to inculcate or instill good behavioural/altitudinal change in his/her students at any level of the Educational System. Supporting this view Ogunranti (1988) observed that instructional materials are concerned with improving the process of human learning such that the desirable change in behaviour is easily achieved through their application. In the same vein Ibrahim (1989) stressed a similar view that, the use of multi-media and instructional AIDS in bringing about societal change and development is inevitable in teaching.

HIV/AIDS Education in Nigeria

HIV/AIDS, today in Nigeria has become a societal problem and an issue of great concern to the nation because it affects the health and life of Nigerians. If we look at the number of lives that have been lost through HIV/AIDS infection and the number of people living with HIV presently, the statistics is high and alarming because about 2.6 million Nigerians were estimated to have been infected with HIV, thus it becomes a National issue.

Buttressing these facts, UN HIV/AIDS report in Saba (2010) that, AIDS is the leading cause of death among teachers in cote d' Ivoire and Zambia. It has been found that it cannot replace the number of teachers who have died or fallen ill.

In another development in Saba (2010) pointed out that HIV/AIDS spread rapidly to more than 100 countries and all the inhabited continents of the globe. He continued that the number of those infected but not yet ill is thought to be ten times greater than the number of people diagnosed with AIDS. In the same view Yunusa 2010 pointed out that in the year 2005, 2.6 million Nigerians were estimated to be infected with HIV/AIDS and 170,000 victims died of AIDS (Microsoft Encarta 2009).

Viewing these facts, however, the issue on which every Nigerian citizen, organizations, sectors especially education must play crucial role(s) in fighting the scourge or the endemic HIV/AIDS.

Thus, the role education sector is playing in combating the endemic HIV/AIDS is through the introduction of a course in the school's curriculum across all the levels of the educational system. A course named family living and Emerging Health Issues – GSE 124 (FLEHI) has been introduced in Colleges of Education national wide to combat and prevent HIV/AIDS infection among the school youths. HIV/AIDS related course have been equally introduced at Universals Basic Education Level, and at the tertiary education level as well. Teaching of such courses is considered to be the important role education sector has to play in combating the HIV/AIDS infection due to some obvious reasons. Among which are:

- (i) Young people at secondary school up to tertiary education level who have attained the age of marriage must have HIV/AIDS education, so that they be guided/discourage against risky behaviours. Students within this group are the focus of FLEHI programme.
- (ii) Records/literatures have shown that most victims of HIV/AIDS in Nigeria are between the ages of 12 -25. About 75% of the literatures agreed with this age bracket because students within this age bracket are considered to be sexually active, therefore, they need to be educated against the dangers/implications of HIV scourge.
- (iii) Most of the lives claimed due to HIV/AIDS are within this age bracket.
- (iv) Nigerian youths of today needs total moral and value re-orientation which all the religions are preaching (Islam and Christianity). This is why moral teachings from them must go along with the teaching of HIV Education in Schools and Colleges. Etc.

Nonetheless, it must be pointed out here that here that development of instructional materials to teach a course which has to do with HIV/AIDS should not be the same as preparing or developing the materials to teach ordinary or other courses that are not HIV related because one cannot talk about HIV/AIDS without mentioning sex education which intimately has to do with religious, socio-cultural and societal values.

Supporting this fact Gana (1981) maintained that efficiency of any instructional material or media depends on their relevance to the cultural background and the physical environment of the learners. In addition, it is also observed that it is necessary to consider the influence of the environment in choosing the forms of media/instructional material that would be applicable to a particular situation (Edozie, 2006).

Therefore, teachers, curriculum and instructional materials developers have to be extra-careful in planning, designing, developing and usage of the materials, especially those meant to teach and educate learners on courses which have to do with HIV/AIDS because of the sensitive nature of the subject matter.

It is based on this background that this paper discusses a guide to teachers, instructional materials designers and curriculum developers on developing instructional materials to teach courses which are related to HIV/AIDS.

What are Instructional Materials?

- There are materials that help in the process of imparting knowledge, idea, information or skill from the teacher to the learner(s) or from one person to another.
- An instructional material is any form of teaching materials aimed at ensuring skills building, attitudinal and behavioural change in the learners or (intended target audience) (FME 2007).
- They are also described as sets of materials designed and produced with the aim of assisting the learners (target audience) to make healthy and informed decisions about their living. (To live healthy, responsible, purposeful and HIV free life).

Need for Instructional Materials in the Teaching of FLEHI

The following are some of the reasons why instructional materials are required for teaching FLEHI in Schools and Colleges.

- (i) Children or learners enter class with varying abilities, therefore, the use of instructional materials assists the teacher in narrowing the gap (difference) between the fast, average and slow or weak learners i.e the materials facilitates/enhance understanding of the weak learners to catch up with the fast learners.
- (ii) A class of students do not learn at the same rate, so effective use of instructional materials assist individual learners to learn at his/her pace.
- (iii) Students have divergence views on the nature, use and positive effects of the instructional materials. Divergence of views can support each other to form a meaning and better idea of the concepts to be taught.
- (iv) Children/learners enjoy working together, group activities on the use of instructional materials bringing the learners/pupils together thereby promoting interaction, socialization and brainstorming among the learners.
- (v) Some children or learners need special attention use of instructional materials could help such children to learn better.
- (vi) Certain instructional materials when displayed can serve as a deterrent/discourage the learners (target audience) from engaging in some risky behaviours e.g pictures of those infected with HIV/AIDS.

Sample Instruction Materials

Sample instructional materials for teaching FLEHI and HIV/AIDS in schools:

Human development:

- Labelled diagrams

- Posters
- Charts
- Pictures
- Magazines
- Newspapers
- Books
- Computer slides
- Record players
- Radio
- Cassette recorders
- Transparencies carrying labelled diagrams, illustrations key points/notes etc

Personal skills:

- Photographs
- Scenarios of value difference
- Agree or disagree signs.
- Stories
- Guest speaker(s)
- Film on different situations (not blue film).
- Television

HIV/AIDS

- Poster/charts showing behaviour that can lead to risky behaviour like boy and girl joining hands, staying in secluded place, kissing, romancing, rubbing bodes etc
- Films on HIV/AIDS
- Pictures of infected people
- Film showing infected people
- Film on people living with AID (PLWA)

Relationship

- Picture depicting persons (interacting positively)
- Filmstrips showing people performing their daily duties.
- Outline of tips limiting relationship between boys and girls and even adults who are not married couples or spouses.

Family Life Education

- Diagrams of male and female reproductive organs.
- Characteristics of puberty (physical, social and psychological).
- Menstrual sanitary pads.
- Tips on psychological desires and self control measures (applicable to boys and girls).

Factors to Consider in the Development of Instructional Materials for FLEHI and HIV related Courses

Some factors are essential to be considered in the design, production, development and usage of the instructional materials for teaching FLEHI and HIV related course(s) because of its sensitive nature, such factors include:

- (i) **Learners Focused:** This implies that the instructional materials must be able to communicate benefits to the learners without any intermediary or interpreter is learners (target audience) focused materials should be used and understood without any special guide before consumption. The learners (audience) must be placed in a position where by the message will not suffer any form of barrier before it is understood. The message must be clear and precise to the learners.
- (ii) **The Information/Idea must be Factual Based:** In designing an effective instructional materials, the information/idea and the content to be communicated to the learners must be fact based, the message must be factual and adequate enough to assist the learners acquire the desired information or behavioural change. The facts which the teacher/instructor is passing across must be trust worthy and have a reliable source.

Quotations from the Holy scriptures for the FLEHI programme to achieve positive outcome.

- (iii) **FLEHI:** Instructional materials should AID formation of positive attitude, beliefs and values. The attitudes beliefs and values of the learners are focused with the aim of achieving a positive outcome through direct learners focused instructional materials. Thus, such materials must be capable of motivating the learners towards positive attitude formation. Beliefs and values of individual or group(s) in focus must also be moulded effectively for cultivation of desired result. (Going away or total abstinence from any risky behaviour).
- (iv) **Special Flash Cards Transparencies:** Carrying relevant portions from chapters/verses of Holy Quran and Bible prohibiting, social vices,- adultery, fornication, homosexuality (Lesbianism and Gay) and other risky behaviour can be prepared/presented to the learners. In addition, some idea can be projected in different forms for the learners. Teachers should project to the learners the position of religions on sexuality, bringing out relevant portions from Holy Scriptures – this is to correct sexual misbehaviour in the students and to make them abstain from sex until when they are married. For the married ones among them they should not involve in promiscuous attitude.
- (v) **Avoid use of Offensive Instructional Materials:** here emphasis is that religiously or culturally offensive aspects of the instructional materials or media should be eliminated. Such offensive materials like active/passive pictures of nudeness, coitus “vain talks” (Dubious talks), blue films etc should be avoided completely.
- (vi) **Sequential Format:** Ensure that instructional materials are presented sequentially. They should be orderly and pre-arranged in advance. Electronic media should be serviced ahead of time with their functionality established. All technical quality of media or equipment should be guarantee.
In addition, instructional materials that requires longtime or chain presentation must be divided into parts or units for flexibility and sequential use during the presentation. This could best be achieved with clear statement of topics learning objectives, duration of programme or presentation, resource materials, content, teaching methods summary, evaluation and review where the need arise.
- vii. Promotes skills development: Instructional materials are highly required to build skills of the learners through use of certain materials and lessons or experience gained from real life presentations. Students can develop or improve skills from the presentations of instructional materials when they watch or visualize them. In designing the materials, it must be able to cope with the biological, psychological, socio-cultural and spiritual life of the learners or target audience.
- viii. Non-formal setting: Utilization of learners based instructional materials does not require a formal setting. At the same time materials in this group do not require grouping of the learners before it could be utilized. Though in the process if the development, it requires consideration of age, background, status, beliefs religious inclination, culture e.t.c.

Tips for effective instructional materials development

The following are tips for effective development and presentation of instructional materials for teaching FLEHI & HIV/Aids:

- Command attention
- Interest arousing/motivations
- Clear message
- Convey a benefit
- Creat trust
- Convey consistent message
- Cater for the head and heart (Direction, content, objective to be clear)

- Call for action
- Provide room for evaluation/assessment of the materials
- Teach/promote moral values and good behaviour which lead to formation of high self esteem.
- Discourage use of materials that show bad habit/risky behaviour.
- Avoid discussion on contraceptives/but where it become necessary, be extra – careful in your discussion

In conclusion, teachers, curriculum/instructional materials developers and stakeholders in the education sector should be conscious and cautious of what to design, develop or even teach/discuss with student on FLEHI and HIV/Aids related courses. This is necessary, so that the desirable positive changes in students behaviour can be achieved to ensure drastic reduction/or total eradication of HIV/Aids scourge among the students.

Recommendations

The following recommendations are suggested for effective development of instructional materials:

- i. A review and modification of the FLEHI curriculum such that the curriculum should carry natural law extracted from the holy scriptures (Quran & Bible). This would form the bases of teaching the FLEHI and HIV related courses).
- ii. Moral teaching from the Holy books will be taught to mould the behaviour and for value re-orientation on the students against social vices and risky behaviour, so that the desirable sound moral behaviour can be found in the student, this will prevent them from risky behaviour.
- iii. Ready made flash cards, posters, transparencies carrying relevant verses from Quran and Bible on moral teaching and those prohibiting social vices should be prepared and presented to the students from time to time in the course of teaching FLEHI –Course
- iv. Computer assisted instruction (CAI) can be used where programmes on FLEHI can be presented on power point.
- v. Projected materials like multi-media projectors, over head projectors, and other forms of projectors can be used to project series of topics and programme on FLEHI and HIV/Aids.
- vi. Finally, the three stages involved in human behaviour change are recommended, to be followed in teaching FLEHI course, these are:-
 - Inform/Educate the learners (students or target audience)
 - Involve the target audience (learners)
 - Enforcement

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INSTRUCTIONAL DESIGN MODEL UTILIZATION FOR BEHAVIOUR CHANGE AMONGST JSS CLASSES USING INNOVATIVE VIDEO-LINKED CLIPS

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Abstract

It is widely accepted that the end of education is to bring about change in behaviour. In recent times, rather sadly, many print media reporters and social critics submit that the level of social decadence amongst young school leavers within and outside Nigeria is alarmingly significant. This means that the methods, models and utilization strategies in lesson delivery have not produced the desired performance expected of the products. This paper projects that for the realization of the goals of social studies in good citizenship education, teachers in JSS classes must decide on what models, instructional media and utilization strategies they wish to adopt in teaching/learning from youth. To achieve this aim, researchers designed an instructional model for behavior change to complement teacher-made video linked comments in teaching social studies because visuals generally depict various phases of complex processes in great detail. To achieve the objectives of the study therefore, 500 JSS I social studies students and all the 62 social studies teachers in all public schools in Uyo L. G. A. constituted the study sample. Three research questions and three hypotheses were formulated and tested using the mean, simple percentage, ANOVA, chi-square statistics and t-test. The result revealed an overall significant effect, performance and change of attitude in JSS I students. The study therefore, recommended amongst other factors the use of teacher-made video linked clips along with accompanied model for behaviour change to realize desired objectives of good citizenship education.

Introduction

Scholars and curriculum designers have initiated many researchers to bring about innovations in the teaching-learning process due to the serious concern expressed regarding the quality of education and products graduated from schools in Nigeria. Such scholars like Ivowi (1982), Akau (1982), Ibe-Bassey (1992) and Huitt (2003) have all found faults in the approach to instruction given to our children in schools summarizing that the aim of any instruction is to get the best out of such instruction. Huitt (2003) further submits that, "in the 1980s, several researchers like: Cruickshank (1985); Proctor (1984); Squires, Huitt, Segars (1983) developed models of teaching/learning process that summarized much of what was known about increasing test scores. At the same time these researchers were focused on accounting for all the factors related to school achievement. Others developed models of effective teacher practice (eg. Hunter, 1994; Roseshine, 1995; Slavin, 2003). A major problem that envelops all these models is that they focus on improving test scores; yet the public is concerned about students' character, self-esteem, and social development" (Gallup, 1975; 1980). A good number of print media reporters and social critics submit that the level of social decadence in Nigeria as in some other countries is alarmingly significant. Newspaper reporters and critics like Soyinka (2002), Agbambu (2006) and Daniel (2006) have also identified and argued for measures against social decadence in Nigeria among our youths. Agbambu (2006) sheds some light while quoting the retired Chief of Air Staff, Air Marshall Jonah Wuyeb as arguing for a "reinforcement in the teaching of moral norms and values in youths' homes and schools".

The chains of habit, whether good or bad are formed at youth. Behaviour patterns are nurtured and take root in the primary and post primary school years. Soyinka's (2002) report titled "Under the Gun" reveals a horrifying case of total breakdown of moral discipline when a 19 year-old suspended school boy gunned down 17 of his teachers. The status quo so far in the behaviour patterns of our youths does not suggest that they were properly taught with the use of the right types of instructional media that can exert a positive effect on student learning in order to exhibit good qualities in behaviour, conscience and virtue, while in the primary and junior secondary schools in their social studies classes. Generally, teachers lack the spirit of improvisation but tend to concentrate and emphasize on verbal methods of instruction. As society changes, schools must adapt as well to meet the changing perspectives and need of students who live in this predominantly visual environment.

Abdelraheem & Al-Rabane (2005.p.1) in their studies agreed that the teaching of social studies courses has always been based on a limited knowledge base, and as a result, the utilization of the instructional media among teachers often rely on traditional applications of technology. Despite this agreement, some creation of teacher-made media of low technological materials can enlarge such a limited knowledge base and enrich instruction to a guaranteed quality. It can also promote strategies that ensure the integration of technology in the teaching and learning process of social studies.

Ezomike (1967), Enezeh (1972), William (1973), Nolan et al (1970) all agree that teaching with audio-visual aids (video based lesson) appeals to the auditory, visual and tactile senses and facilitate learning, aid retention, makes lessons real and practical, arouse interest and stimulate students' imagination. The visual aids based lessons help students recall experiences, William (1973). From the works of all these researchers, it is believed that if teachers can properly match their lessons with the relevant video pictures and comments while teaching, the reality of the events in the pictures will "intensify the impressions and cause the imagery in the pictures to become firmly embedded in the mind", (Ezomike 1967). This will unfailingly influence the learners' attitude and behaviour positively towards good citizenship.

Theoretical Framework

This study is guided by psychological learning theories relevant to performance and behaviour change of child (1988), Kemp (1988) and Denga (1988). They all believe that attitude and behaviour of performance can be changed resulting from experience and practice such that the learner can face later situations differently which can influence future performance.

Secondly, researchers have been inspired by Awotua-Efebo's (1999) model, Bruner (1960) in Efebo's (1999) explanation that "the role of a teacher was to create a more humane person, not a memory book, and Ogunmilade's (1984) submission that "the end of education is to change behaviour". Researchers have now arrived at the belief that if effective teaching could be achieved through good preparation, implementation and evaluation, then a classroom exercise involving such effective teaching of social studies using an organized teacher-made instructional media can be achieved. Thus, induced to design the below model of utilization strategies of video-linked clips for behavior change among JSS classes of social studies education.

Description of the Teacher-made Video-Linked Clips

The Video-linked clips contains a programmed teaching on moral obligations and good citizenship education in social studies matched in such a way that the learner can learn either through the guidance of the teacher or operate it and learn privately at will and at any spare time. The contents include: (a) Video clips of imaginary students in classroom settings listening to the programmed teaching, (b) responsible citizens guiding little children to cross busy roads and responsible parents and guardians taking their wards to school in the discharge of their obligations, (c) criminals, civil offenders and juvenile delinquents arrested and taken to police stations or remand homes, (d) civil offenders tried in law courts and sentenced to various terms of imprisonment, (e) prison inmates undergoing torture and hard labour during their periods of confinement, (f) hunger, fighting and death in the prison cell, (g) honest confessions of condemned armed robbers and thieves awaiting court sentences to the effect that they would change their bad behaviour and life styles if they were to regain their freedom, (h) an interactive session between the teacher and the learners asking questions during on-the-spot discussion focusing on the frightening video clips on prison inmates, (i) conclusions on the day's lesson, and (j) assignments.

Here the teacher as illustrated in figure 1 presents a lesson titled "Moral obligations and good citizenship education" through a planned and matched lesson using teacher-made VLC medium during classroom activity. Such a teaching is done with a consideration of how and when to apply the materials and where the VCD could be most effectively applied for maximum results in the communication process. This class activity needs to be followed up and certain aspects of the lesson repeated or emphasized such that the video pictures can "intensify the impression" in the learners' minds, and cause the imagery in the pictures to be retained in the subconscious. This will definitely influence the learner positively to the extent that his or her performance will improve, his attitude will change positively, his/her moral behaviour will improve thus transforming him or her into a good citizen which is the main goal of social studies.

Statement of the Problem

To make teaching and learning function effectively, teachers need to make the best of consultation on approach to designing and utilizing media resources in achieving educational goals. At various instances, a large number of social studies teachers are confronted with inadequate instructional media. The situation worsens with little or no encouragement for improvisation of media from school authorities due to insufficient funds. To the extent at which these problems persist, teachers lack of instinct for improvisation of instructional media. They tend to rely more on traditional textbooks for the teaching of social studies which have thus far only produced memory tools instead of more humane students.

Unfortunately, public outcry and assessment of the products of junior secondary students of social studies depict an unacceptable level of performance in attitude and behavior. Beyond high test scores the public is concerned more with visible evidence of improvement in performance regarding students' character, self esteem and relatively permanent change in behavior. These are the necessary indices which should lead to good citizenship and a stable society, which form the end of social studies.

To tackle these problems, certain questions have to be addressed such as:

Can the use of teacher-made Video-linked clips in lesson delivery affect the students to the extent that their performance in attitude and behavior are positively adjusted in order to yield noticeable changes in students as expected by the society?

Objectives of the Study

The objectives of the study are as follows:

- To examine the influence of the frequency of use of instructional media on the teaching of social studies in JSI classes.
- To compare the academic performance of social studies students taught using teacher-made Video-linked clips and those taught without teacher-made Video-linked clips.
- To determine the difference between the performance in attitudes of male and female JSI social studies students taught using teacher-made Video-linked clips and those taught without teacher-made Video-linked clips.
- To develop a model for utilization strategies of teacher-made Video-linked clips for the teaching of social studies in JSS classes.

Research Questions

The following research questions are formulated to guide the study:

- How does the frequency of use of teacher-made instructional media influence the teaching of social studies in JSI classes?
- What difference exists between the academic performance of social studies students taught using teacher-made Video-linked clips and those taught without teacher-made Video-linked clips?
- What influence exists between performance in attitudes of male and female JSI social studies students taught using teacher-made Video-linked clips and those taught without teacher-made?
- What is the best model of the utilization strategies of teacher-made instructional media for the teaching of social studies in JSS classes?

Hypotheses

The following hypotheses are postulated to guide the study:

Ho₁: There is no significant difference between the academic performance of social studies students taught using teacher-made Video-linked clips and those taught without teacher-made Video-linked clips.

Ho₂: There is no significant difference between the performance of male and female JS I social studies students taught using Video-linked clips medium and those taught without Video-linked clips.

Ho₃: Teacher-made Video-linked clips, attitude of teachers, attitude of students, class size and gender do not have any significant influence on students performance in social studies in JS I classes.

Methodology

The study used a descriptive survey and quasi-experimental design to elicit information from the pupils. The descriptive survey design is used to establish (i) information on utilization strategies (ii) frequency of use by social studies (iii) students attitude on utilization strategies of teacher-made video-linked clips with relevance to students behaviour change at different levels of learning during their 6 months exposure to instructional development plan of Video-linked Clips based lesson. The study area was Akwa Ibom State. 500 JSS I social studies students and all the 62 social studies teachers in all public secondary schools in Uyo Local Government Area constituted the sample used for the study. A total of three research questions and three hypotheses were formulated and tested using the mean, simple percentage, chi-square statistics, t-test analysis and a 2x2 factorial classification of variance (ANOVA). The instrument was face validated by the experts in both educational technology and social studies. The researchers with the assistance of the teachers distributed and collected the social studies students attitude scale (SSSAS) questionnaire from the respondents of JSS I. Intact classes were used.

Method of Data Collection

Permission was sought for and obtained from the Commissioner of Police, Controller of Prisons and Remand Home authorities to enable the researches take life pictures of the prison inmates showing the general welfare and conditions of the inmates. Permission was also obtained from school principals to enable the researcher use their students, teachers and facilities. Permission was finally obtained from authorities of the National Examinations Council (NECO) to enable the researchers use past social studies examination results in this study. relevant permission was also obtained from the social studies teachers in the selected schools to play the role of research assistants.

Result

Table 1: Mean responses of students on the level of frequency of use of instructional media for the teaching of social studies

S/N	Items	Responses							
		Vo	%	Of	%	Ru	%	Nu	%
1	Pictures	284	56.80	131	26.20	60	12.00	25	5.00
2	Wall charts	211	42.20	200	40.00	80	16.00	09	1.80
3	Rolle graphs	186	37.20	156	31.20	68	11.80	90	18.00
4	Bulletin Boards	146	29.20	193	38.60	59	16.60	102	20.40
5	Flannel graphs	98	19.60	106	21.20	83	6.20	213	42.60
6	Posters	28	45.60	187	37.40	31	4.20	54	10.80
7	Models/mock-ups	193	38.60	186	37.20	21	6.00	100	20.00

8	Real objects/specimens	200	40.00	180	36.00	30	7.60	90	18.00
9	Flash cards	98	19.60	103	20.60	38	10.00	261	52.20
10	Maps and Globes	238	47.60	196	39.20	50	0.00	16	3.20
11	Chalkboards	386	77.20	114	22.80	0	12.60	0	0.00
12	Electric boards	13	2.60	28	5.60	63	12.60	396	79.20
13	Projectors	38	7.60	89	17.80	113	22.60	260	52.00
14	Tape recorders	58	11.60	93	18.60	104	20.80	245	49.00
15	Radio sets	58	11.60	98	19.60	99	19.80	245	49.00
16	Television sets	23	4.60	49	9.80	58	11.60	370	74.00
17	Record players	20	4.00	36	7.20	45	9.00	399	79.80
18	Magnetic boards	13	2.60	23	4.60	58	11.60	406	81.20
19	Videos	0	0.00	0	0.00	8	1.60	492	98.40
20	Textbooks	247	49.40	142	28.40	63	12.60	48	9.60
	Mean Total Responses	136.90	27.38	115.50	23.10	56.55	11.31	191.05	38.21

Vo - Very often, Of - Often, Ru - Rarely used, Nu - Not used at all

No. 12-19 (electric boards, projectors, tape recorders, radio sets, television sets, record players, magnetic boards and videos) are not used at all for the teaching of social studies in JSS classes. Again in the mean total responses 191.05 or 38.21% responded in support of the fact that most of the instructional media are not utilized for the teaching of social studies in the JS I classes while 11.31% or 56.55 indicated they were rarely used. 98% reported that video clips are not used at all. 1.6% said video is rarely used.

Table 2: t-test analysis of academic performance of social studies students taught using teacher-made VLC and those taught without the VLC

Groups	N	Mean	SD	df	t-crit	t-cal	Decision at P < 0.05
Students taught using VLC	250	19.57	2.81				
Students taught without VLC	250	13.27	3.59	498	1.96	21.72 (1.96)	*

* - Significant at P < 0.05, Value in bracket represents critical value.

The Table above shows a significant influence between the performance of students taught using teacher-made instructional media (VLC) and those taught without the use of teacher-made Video-linked clips based on their scores from the social studies test, the calculated t-values of 21.72 is greater than the table value of 1.96 at 0.05 alpha level. This implies that there exist a significant difference between the two sets of students with the students taught using Video-linked clips (X = 19.57) performing better than those taught without Video-linked clips (X = 13.27).

Consequently, null hypothesis three is rejected and the alternative hypothesis is retained. As a result the research question that seeks to show if difference exists between the academic performance of students taught with VLC and those taught without VLC is answered to the effect that there exists a significant difference between these two groups.

Table 3: Multiple Classification Analysis showing a 2 x 2 x 2 x 2 x 2 Factorial Analysis of Variance (ANOVA) on the Performance of JSI Students in Social Studies as determined by Instructional Media, Gender, Class Size, Teachers' Attitude and Students' Attitude.

Variable + Category	N	Unadjusted		Adjusted for Independent Variables and Covariates	
		Dev'n	Eta	Dev'n	Beta
Instructional Media	250	3.15		3.01	
Utilized	250	-3.18	0.51	-3.61	0.49
Not Utilized					

Gender						
Male	250	0.68		0.56		
Female	250	-0.69	0.48	-0.58		0.42
Class Size						
Small	250	3.18		2.99		
Large	250	-3.02	0.36	-2.86		0.31
Teachers' Attitude						
Positive attitude	250	3.81		3.11		
Negative attitude	250	-3.21	0.41	-3.00		0.36
Students Attitude						
Positive	250	3.91		2.96		
Negative	250	-2.86	0.53	-2.18		0.48
Multiple R Square (R ²)						0.50
Multiple R	R					0.71

Table 3 above shows that the observed differences are in favour of students who were taught using teacher-made VLC. Male gender, students from small class size, students whose teachers have positive attitude towards the utilization of instructional media and students who have positive attitude towards social studies returned means of 19.43, 16.98, 19.41, 19.53 and 19.38 (16.42) respectively. The table also reveals that the teacher-made VLC, gender, class size, teachers' attitude and students' attitude have indices of relationship of 0.49, 0.42, 0.31, 0.36 and 0.48 respectively with a multiple regression index (R) of 0.71 and R² of 0.50. This implies that 50% of variations in students' performance can be attributable to the joint influence of teacher-made VLC, class size, teachers' and students' attitudes.

Discussion

From Table 2 and 3, it is evident that the use of Teacher-made VLC has significant influence on the attitude of students towards social studies in the JSS with a calculated F value of 1258.72 greater than the table value of 2.56 at 0.05 alpha level. Therefore the hypothesis which responds to this is rejected in favour of the alternative hypothesis. Class size too has no significant influence on students' attitude towards social studies with a calculated F value of 1.70 less than the table value of 2.56 at 0.05 alpha level. With the interaction effect with F value of 7.14 greater than the table value of 2.56 it implies that this hypothesis is rejected in favour of its alternative hypothesis, and then it answers the research question which shows the interactive effect of class size and teacher-made Video-Linked Clips on the attitude of students towards the study of social studies. It can also be seen that 63% of the variation in the attitudes of the students towards social studies may be attributable to the effect of Teacher-made Video-Linked Clips and class size. These variations only favoured the students taught using VLC and students from small class size. Since there is a significant effect on the interaction, the hypothesis in respect to this is rejected. This finding answers the purpose of the study which was to determine the influence of class size and VLC on the attitude of students towards social studies in the JSS. It also answers the research questions on effects of VLC on students' attitude.

This finding agrees with the aims of teaching social studies as enshrined in National Policy on Education (2004) which among others include "the inculcation of the right type of values and attitude for the survival of the individual and the Nigeria society". The findings also support the research works of Okobia (1985) and Okam (2004) in teaching social studies and change of attitudes. Okobia (1985) observed that the main philosophy behind the birth of social studies in Nigeria in the 1960s was to help youths and young learners cultivate understanding of the society with skills, attitudes, moral values ... , and cultural development of the Nigerian society.

The result of the finding might be due to the fact that the use of well designed low technological materials can stimulate and sustain the interest of the learners and motivate them to learn and be affected by such learning.

Conclusion

Teaching has little or no meaning if the students cannot exhibit noticeable change in behaviour and performance in response to the teaching-learning process. The comment and emergent roles of teachers necessitated by the prevailing change taking place in the society coupled with knowledge explosion relative

to visual stimuli, require a new view about organisation and utilization of learning resources to bring about innovation in the teaching learning process.

The instructional utilization strategies involving the creation of live action pictures of teacher-made VLC medium adopted by the researcher were able to touch on the deepest roots of the students personality as their attitude and performance were influenced during cause of this study. These students will learn social studies better when they are taught with strategies that translate factual information given them into concrete terms and the anticipated or desired social norms will be achieved. Indeed, teacher-made media and materials of low technology resources appear to offer numerous advantages over traditional textbooks based instructional methods.

Recommendation

1. In order to ensure result-oriented teaching of social studies in schools, government should encourage teacher on the improvisation of instructional media and materials and the VLC based lessons should be used more frequently in classrooms.
2. Learners need opportunities to become perceptive and analytical of the visual world to enable them make judgement of what is pleasant to situations. Therefore students should be allowed to have access to these visual stimuli in their media centres to encourage individualized learning because students spend much more time studying independently than they do attending classroom presentations.
3. Curriculum designers should design a social based curriculum that would integrate the production of VLC matched lesson contents with live pictures for JSS classes of social studies with the aim to stop forgeries, violence, organized robbery, cultism and drug abuse among others which are all societal vices.
4. The need to take social studies students out on excursion to the prisons, remand homes, law courts in sessions and police stations in order to learn first hand and on the spot about the realities of life in these places should be a priority in the social studies curriculum. This will help student live upright lives and avoid criminality.
5. Social studies teachers should follow the developed instructional model for behaviour change and should frequently teach students form the guides provided in the model.
6. All schools should have standby generators to enhance operation of audio visual based lessons.

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Availability and Utilization of Educational Resource Centers in Senior Secondary Schools in Imo state

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Abstract

Educational Technology is of two aspects; "Product" and "Process" aspects (Onyejemezi 2004). The process aspect deals with systematic applications of psychological principles in identifying and solving problems in human learning while the product aspect deals with effective utilization of tools/resources for improvement in human learning. Among the resources is, Educational Resource Centers (ERCs). The study is a descriptive survey involving all the teachers and senior students (SS3) in Owerri Municipal Council and Ideato North Local Government Area of Imo State. Through random sampling technique, 100 teachers and 300 students were selected in all the 9 public schools in Owerri Municipal Council and 8 in Ideato North L.G.A of Imo State. 12-itemed questionnaire served as instrument for collecting data from teachers on adequacy, availability and utilization of ERCs while 10-itemed questionnaire was used for collecting data on the extent students are exposed to resource-based learning. 2 research questions and 2 hypotheses guided the study. Mean and Standard Deviation were used in analyzing the research questions and Z-test used for the null hypothesis at 0.05 level of significance. Findings revealed availability of ERCs in Owerri Municipal Council and non availability in Ideato North L.G.A. There were no adequate resource centres and these centres were not utilized in the areas under study. Students in Owerri Municipal Council were exposed to resource-based learning than their counterparts in Ideato North L.G.A. The study recommended among others; revitalization of ERCs in Imo State and exposing students to resource-based learning. Also, teachers in rural areas should be given special incentives to close the gap between teaching in urban areas and rural areas

Introduction:

The dire need for functional curriculum in Nigerian educational system has emerged and given way to newer ideas in pedagogy and methodology in teaching. Among such ideas is, Utilization of Educational Resource Centre which employs resources in the teaching and learning process. This came into existence to take care of the needs and interests of learners through the provision of resource-based learning that can enhance teachers' pedagogy and methodology, care for individual deference through individualization, self pacing and at the same time, aid collective learning experiences in the classroom. Teachers and students' needs are provided and such flexible learning environment leads to quantitative and qualitative teaching and learning. The emergence of resource centres in education according to Bennie (1976) in Ifegbo (2003) could be traced back to 1700 when educators became interested in the provision of the learner's needs and interests. In Nigeria, Educational Broadcasting came into existence and gave rise to educational resource centre. Abimbade (1999) traced back the establishment of educational technology centres to the Rural National Development Plan of 1975/80 that provided powerful statement that brought into existence, educational technology centres among which is development of educational resource centre. Dada in Imogie (1984) posits that the Federal school broadcasts and audio-visual aids development centre, Kaduna later became the National Educational Technology Centre, Kaduna and their function include, development, production and evaluation of instructional/curriculum materials prototypes and assisting some states and school centres in equipping their centres.

Educational Technology is embedded into educational services according to the National Policy on Education (1981:41, 2004:51) to achieve the goals of the services among others, each state and local government authority shall establish Teachers' Resource Centre, federal and state, government shall establish Educational Resource Centres whose functions among others are to enhance the study of language, science and mathematics. It is imperative therefore for each state and local government to establish science resource centres, language development centres and mathematics resource centres where teachers and students should go for enhancement of these subjects. Classroom experiences could be boasted with the aid of resource based learning. In the resource centre, teachers facilitate learning. The learners and the teachers design, develop, execute and evaluate learning together. There is adequate interaction between the teacher and the learner and the learning environment.

Abimbade (1999) sees Educational Resource Centre as a setting (space) where educational materials, tools and equipment can be designed, developed, utilized, borrowed and stored

Percival and Ellington (1984) defined resource centre as a place that is set up specifically for the purpose of housing and using a collection of resources, usually in the form of self-instructional materials. Percival and Ellington posit that centralized resource centre in primary and secondary schools, may store and supply both book and non-book materials that are most often used as aids to traditional face to face approach rather than for individualized instruction. In affirmative resource centres can conveniently take care of individualized instruction or serve as a means of vivifying group instruction for purposeful and meaningful learning to take place. Onyejemezi (1990) posits that Educational Resources (ER) are materials, items of equipment, personnel and infrastructures which are used for teaching and learning activities while Resources Centres is a place where educational resources are kept and utilized, it is where learning materials are designed, developed, classified and stored for retrieval when required for learning purpose. p.179.

Ike in Ike and Chimezie (2006) postulate that learning Resource centres are established at the teachers' colleges, secondary and primary schools and their functions are to provide professional assistance to teachers and students or pupils in the design, production and utilization of instructional materials, provide educational media for both individual and group instruction by teachers, students or pupils and liaise with the state and zonal educational offices for evenly distribution of educational resources .

Okafor (2003) carried out a study on the management of resource centres in our secondary schools for enhancing Universal Basic Education (UBE) in Orumba North and Awka North L.G.A. and found out from the teacher's response that the use of full time educational technologist is needed in the day to day running of centers, inspections of the centre, use of effective catalogue system, adequate funding and arrangement of materials with information are of vital importance in effective management of resource centres. Okafor further postulates that it was difficult for secondary schools to establish viable resource centers.

It is on this backdrop that the study tries to find out if ERCs are available in Secondary Schools in Imo State, whether these centres are adequate and the extent they are effectively utilized for qualitative teaching and learning. At the same time, to determine the extent students are exposed to resource- based learning.

Two research questions and two hypotheses guided the study. Thus:

- i. Are there available resource centres in secondary schools in Imo State?
- ii. How adequate are the available resource centre?
- iii. To what extent do teachers and students utilize the available resource centres in the teaching and learning process?

H₀₁: There is no significant difference in the mean responses of teachers in Owerri educational zone and Orlu educational zone on the availability and utilization of resources centre in secondary schools in Imo State.

H₀₂: There is no significant difference in the mean responses of students in Owerri Educational zone and Orlu educational zones on their exposure to resourced-based learning.

Method:

All the SS3 students and teachers in the public schools in Owerri municipal council and Ideato North local government area of Imo State served as the population of the study through a random sampling balloting without replacement, the study choose 100 sample size for teachers and 300 for students. Twelve- itemed questionnaire served as instrument for data collection from teachers on availability, adequacy and utilization of ERCs while 10 -itemed questionnaire was used for students response on exposures to resource-based learning. For items eliciting answers to availability of resource centers, two point weighted scale of available (A) 2 and not available (NA) 1 served as responses. For utilization, a four point weighted scale of fully utilized(4), fairly utilized(3) , utilized (2)and not utilized(1) was used. For adequacy, fully adequate (4) fairly adequate (3) adequate (2) and not adequate (1).

Availability is accepted at 1.5 mean score and above and rejected below 1.5 while for adequacy and utilization, a mean score rating of 2 and above is accepted and below 2 points is rejected.

Hypotheses were tested using z-test of no significant level at 0.05.

Results

Research Question I: Are there available resource centre in the secondary schools in Imo State?

Table I. Response of Teachers on the availability of resource centre in secondary schools in Owerri Municipal Council of Imo State.

S/No	Item 1	AV (2)	NA (1)	Total	X	SD	Result
1	State library	100	-	100	2.0		
2	School library	100	-	100	2.0		
3	Science Resource centre	100	-	100	2.0		X = 1.62
4	Int.Sc. Laboratory	20	40	60	1.2	0.40	
5	Biology laboratory	100	-	100	2.0		
6	Chemistry Laboratory	100	-	100	2.0		
7	Physics laboratory	100	-	100	2.0		SD =0.15
8	Mathematics laboratory	-	50	50	1.0		
9	Language laboratory	30	35	65	1.3	0.46	
10	Teachers Resource Centre	-	50	50	1.0		
11	Learning Resource centres/Stations	60	20	80	1.6	0.47	
12	Technical workshop	30	25	65	1.3	0.46	

Table 1b: Teachers response on availability of educational resource centers in secondary schools in Ideato-North Local Government Area of Imo State.

S/NO	Item 1	AV (2)	NA (1)	Total	X	SD	Result
1	State library	100	-	100	2.0	-	
2	School library	30	35	65	1.3	0.46	X = 1.43
3	Science Resource centre	60	20	80	1.6	0.49	
4	Int.Sc. Laboratory	10	45	55	1.1	0.30	SD =0.213
5	Biology laboratory	100	-	100	2.0	-	
6	Chemistry Laboratory	100	-	100	2.0	-	
7	Physics laboratory	80	10	90	1.8	0.40	
8	Mathematics laboratory	-	50	50	1.0	-	
9	Language laboratory	10	45	55	1.1	0.30	
10	Teachers Resource Centre	-	50	50	1.0	-	
11	Learning Resource centres/Stations	10	45	55	1.1	0.30	
12	Technical workshop	10	45	55	1.1	0.30	

In the above tables, teachers' responses from Owerri educational zone have a mean score of 1.62 while that of Orlu educational zone was 1.43. The decision scale of 1.5 above indicated availability, while below indicated non- availability. Secondary schools in Owerri have available resource centres while those in Orlu do not have though some items in Owerri and Orlu varied in their mean scores by either showing availability or not available.

Research Question II: To what extent are the available resource centres adequate in secondary schools in Imo State?

Table 2a: Teachers response on the adequacy of ERCs in Owerri Municipal Council of Imo State.

S /NO	Item	FUA (4)	FAA (3)	A (2)	NA (1)	Total	X	SD	result
1	State library	120	30	20	-	170	34	0.8	
2	School library	-	60	40	10	11	2.2	0.7	
3	Science Resource centre	-	-	-	50	50	1.0	-	X=1.70
4	Int.Sc. Laboratory	-	-	10	45	55	1.1	0.4	SD=0.50
5	Biology laboratory	75	40	05	120	2.4	2.4	1.2	
6	Chemistry Laboratory	75	40	05	120	2.4	2.4	1.2	
7	Physics laboratory	75	20	15	110	2.2	2.2	0.7	
8	Mathematics laboratory	-	-	-	50	50	1.0	-	
9	Language laboratory	-	-	30	35	65	1.3	0.4	
10	Teachers Resource Centre	-	-	-	50	50	1.0	-	
11	Learning Resource centres/Stations	-	-	10	45	55	1.1	0.3	
12	Technical workshop	-	-	30	35	65	1.3	0.4	

Table 2b: Teachers response on the adequacy of ERCs in secondary schools in Ideato -North L.G.A. of Imo State.

S /N	Item	FUA (4)	FAA (3)	A (2)	NA (1)	Total	X	SD	result
1	State library	-	-	60	20	80	1.6	1.6	
2	School library	-	-	20	40	60	1.2	1.0	
3	Science Resource centre	-	-	-	50	50	-	-	X=0.97
4	Int.Sc. Laboratory	-	-	-	50	50	1.0	-	SD=0.60
5	Biology laboratory	-	-	10	45	55	1.0	0.8	
6	Chemistry Laboratory	-	-	24	38	62	1.1	1.1	
7	Physics laboratory	-	-	12	44	56	1.2	0.7	
8	Mathematics laboratory	-	-	-	50	50	1.1	0.4	
9	Language laboratory	-	-	-	50	50	1.1	0.4	
10	Teachers Resource Centre	-	-	-	50	50	1.1	0.4	
11	Learning Resource centres/Stations	-	-	-	50	50	1.1	0.4	
12	Technical workshop	-	-	-	50	50	1.1	0.4	

In the tables above, responses of teachers from Owerri Municipal Council in Owerri education zone on adequacy showed a mean score of 1.70 and that of Ideato North in educational zone was 0.97 that shows that educational resource centres in Owerri Municipal and Ideato North Local Government Areas were not adequate.

Research Question III: To what extent do teachers utilize the available resource centres for teaching and learning process?.

Table 3a: Response of teachers on the extent of utilization of the available resource centres in Owerri Municipal Council of ImoState.

S /NO	Item	FUA (4)	FAA (3)	A (2)	NA (1)	Total	X	SD	result
1	State library	-	-	60	20	80	1.6	0.48	
2	School library	-	-	60	40	80	1.6	0.48	
3	Science Resource centre	-	-	-	50	50	1.0	-	X=1.43
4	Int.Sc. Laboratory	-	-	20	40	60	1.2	4.0	SD ₅ 0.365
5	Biology laboratory	-	-	70	15	85	1.7	0.45	
6	Chemistry Laboratory	-	-	30	-	135	2.7	0.45	
7	Physics laboratory	-	-	30	-	135	2.7	0.45	
8	Mathematics laboratory	-	-	-	50	50	1.0	-	
9	Language laboratory	-	-	60	5	110	2.1	0.6	
10	Teachers Resource Centre	-	-	-	50	50	1.0	-	
11	Learning Resource centres/Stations	-	-	50	25	75	1.5	0.5	
12	Technical workshop	-	-	3.0	35	65	1.3	0.45	

Table 3b: Response of teachers on the extent of utilization of the available resource centres in Ideato-North L.G.A of Imo State.

S /NO	Item	FUA (4)	FAA (3)	A (2)	NA (1)	Total	X	SD	result
1	State library	-	-	-	50	50	1.0	-	
2	School library	-	-	20	40	60	1.2	64	
3	Science Resource centre	-	-	-	50	50	1.0	-	X=1.167
4	Int.Sc. Laboratory	-	-	-	50	50	1.0	-	SD ₅ 0.163
5	Biology laboratory	-	-	90	05	95	1.9	0.3	
6	Chemistry Laboratory	-	-	40	30	70	1.4	0.48	
7	Physics laboratory	-	-	40	30	70	1.4	0.48	
8	Mathematics laboratory	-	-	-	50	50	1.0	-	
9	Language laboratory	-	-	-	50	50	1.0	-	
10	Teachers Resource Centre	-	-	-	50	50	1.0	-	
11	Learning Resource centres/Stations	-	-	10	45	55	1.1	0.3	
12	Technical workshop	-	-	-	50	50	1.0	-	

In tables III above, teachers' response indicated a sum of mean of 1.63 and 1.16 for Owerri and Orlu respectively. It shows that resource centres are not utilized in Owerri municipal council and in Ideato North Local Government Area.

H₀₁: There is no significant difference between the x score of teachers in secondary schools in Owerri and Orlu on availability and utilization of ERCs in Imo State.

Table 4a: Analysis of response of teachers' on hypothesis I (Availability of educational resource centres)

Teachers group	N	X	SD	Z-cal	L.S	DF	Decision
Owerri Municipal(Urban)	50	1.70	0.50		0.05		
Ideato North (rural)	50	0.97	0.60	5.163		1.96	Reject hypothesis

Table 4b: Analysis of response of teachers on hypothesis I (Utilization of Educational Resource Centres)

Teachers group	N	X	SD	Z cal	LS	DF	Decision
Owerri (Urban)	50	1.63	0,37		0.55	1.96	Reject the
Ideato North (rural)	50	1.17	0.16	8. 39		1.96	null

In table 4a&b respectively, the Z-cal for availability was 4.93 while that of utilization was 8.39 with critical value of 1.96 and level of significance of 0.05. Hence, the Z-values were greater than the critical value therefore, there are significant differences between the mean scores of teachers in Owerri and Orlu on availability and utilization of educational resource centres.

Hypothesis II: There is no significant difference between the mean scores of students from Owerri municipal council and those from Ideato –North on the exposure to resource-based learning (Urban and rural areas).

Table 5a: Response of students on exposure to resource based- learning in Owerri Municipal Council of Imo State.

S /N	Item	LE A (4)	E (3)	ALE (2)	NE (1)	Total	X	SD	result
1	I visit the state library for reading	-	60	260	-	320	2.13	0.36	
2	I read in my school library	-	300	100	-	400	267	045	
3	The laboratory in the schools are useful to me	460	60	60	-	520	3.47	0.79	
4	My teachers utilize instructional materials for teaching	-	60	260	-	320	2.13	0.36	
5	There is teaching resource centres in	-	60	260	-	320	2.13	0.36	

	my school								
6	The school library is adequate for teaching and learning	100	225	100	-	425	2.83	0.70	
7	Teachers give assignment the quires resource-based learning	-	150	200	-	350	2.33	0.49	X =2.43
8	Community resources are utilized for teaching and learning in my school	-	60	260	-	320	2.13	0.36	SD=0.47
9	Teachers encourage us to provide local instructional material	-	150	200	-	350	2.33	0.49	
10	There is a workshop for technical/vocational subjects in my school	-	60	260	-	320	2.13	0.36	

Table 5b : Response of students on the extent of exposure to resource- based Learning in Ideato North L.G.A

S /N	Item	LEA (4)	E (3)	ALE (2)	NE (1)	Total	X	SD	result
1	I visit the state library for reading	-	-	100	50	150	1.67	0.46	
2	I read in my school library	-	-	40	130	170	1.13	0.35	
3	The laboratory in the schools are useful to me	-	-	50	125	175	1.17	0.36	
4	My teachers utilize instructional materials for teaching	-	-	40	130	170	1.13	0.35	
5	There is teaching resource centres in my school	-	-	40	130	170	1.13	0.35	
6	The school library is adequate for teaching and learning	-	-	40	130	170	1.13	0.35	
7	Teachers give assignment the quires resource-based learning	-	-	-	150	150	1.00	-	X =1.18
8	Community resources are utilized for teaching and learning in my school	-	-	210	45	255	1.70	0.46	SD=0.34
9	Teachers encourage us to provide local	-	-	100	100	200	1.33	0.48	

	instructional material								
10	There is a workshop for technical/vocational subjects in my school	-	-	10	145	155	1.03	0.20	

Table 6a :z-test Analysis of students from Owerri and Orlu respectively

Students Group	N	X	SD	Z-cal	LS	DF	result
Owerri	150	2.43	1.18		0.05	1.96	
Orlu	150	0.47	0.34	26.4			reject

From the result above, z- value is greater than the critical -value at 0.05 level of significance. Therefore, there is significant difference between the mean scores of students from Owerri and Orlu on the extent they are exposed to resource based learning n Owerri are exposed to resource- based learning than their counterparts from Orlu Educational zone of Imo state.

Discussions:

The findings revealed that:

Secondary schools in Owerri municipal council have available resource centres and those in orlu have not based on the mean of means.

There were no adequate resource centres and these centres are not effectively utilized in secondary schools in Imo State.

z-test scores of teachers in both schools showed no significant difference in availability and utilization ERCs.

z-test score of students indicated significant difference on the extent students are exposed to resource-based learning. It was revealed that students in Owerri municipal council are exposed to resource based learning than students from Ideath North L.G.A.

Furthermore, it was observed during the visit that teachers are grossly lacking in the rural areas. The Parent Teachers' Association of the rural communities in Ideato North employ mathematics and Science teachers and pay them with the PTA money. Few mathematics and Science teachers employed by the Government in the rural area rotate round these schools to help the student and are given honorarium. The retired ones were retained and sponsored by the PTA. The massive migration of teachers from the rural area probably is due to comfortable life in the urban areas than in rural areas. Teachers prefer staying with their family in urban area where they think qualitative education is available for their children. And this has grossly marred teaching and learning in secondary schools in Ideato North L.G.A of Imo State.

Educational Implications/Recommendation.

The implication of the study is that ERCs should be revitalized in secondary schools in Imo State both in state, local government and school levels. The state government should ensure that at local government level, resource centres like library, teacher's resource centres and even science resource centres are made available and supervised from time to time for viability /sustainability.

The local government chairman in collaboration with their educational secretaries should ensure that their schools are serviced from centres in the state/ local government areas to enable both teachers and students to teach and learn purposefully and meaningfully utilizing ERCs.

The principals, teachers should collaborate with the parents and some philanthropists to ensure that their schools are adequately equipped with science, technology and mathematics (STM) laboratories, also simple learning centres/stations should be improvised by teachers. Language laboratories and school library may be equipped by looking for grants/aids from Non-governmental organizations and some of their sons and daughters abroad.

Above all, government should give special incentives for teachers in our rural areas to ensure equal educational opportunities for students in both urban and rural areas hence they write the same external examination.

Science teachers Association of Nigeria should contribute by encouraging their colleagues to accept posting in rural area.

Conclusion:

Educational resource centres provide facilitative teaching and learning. If quality and equality are desired in students learning, state, local government areas and communities should interact and relate with each other to ensure that resource-based teaching and learning are adequately provided and effectively utilized. If such centres are not made available, how then can ICTs be provided especially in rural areas for our students to face the challenges of the 21st century knowledge – based economy?

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IMPROVISATION AND INTEGRATION OF LOCAL INSTRUCTIONAL MATERIALS: THE PERCEPTION OF FINE ART TEACHERS IN JUNIOR SECONDARY SCHOOLS IN IMO STATE.

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Abstract

Improvisation and integration of local instructional materials in the teaching and learning of Fine Art in the Junior Secondary School was investigated. Four research questions and two hypotheses were formulated and tested at 0.05 significant levels. Population for the study comprised all Junior Secondary School Fine Art teachers numbering 32 and 4125 Junior Secondary School Two (JSS2) students in Owerri Municipal Council of Imo State. Sample size consisted all the 32 Fine Art teachers and 200 Fine Art students from the 10 Junior Secondary Schools in the municipality. The students were selected using simple random sampling technique. The instruments for data collection were Fine Art teachers' questionnaire (FATQ) and Fine Art Students Questionnaire (FASQ). Data collected were analyzed using simple descriptive mean and standard deviation statistics. Results of the analysis showed that fewer instructional materials are improvised and integrated in the classroom. There is no gender influence in the improvisation and integration. Among the recommendations made was that understanding and development of indigenous art technology aesthetics, beliefs, values and attitudes should be intensified so that the Fine Art students would not be denied the opportunity of meaningful learning interactions.

Introduction

Education is considered as the most important tool towards the development of any nation. It equips an individual with necessary skills to be useful to himself, the community and the nation at large. The proliferation of secondary school education institutions has led to expansion of educational opportunities and its resultant instructional problems which the use of instructional materials could partially solve. Due to the rising cost of imported instructional materials and the present economic recession, it will be wiser to embark on a mass production of educational materials locally. Dependence on expensive imports for educational materials and equipment cannot benefit the country in the long run in terms of finance, cultural relevance and curriculum flexibility (Talabi: 1984). This phenomenon has created an acute shortage of instructional materials as means of effective classroom communication. To cope with the above problems, efforts must be made to improvise and integrate local instructional materials which constitute essentials of instructional technology in the classroom. This makes it imperative that teachers should think of how best to improvise (produce) and utilize locally made instructional materials in the absence of the original in the classroom.

However, Fine Art is one of the compulsory vocational subjects offered at the Junior Secondary School Certificate Examinations (JSSCE). It seeks to achieve in the students power of keen observation, memory,

imagination, qualitative aesthetic judgement, ability to express ideas and courageous to construct creativity with power of vision (Ekeada, 2002). But Eisner (1972) opined that fine art has not enjoyed a place of prominence in schools because of the ways in which it has been poorly perceived. This means that many fine art teachers lack the ability in handling and making use of available models and this leads to improper lesson delivery which affects students' performance (Anulobi 2009). Fine Art students are denied the ample opportunity of meaningful learning interaction. Some of the fine art instructional materials that can be improvised and integrated in the classroom includes; chalkboards, charts, drawings, pictures, posters, graphs, display boards, models, audio-tapes and video-tapes. Hence, the researchers wish to find out if fine art teachers actually improvise and integrate local instructional materials to save the precarious situation.

Instructional Materials

Instructional materials refer to a broad-range of resources which can be used to facilitate effective and efficient classroom communication (teaching and learning). Oyejemezi (1999) identified two main types of instructional materials, namely real materials and representations or substitutes. Real and representations includes those materials that learners can see, hear, read, manipulate or talk about, which can enhance teaching and learning in the classroom, they can be classified according to the senses as: visuals, audios, audio visuals, projected and non projected, prints, non prints, software, hardware, etc.

The use of instructional materials aim at maximizing the employment of the five senses (seeing, hearing, touch, smell and taste) in any communication or instruction. They also enable the teacher to teach less and the learner to learn more. For instance, words can describe a cup, but it is very bad to tell anyone exactly what a cup looks like without a picture of a cup.

Nwosu cited in Ifegbo (2006, P. 232), identified the following as the achievements of the properly used instructional materials: thus:

- i. They supply a concrete basis for conceptual thinking and reduced meaningless word responses
- ii. They make learning more permanent
- iii. They have a high degree of interest for student
- iv. They offer a reality of experience that stimulates self-activity on the part of students.
- v. They contribute to growth of meaning and hence to vocabulary development.
- vi. They provide experience and contribute to the efficiency, depth and variety of learning.

The teacher is a facilitator of learning. A creative teacher, as a resourceful teacher is an effective teacher who enhances learning by breaking the barrier between abstractions in the teaching and learning process. The teacher will do this through the appropriate improvisation and utilization of instructional materials in the classroom.

Improvisation and Integration of Instructional Materials

Improvisation of instructional materials is the desire of an effective teacher to help the learner to share and acquire purposeful and meaningful learning. The gains of improvisation will help the teacher and learner to achieve their instructional problems. Improvisation aims at giving the same results which the use of an original but non-available material is expected to perform. Akude (1996) observes that improvisation simply refers to the act of making up for deficiencies in the process of teaching and learning. Ofoefuna and Eya cited in Ifegbo (2006) see improvisation as techniques of originating a totally new tools, instrument, material, device or modifying an existing one for a particular purpose.

Improvisation may be by substitution or by construction. Improvisation by substitution involves the use of an already made functional local instructional material in place of an original one that is not available. While, improvisation by construction means the construction/production and use of an instructional material entirely by a resourceful and creative teacher when the original material is not available. For instance, in a typical audio-visual practice that involves the two stages of sound production and seeing that the tape-recorder is used to play the taped activity, while the projector helps to shoot the accompanying images on the screen. Rather than the classroom teacher to wait for the school authorities to provide huge sums of money for the costly audio-visual gadgets and face the attendant problems of maintenance and storage, improvisation can be designed (Okonkwo and Ozurumba, 1989). Thus, the teachers' voice can replace the tape recorder as he reads, whereas the flannel/magnetic board serves to display the pictures cut

out, to accompany the sounds. The teacher does the pastings of the pictures on the board at the relevant moment of the teaching and learning process. Onyejemezi (1990) emphasized that the benefits of improvisation will enable both the teacher and the learner to come out of their educational predicament, especially in Nigeria situation.

Other gains of improvisation in the classroom according to Bassey and Bisong (2009, P.84) include:

- a. They are custom-made to meet the objectives of the lesson for which it was designed.
- b. They are usually less costly compared to conventional ones.
- c. The design and production process adds to the teachers professional growth and competence.
- d. Teachers usually involve students in the design and production skills and they also learn better.
- e. Teachers teach better with materials produced by them.
- f. It makes teachers more resourceful, creative, versatile and less dependent on other people for the solution of the instructional problems.

The process of teaching and learning should have a step-by-step approach to enable the realization of the instructional objectives. This can be achieved through integration of local instructional material. Integration simply refers to step-by-step presentation of instructional materials in teaching – learning process. Instructional materials are integrated at the introductory stage to introduce the lesson, they are integrated at the presentation stage to present the content of the lesson and they are integrated at the summarizing stage to summarize the lesson (Tukur, Olagunju and Junaid, 2006).

Problem of the Study

Many Junior Secondary schools do not have fine art instructional materials to enable effective teaching and learning in the classroom. As a result, students find the lesson boring and not easy to understand, thus creating a disinterest in the subject. Hence, they do not perform well. The inability of teachers to effectively improvise and integrate fine art instructional materials in teaching – learning process is also significant. It is therefore necessary to find out the perception of fine art teachers on the improvisation and integration of local instructional materials in junior secondary schools in Imo state.

Purpose of the Study

This study has the following objectives;

1. To determine if fine art teachers actually improvise and integrate instructional materials during lesson delivery.
2. To find out if there is gender influence on the improvisation and integration of art instructional materials.
3. To ascertain the factors militating against the teachers' ability in the improvisation and integration of local instructional materials.

Research Questions

1. What local instructional materials do the Fine Art teachers improvised for their teaching - learning processes?
2. To what extent do teachers integrate the improvised instructional materials in their teaching-learning processes?
3. What are the problems militating against the improvisation and integration of local instructional materials?
4. To what extent do students study with improvised instructional materials in their teaching – learning processes?

Hypothesis

Ho: There is no significant difference in the mean scores of male and female Fine Art teachers in their improvisation and integration of local instructional materials in the classroom ($P < 0.05$).

Research Design

The research is an analytical research design

Area of Study

The study was purposively carried out in the junior secondary schools in Owerri municipal council of Imo state of Nigeria.

Population of the Study

Population of the study comprised of all the JSS Fine art teachers and students in Owerri Municipal council. There are 32 JSS teachers and 4125 JSS II students in the Owerri Municipal council (SEMB, 2010). There are ten JSS schools in the municipality.

Sample and Sampling Techniques

The sample consisted of two hundred (200) fine art students and 32 teachers drawn from 10 schools. The total sample size for the study was two hundred and thirty two (232) respondents. Simple random sampling technique was used in selecting the students for the study. While all the teachers and schools were purposively selected, based on their small size.

Instrument for Data Collection

Instrument used for the study were the Fine Art Teachers Questionnaire (FATQ) and Fine Art Students Questionnaire (FASQ). FASQ was used to collaborate the teachers performance in fine art subject.

Validation and Reliability of Instrument

Face and content validity of the instrument was established by three lecturers. Two are educational technologists while the third is an expert in Measurement and Evaluation from Evan Enwerem (IMSU) University Owerri, for necessary corrections. The instruments were subjected to a test technique with a group of five teachers and twenty students from another local government council. A positive result was satisfactorily recorded.

Procedure

The researchers finally administered the whole questionnaire face to face to 32 fine art teachers and 200 JSS II students. One hundred percent (100%) return was recorded.

Data Analysis and Results

The data collected were analyzed using simple descriptive, mean and standard deviation. A four point likert rating scale of SA, A, D and SD were used in weighing the teachers responses; and always, sparingly, not always and not at all for students responses. The cut off point was determined by summing up the normal value and dividing by the total number of scaling items.

There were four research questions and one hypothesis postulated to guide the study. The data for these are as presented below:

Research Question One

What local instructional materials do the fine art teachers improvised for their classroom teaching and learning process?

Table 1: Local Instructional Materials Improvised by the Fine Art Teachers

	Item Rated	Responses	
		Yes	%
1	Chalkboards	31	96.87
2	Charts	25	78.13
3	Drawings	24	75
4	Pictures	5	15.62
5	Posters	7	21.88
6	Graphs	1	3.13
7	Display boards	7	21.88
8	Models	23	71.88
9	Audio tapes	8	25
10	Video tapes	2	6.25
Total		36.51	

Table 1 revealed that Fine Art teachers improvised chalkboards (96.87) charts (78.13), drawings (75), and models (71.88), while pictures, posters, graphs, display boards audio tapes and video-tapes were not.

Research Question Two

To what extent do Fine Art teachers integrate improvised instructional material in their teaching – learning processes?

Table 2: Fine Art Teachers Response on the Integration of Improvised Instructional Material

S/NO	Items Rated	Always	Not Always	Sparingly	Not at all	\bar{X}
1	Chalkboards	29	1	1	1	3.81
2	Charts	4	22	3	3	3.80
3	Drawings	4	15	7	16	2.53
4	Pictures	-	8	10	11	1.72
5	Posters	-	2	10	20	1.44
6	Graphs	-	-	3	29	1.10
7	Display boards	-	-	10	22	1.38
8	Models	-	21	5	16	2.47
9	Audio tapes	-	-	9	23	1.28
10	Video tapes	-	-	2	30	1.10
Total \bar{X}						20.63

Table 2 showed that smaller proportions of improvised instructional materials are integrated by Fine Art teachers during their teaching-learning process whereas a greater number are not integrated. The instructional materials integrated are chalkboard (3.81), charts (3.80) and drawings (2.53), while pictures, posters, graphs display boards, models, audio-tapes and video-tapes are not integrated during any teaching-learning process.

Research Question Three

What are the problems militating against the improvisation and integration of local instructional materials by Fine Art teachers?

Table 3: Fine Art Teachers Response on the Problems that Militate Against the Improvisation and Integration of Instructional Materials.

Statements		Responses				
S/NO	Item	SA	A	D	SD	\bar{X}
1	Lack of skills to produce and use instructional materials.			2.1		2.1
2	Ignorance on how to produce and integrate instructional materials.			2.19		2.19
3	Lack of time to produce/improvise instructional materials			2.03		2.03
4	Lack of materials to use in the production.		3.1			3.1
5	Lack of organization of workshops, seminars and conferences on how to produce instructional materials.		3.38			3.38
6	Lack of short courses and in-service training on the production and use of instructional materials.		3.25			3.25
7	Poor salary structure and allowance		3.34			3.34
8	Lack of discipline on the tutors.			2.38		2.38
9	Lack of motivation by the governments		3.34			3.34
10	Lack of power supply and support facilities.		2.97			2.97
Total =						28.00

Table 3 showed that many problems are prohibiting Fine Art teachers from improvising and integrating improvised instructional materials. The factors include the lack of materials to use in the improvisation, lack of organization of materials to use in the improvisation lack of organization of workshops seminars and conferences. Others are lack of short courses and in-service training on the improvisation and integration of materials, poor salary structure, lack of motivation and electricity power supply. The table also reveals that the teachers have the skills, ignorance lack of time and discipline do not hinder Fine Art teacher from improvising and integration materials.

Research Question Four

To what extent do Fine Art students study with improvised instructional materials in their teaching – learning processes?

Table 4: Students Response on the Study with Improvised Instructional Materials

Items		Response				
S/N	Items Rated	Always	Not Always	Sparingly	Not at all	\bar{X}
1	Chalkboards	155	35	10	-	3.73
2	Charts	-	130	65	5	2.63
3	Drawings	10	150	40	-	2.85
4	Pictures	-	37	160	3	2.17
5	Posters	-	10	140	50	1.80
6	Graphs	-	4	26	170	1.17
7	Display boards	2	4	36	158	1.24
8	Models	-	130	50	20	2.55
9	Audio tapes	-	-	50	150	1.25
10	Video tapes	-	-	20	180	1.10
Total					=	
20.48						

Table 4 revealed that Students study with chalk boards (3.73), charts (2.63), drawings (2.85), and models (2.55) during teaching and learning processes, while the other items were never used. The table has collaborated with tables 1 and 2 which revealed that Fine Art teachers actually improvised and integrate only chalkboards, charts drawings and models in their teaching – learning processes. Rather, the remaining items – pictures, posters, graphs, display boards. Video – tapes and audio – tape were neither improvised nor integrated in their teaching learning process.

Ho: There is no significant difference in the mean scores of male and female Fine Art teachers in their improvisation and integration of local instructional materials in the classroom (P<0.05).

Table 5: Analysis of male and female Junior Secondary School Fine Art teachers in the improvisation and integration of instructional materials.

Gender	N	\bar{X}	SD	DF	T-cal	T-Critical	Decision
Male Teachers	12	28.58	5.35	30	-2.69	2.042	Accepted
Female Teachers	20	29.30	5.41				

The result in table 5 above showed that t- calculated value (2.69) was less than the t-critical value (2.042) with 0.05 level of significant. Based on the result, the null hypothesis is not rejected. Hence there is no significant difference between male and female Junior Secondary School Fine Art Teacher in the improvisation and integration of local instructional materials.

Summary of Findings

- JSS Fine Art teachers improvise very few local instructional materials such as chalkboards, charts, drawings and models, while pictures, posters, graphs, display boards, audio-tapes and video-tapes are never improvised.
- JSS teachers integrate only those few materials they improvised. This was corroborated by the students' response in table 4 which revealed that they study with only the instructional materials such as chalkboards, charts, drawing and models, integrated by their fine art teachers during their teaching learning processes.
- There is no gender influence on the act of improvising and integrating local instructional materials in the classroom.
- Many problems hinder the fine art teachers from exercising their effective teaching. These factors include the lack of skills of improvisation and integration of instructional materials; lack of materials to be used in the improvisation (production) of instructional materials; lack of organized workshops, seminars and conferences. Others are lack of short courses and inservice training of the teachers; lack of motivation; poor remuneration; inadequate electricity power supply and essential support services.
- Finally, the study revealed that there is low perception of fine art teachers in the improvisation and integration of local instructional materials in the classroom.

Conclusion

True technology must be partly indigenous and home-made. Improvisation and integration of local fine art instructional materials are the desire of effective teachers to help the learner to share and acquire purposeful and meaningful learning in the classroom. The gains will also help the teacher and the learner to achieve their instructional problems. This makes it imperative that teachers must think of how best to improvise instructional materials so that they can achieve their lesson objectives. This will enable the fine art students not denied the ample opportunity of meaningful learning interactions. Therefore teachers must be resourceful, creative and possess the professional competence not only in the production of local instructional materials but also in their integration in the lesson delivery for the attainment of educational goals.

Recommendations

1. True technology must be partly indigenous and home-made. Dependence on expensive imported instructional materials cannot benefit the classroom in the long run in terms of finance, cultural relevance and curriculum flexibility. Hence the ability to acquire effective skills of improvisation and integration by fine art teachers should be intensified.
2. State universal basic education authority should immediately organize workshops, seminar and in-service training programmes for teachers in order to update their knowledge and skills in the act of improvisation and integration of instructional materials in the classroom.
3. There should be an educational technology resource centre in the municipality to enable teachers make consultations on the production/integration of relevant instructional materials.
4. Understanding and developing of indigenous art technology, aesthetics, beliefs, values and attitudes should be intensified, so that the fine art students would not be denied the opportunity of meaningful learning interactions.

The federal government should motivate the teachers through the payment of enhanced salary structures, provision of regular electricity power supply and other essential support services to ensure effective classroom teaching-learning delivery.

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INNOVATIVE INSTRUCTIONAL STRATEGIES

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Abstract

Innovative instructional strategies refer to new changes or developments that bring about long term plan to achieve a specific purpose in the quality of instruction, learning and total education process. It also connotes a device, programme, method, process or production which can be utilized to bring about improved condition.

This paper considers the challenges facing the teachers and the learners in the teaching and learning process, especially with the Information and Communication Technology system (ICTs) whereby the world has become a global village. It became necessary that education system must advocate for innovation instructional strategies in all levels of education to improve effectiveness and efficiency in the teaching and learning process.

However, this paper has designed an instructional package as innovative instructional strategy for Home Economic students in SSI on Food and Nutrition, and also recommended some approaches for successful and sustainability of instructional strategies in ICTs in Nigerian school system.

Introduction

Innovation connotes a device, programme, method, process or production which can be utilized to bring about improved condition. In education, some innovations have been evolved to improve the quality of instruction, learning and the total educative process.

Von Haden and King (1971) have identified the following innovations: Individualized instruction, Programmed learning instruction, Multi-media instruction, the Non-graded school, Accountability, Performance contracting, Planning, Programming, Budgeting system, Behavioural objectives, Voucher system, National Assessment, Community resources, Creativity Development, Community school, flexible scheduling, Occupational education, Extended school year, Collective Negotiations, Differentiated staffing, Team teaching, Interaction analysis, Microteaching, Open classroom and Continuous Assessment.

The current rapid technological changes in teaching and learning strategies and the presence of the new varieties of communication media have accelerated the trend towards a wider use of multimedia teaching and learning approaches in schools by teachers.

Brief discussions of innovative instructional strategies are thus provided:

Instruction

The sole aim of any instruction is learning. Not all instructional efforts result to learning. Some teaching efforts are counter productive and produce adverse behavioural patterns. Teaching thus becomes a complex and integrated process in human setting, it has a strategy, events and capabilities that can be manipulated.

Instruction constitutes the level of implementation and the most problematic area of the curriculum. It is the activity centre of education i.e. the whole process through which character is formed and personality develop. It involves teachers/educators, learners and environment. The modern approach to teaching/instruction and learning is making a greater demand upon teachers and educators. The innovation in teaching today involves arranging, manipulating, adopting or adjusting and managing the learning environments so that any person with the appropriate entry behaviour placed in that environment may learn.

Instruction has a more specific construction and is more systematic and objective oriented. Bruner (1966) said, instruction consists of leading the learner through sequence of statements and restatements of a problem or a body of knowledge that can increase the learners ability to grasp, transform and transfer what he is learning.

Lumsdaine (1964) stated that instruction used in a generic sense refers to any specifiable means of controlling or manipulating a sequence of events to produce the required modification of behaviour through

learning. However, the primary function as teachers/educators is to instruct the learners through effective innovative planning or designing of the teaching or instructional unit or topic using different strategies.

An instructional unit or topic that is prepared and well presented is known as designed planned and programmed instruction/learning. Some of the innovative instructional strategies to be discussed are (a) Individualized Instruction (b) Multi-Media Approach to instruction (c) Team Teaching (d) Micro-Teaching and (e) System Approach to instruction.

Individualized Instruction

Every individual is unique in many ways, including his learning style. It is therefore necessary that individual characteristics are considered in order to facilitate maximum learning. It is this factor of individual uniqueness that makes individualized instruction indispensable.

For individualized instruction to succeed, the individualized learner's learning style, including his problems have to be diagnosed on the basis of which instructional programme is developed and tailored towards helping him learn. Under this innovation are a number of teaching-learning systems which include the programme learning, Individually Guided Education (IGE) and Individually Prescribed Instruction (IPI). All these learning systems emphasize diagnosis of the learner's needs, instructing of the objectives, providing the content and materials for instructions and evaluation of outcomes or results.

The programme learning system is prominent in the case of individualized instruction. The programmed learning is a change in response or behaviour brought about through the use of materials and experiences built into a carefully organized sequential system. The basic principles of programming include

(1) **Principle of small steps:** The subject matter which is to be programmed is analysed thoroughly and divided into meaningful segment of information called "frame" is presented at a time to the learner.

(2) **Principle of immediate confirmation:** When a learner proceeds through a linear programme, he is provided with the knowledge of results immediately after writing his response of the frame. He can compare his response with the correct one if his response is confirmed, if not, he goes back to it until he gets through it.

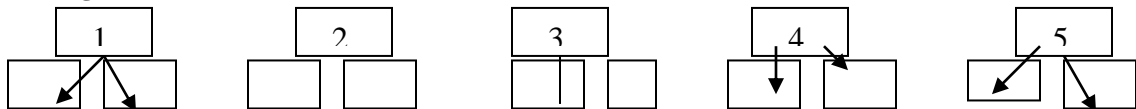
Linear Model or Skinnerian Model

(a)

Linear means proceeding in a straight line. Linear programmed model was developed by B.F Skinner of Harvard University.



(b) **Branching or Intrinsic or Model**



The branching or intrinsic programming was originated Norwan Crowder. It is called intrinsic because the learner himself makes the decision to adopt the instruction to his needs without the medium of extrinsic device as a computer.

The method of student response is different than that of linear model. Students have to make choice out of several choices. Multiple choice questions are asked. Each response to the question is keyed to student pages. If the learner select correct response, his response is confirmed and in case he selects wrong response, then he branches which is routed to material which explains as to why he is wrong.

(3) **Principle of Active Responding:** In order for the learning to occur, a response must be made by the learner. A good programme requires a thorough understanding of the previous frames before moving to the next frames.

(4) **Self-pacing:** The learner proceeds at his own pace when he moves through a programme.

(5) **Student Testing:** The student is regularly tested in order to assess his progress. On the basis of such testing, the student can also evaluate his performance on the programme.

The use of programmed instruction can be made in the following areas of education:

- Teacher's training
 - Correspondence courses
 - Non-formal education
 - Modification of deviant behaviour
 - Sanitary habits

- Agriculture
- Distance and open education

Multimedia Approach To Instruction

The employment of many media to achieve a specified objective is multimedia approach to learning, otherwise termed multi-mediation. It means that certain instructional situations require the use of more than one medium form to achieve the objectives. For an effective teaching-learning process, the teacher should endeavour to create an adequate multimedia learning environment. It is necessary that the teachers should not limit himself to the use of one medium.

Onyejemezi (1991:150) maintains that meaningful learning takes place when learner is fully involved in the process through the use of well prepared and presented instructional media. This gives the learner the opportunity of experiencing as he observes, hears, touches or manipulates things, carries out some experiments or interact with some concrete objects and situations. The application or use of variety of instructional media which enables the learners to observe, hear touch or manipulate a thing is what is referred to as multimedia approach to instruction.

Wittich and Schuller (1973) refer to multimedia learning as the basis strategy of interrelated learning experiences.

Multimedia approach to instruction emphasizes the selection, use of appropriate sequences of interrelated audio visual or instructional objective thereby enhancing the process of the learner. This implies that Multimedia learning involves all the sense organs of the body. An experienced teacher in classroom presentation should be able to adopt it for instance, when a teacher writes a topic or concept on the chalkboard, reads aloud what he has written, illustrates or draws or presents charts, models or specimen of that particular concept, he is applying multimedia approach to instruction.

Again a concept like kit that contains cassette, recording a film strip, a single concept 8mm film and a printed work sheet, all designed to serve a set of objective for a lesson is an application of multimedia for learning. The use of multimedia approach to instruction can be used at all levels of education e.g. nursery schools, primary schools, secondary level and tertiary institutions, health education, extension education, conferences and workshops.

Team Teaching

The type of formal education which Nigeria inherited from her colonial administration brought along with it an instructional method which is no more today accepted as the best method of teaching. The traditional lecture method of teaching is characterized by one teacher, to one subject, read, recite and recall. This is practiced in the elementary and post primary schools. It is now clear that the assumptions of the traditional lecture method are not true and should therefore be discarded.

Team teaching is one of the innovative instructional strategies in education system. Warwick (1971) defines team teaching as "a form of organization in which individual teachers decide to pool resources, interest, and expertise in order to device and implement a scheme of work, suitable to the needs of their learners and the facilities of their school;" Thus, team teaching may simply be defined as a method of organizing teachers, learners and the facilities of their school". Thus team

teaching may simply be defined as a method of organizing teachers. Learners, space and curriculum which requires more than one teacher as a group to plan, conduct and evaluate the educational programme for all the learners assigned to them. From the above definitions it is evident that team teaching has a lot of advantages over the traditional methods. It also has implications for learning, educational planned, the school staff and to the use of instructional media.

In team teaching, teachers are brought into a close working relationship for the joint instruction of the same group of students. As regards to educational system in Nigeria, there are subject teams for each subject as for each educational level such as kindergarten, primary, junior and senior secondary levels and tertiary

institution. The teams or task forces could make use of people of various skills and experiences and also have a group of schools willing to try out curriculum and educational technology products and innovations CD.

Teams and education technology task forces are often supported by a consultative committee comprising teachers, teacher-trainers inspectors, university dons and ministry personnel. Team work and collaboration and cooperation is inevitable in educational resource centres. The heads or directors of these centres coordinate the other personnel of the centre, they are expected to be a specialist in educational communication/technology and work with subject specialist production, staff graphic artists, photographers, cartoonist, illustrators, printers, cinematographers, audio specialist broadcasters, etc. Most distance learning systems employ a multimedia approach and offer a variety of courses. Most of the DLS course materials therefore have to be produced by a team of subject experts, print editors, television and radio producers, computer experts, and instructional designers, media technologist, etc. Thus, in distance learning team work, team spirit, collaboration and cooperation are inevitable.

Micro-Teaching

Micro-teaching originated in Stanford University in 1963 as a very important development in the practical teaching exercise. It is an innovative instructional strategy to practical teaching training. The activities are highly simplified and tailored to serve essentially as a major phase in the process of induction of the student-teacher. It is a real and constructed teaching situation that employs simultaneous techniques. In the process, student-teachers are gradually introduced in the field of practice teaching and teaching experience involving various skills device approximates to real classroom situation.

According to Onyejemezi (1988:168) micro-teaching is the idea which arose from the experiences with trainee teachers who were exposed to teaching practice supervision for the first time not knowing what to do rather felt embarrassed when introduced raw to a large class. In order to help trainee teachers overcome these problems of stage fright and to master certain teaching skills micro-teaching came into being.

Micro-teaching is done in small groups of 4 – 7, each group is exposed to one skill at a time. Each trainee teacher in a group now prepares a lesson and teaches that lesson applying the skill learnt. As the teaching is on, the other group members observe him and rate him using a rating scale especially prepared for this, each micro-teaching lasts for 5 minutes.

Feedback can also be provided by means of video tape recordings and by using tape recorders. A trainee teacher practices all the skills until he becomes proficient in all of them and skill is mastered.

Teaching skills in micro-teaching

Okonkwo and Ozurumba (1989:193) listed teaching skills as follows:

- (i) **Set Induction:** This is pre-instruction orientation of the lesson.
- (ii) **Illustration:** This is the context, examples refer to concrete image used to explain, clarify, and substantiate abstract and difficult concepts.
- (iii) **Stimulus Variation:** This is often designated as variety and variation or attention – producing teaching behaviour during a classroom lesson.
- (iv) **Repetition:** This is a technique designed to help students to relearn and remember, retain the main ideas, concept and facts taught.
- (v) **Non-Verbal Communication:** This is postures, questions, intonation, inflections and movements; they vary with individual culture and societies, use effective materials in lesson presentation.
- (vi) **Reinforcement Skill:** These include all devices intended to reinforce learning.
- (vii) **Questioning skill:** Fluency, brevity, and preciseness of questions are important. Probing, higher order questioning, divergent questions should be emphasized.

- (viii) **Closure or ending the lesson:** Concluding the lesson properly, is as important as introducing it.

Uses of Micro-Teaching in Education

Micro-teaching is used Education in Nigeria mostly in Colleges of Education. They offer both theory and practicum. In the universities, the education students offer this course with or without the hard wares. The problem encountered for micro-teaching by students is the high cost of materials required for it like the video tape recorder and television.

Systems Approach To Instruction

Systems approach to instruction has been viewed by Ogunranti (1982) as an attempt to conceive of the teaching-learning process as an event consisting of several elements or subsystems (teacher, learner, media, methods, learning experiences, and evaluation) which they all cooperatively interact to promote efficiency and effectiveness.

The system technology is simplified and summarized as application of the small step-by-step programmed learning approach of breaking complex tasks into simpler parts to the process of improving education as a whole and particularly in the process of teaching and learning. The step-by-step programmed is also known by other names such as step-by-step, systems analysis, systematic approach, system technology, educational technology.

The principles of systems approach are rooted in effective planning and stress that we first study or examine the existing situation by carrying out the following activities.

- (i) Identify the educational problem to be solved
- (ii) State the objectives to be achieved
- (iii) Indicate the conditions necessary for the achievement of the objectives
- (iv) Map out appropriate strategies and material resources to be used
- (v) Design the way of knowing whether the objectives are achieved or not
- (vi) Implement or try out the prepared package to the identified educational problems or task
- (vii) Determine whether the objectives have been achieved, evaluation aspect of the strategy.

In conclusion, it is very essential that we adapt our knowledge of curriculum development and instructional strategies to our peculiar circumstance and also ensure that we extend appropriate and suitable media to our distant clients for effective learning process. The innovative instructional strategies discussed above is ideal and calls for all levels of education to adopt the systems in the various school for effective teaching and learning.

However, this paper presented instructional package designed for Home Economic students in SSI on Food and Nutrition in line with the conference ICTs desire of shifting from theory to practice. Please see the attached instructional package on Home Economic students in SSI on Food and Nutrition.

Recommendations

The recommended approaches in innovative instructional strategies are:

- (a) All schools at various levels should apply system approach to course development and instructional designs in their schools.
- (b) They should apply individualized instruction, multimedia approach to instruction, micro-teaching and team teaching-teaching, especially secondary schools and higher institutions.

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INNOVATIVE INSTRUCTIONAL STRATEGIES AS IMPERATIVES FOR IMPROVING CLASSROOM COMMUNICATION IN THE NIGERIAN SCHOOL SYSTEM

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Abstract

Education has been globally acclaimed as the bedrock and an index for measuring national development. Consequently, many governments of the world have sought for ways of laying structures that will serve as launching pads to catapult their countries to the frontiers of knowledge. Successive governments in Nigeria have not been exceptions to this global aspiration. Educational innovations when pursued as a deliberate policy, is a complex process of social as well as educational forces that can take place only where an environment favourable to change has developed. This paper therefore examined the concept of innovation, reasons for seeking to innovate in education, qualities of a successful innovation and hindrances to implementation were discussed. Team teaching and microteaching approaches were also highlighted. Recommendations included among other things, that institutions of learning should own microteaching laboratories as well as educational resource centres.

Introduction

Globally, education is the pivot upon which any developmental stride takes its moment. In Nigeria, it is an instrument “par excellence” for effecting national development. It has witnessed active participation by non-governmental agencies, communities and individuals as well as government interventions. All these participatory approaches brought along with them instructional innovations according to the dynamics of the time and needs of the individual in particular and the society in general .

As envisioned by the Federal Republic of Nigeria, FRN (2008) in her National Policy on Education thus: “The acquisition of appropriate skills and the development of mental, physical and social abilities and competencies as equipment for the individual to live and contribute to the development of the society”, is a goal that must be pursued and realized through “laying a sound basis for scientific and reflective thinking”.

Consequently, successive governments in Nigeria have been engaged in the process of rethinking educational structures so as to make them more complete, flexible and innovative in both formal and non-formal education. This is because it is perceived that education provided in schools is not sufficient to take the people through life expectancies and therefore must be supplemented by a continuing process of learning. More importantly, with the escalating, unprecedented quest for education accentuated by population explosion vis-à-vis a poor state of infrastructure in institutions of learning and cost of education, much attention is now being paid to cost-saving devices, strategies and innovations that offer value for money.

Thus, innovating the education enterprise is seen as a sine qua non. Such innovations include auxiliary school personnel, correspondence education, games and simulations, individualized learning, modular course, continuous assessment, programmed learning, resource centres, study centres and teacher’s centres. Others are team teaching, micro-teaching, educational radio and television broadcasts, distance and open-learning, virtual learning, e-learning, in-service training and workshops, seminars and conferences for professional growth and development.

Concept of Innovation

The Oxford Advanced Learners Dictionary of contemporary English defines innovation as “the introduction of new things ,ideas or ways of doing something”. When this new method or idea is applied to the teaching-learning process, it is an instructional/educational innovation. Anuonye (2006) viewed that the philosophy behind any educational innovation is to introduce new ideas or methods of teaching and improve upon already existing practices. The need for the change is largely to ensure that what is being taught is relevant to the aims and objectives of education, the interest and needs of the pupils’ aspiration and values of our culture and the resources at our disposal”.

Onyejemezi (2006 lecture notes) observed that “Educational innovation is a planned, objective-oriented change aimed at improving upon already existing educational practices. Educational innovation is not merely a change. It is borne on the need to effect a change. It takes time and money and usually it is a continuous process.

Okwo cited in Ike and Iwu (2001) posited that innovation refers to a new technique, method, or approach deliberately designed and developed to improve effectiveness and efficiency in a given setting. Innovative technique can be a new package or an integrative of old and new ideas deliberately designed to improve effectiveness and efficiency of educational communication.

In recent years, the emergence of communication revolution and its effective application in classroom setting has added a lot of value to teaching-learning process. The traditionally conservative “talk-chalk” method is now giving way to a more flexible and creative formats for teacher-student interaction. Ike and Iwu (2001) felt that to improve teacher-student relationship, teaching procedures should be varied from the traditional method towards techniques more likely to generate motivation, interest and involvement; especially where the learner is expected to master concepts or problem- solving skills. They further added that the appropriate application of the new communication media and the allied technologies will make the most dramatic changes in our pre-primary, primary, post-primary and tertiary institutions. For instance, educational radio and television, language laboratories, teaching machines, films and the whole range of other mechanical and electronic means of communication would become increasingly important.

Purpose of Innovative Techniques in Education

Ike and Iwu (2001) noted that the broad objective of innovative techniques in educational communication is to enhance effectiveness and efficiency of the educational system in its entirety. Specifically reasons adduced include:

- (i) Equipping teachers with the skills, competencies and knowledge needed for improving performance.
- (ii) Providing interactive and other forms of participatory learning.
- (iii) Providing education appropriate the needs of and demands of the society in which the teaching-learning takes place.
- (iv) Providing alternative modes of instruction.
- (v) Making learning fun, provocative, exciting and interesting.
- (vi) Motivating learners to wish to learn more providing ways for the evaluation of new instructional or educational system.

Essentials for Successful Innovation

1. Adequate participation in planning by all those who will be involved at various levels and stages in implementing a project.
2. Support in principle from those authorities who have responsibility for education in the area in which an innovation will operate.
3. Sufficient preparation to ensure that the teachers who will be involved and the facilities at their disposal will be capable of meeting the demands placed upon them.
4. Clear identification of the limits within which an innovation may operate and the extent of the supporting services that can be provided. (Farrant, 1980).

Highlighting some Innovative Instructional Strategies

There are many innovative instructional strategies that are in use in the schools cutting across all the levels of teacher education and aimed at improving effectiveness and efficiency in instructional process; and also

in making teacher education more relevant and responsive to the needs of the contemporary Nigerians society. This paper therefore considers two of such innovative instructional strategies and their relevance in teacher education. They are team teaching and microteaching.

Team Teaching: Team teaching is an arrangement whereby a group of teachers share a major responsibility for the instruction of a group of pupils and co-ordinate among themselves the allocation of teaching duties with this group, (Farrant 1980). It can also be seen as a method by which teaching tasks are shared between the numbers of a team of teachers so that the qualifications and qualities of each are used in the best possible manner.

Explaining further on the meaning of team teaching, Olorundaro (2002) maintains that: “It is a systematic arrangement in which several teachers with a leader cooperatively instruct a group of students with an optimum use of technology”. Team Teaching is a cooperative teaching strategy in which the efforts of more than one teacher with complementary skills are harnessed and channeled for planning, implementation or presentation and evaluation of teaching-learning process for enhanced learning outcomes.

Guidelines for Effective Team Teaching

The following shows step-by-step guidelines for making team teaching effective:

1. Identify teacher’s areas of specialty and interest. Team members need to analyze individual’s strength and abilities and determine how they can be used within the team context.
2. Work out how to complement one another with the aim of facilitating improvement of skills in various areas of teaching.
3. Identify the goals of teaching.
4. Identify appropriate content areas that will satisfy the goals.
5. Break and organize the content areas into sections/units.
6. Identify appropriate learning materials.
7. Assign time/periods to each section/unit depending on the content, that is the learning task involved.
8. Develop lesson plans showing clearly the components.

Merits of Team Teaching

Supporters of this instructional strategy claim that it:

- (i) Makes use of the varied skills of different teachers.
- (ii) Reduces monotony that may arise where one teacher teaches the same set of students as in the case of conventional teaching.
- (iii) Avoids the waste of time caused in normal teaching by teachers having to say the same thing and explain the same problems to different classes following the same course.
- (iv) Allows pupils greater responsibility in managing their own studies.
- (v) Gives teachers a sense of assurance through facing teaching problems as part of a team.
- (vi) Allows a more flexible use of teaching space and other resources.
- (vii) Presents a challenge to conventional teaching etc.
- (viii) Reduces the work level one; having two or more thus making teaching less cumbersome.

Demerits of Team Teaching

Critics of team teaching claim that experience has shown that:

- (i) It appears to demand more teachers rather than fewer.
- (ii) Very large pupil groups pose serious disciplinary and administrative problems.
- (iii) Some teachers are not suited to working in a team.
- (iv) It places very much heavier demands upon teachers preparation and planning time than conventional teaching.
- (v) The large number of children covered by a team teaching approach prevents the development of the close pupil-teacher relationship which is so important a factor in successful classroom communication.
- (vi) Without adequate training, teachers teach worse by team teaching than by normal methods (Farrant, 1980).

Microteaching

Micro teaching is an innovation in teacher education programme with focus on modifying teacher's behaviour in accordance with specific objectives in addition to improving teacher effectiveness. (Chimezie, 2000). Ughamadu (1992) Eze, Agu and Akudolu (2003) define it as: "Teaching in a very small scale in that the time, number of students, lesson or concept taught and teaching skills emphasized are limited". It is a real constructed scaled-down teaching encounter which is used in training teachers (and others concerned with interpersonal communication) for the development of new teaching skills and refinement of old ones. Microteaching is one of the most recent and most effective innovative controlled laboratory simulation of real classroom instructional strategies designed to help the intern achieve the required level of competence, efficiency and effectiveness in teaching.

Objectives of a Microteaching Programme

Some of the objectives of microteaching include:

1. Assisting trainee teachers to identify some vital skills that make for teacher effectiveness.
2. Helping trainee teacher to select and practice teaching skills in the supportive environment of his peers or fellow students and expert teacher.
3. Helping to motivate and instill confidence in the trainee teachers before they proceed on teaching practice in schools.
4. Assisting the trainee teacher to be well disposed towards supervision and supervisor who should be seen as a friend concerned with improving his skill as a teacher.
5. Developing in the trainee the ability to be analytical, critical and objective in self-assessment of his teaching which hopefully he can transfer to normal classroom situation in his school.
6. Making trainees to realize the need and importance of practicing teaching in forms definable, observable, measurable and controllable teaching skills.
7. To develop intelligent student observers, providing feedback through either oral or written comments on micro-lessons taught by their peers. (Ughamadu, 1992).

Merits of Microteaching

According to Ike (2003), microteaching enables teachers to:

- (i) Achieve a great success in teaching.
- (ii) Show an improved ability in perceiving weakness and strengths in teaching.
- (iii) Utilize more teaching skills when teaching.
- (iv) Focus on more specific skills.
- (v) Continue to practice until mastery is attained.
- (vi) Focus his/her attention and that of the supervisor on a specific skill, thus making evaluation much more manageable.
- (vii) Evaluate himself/herself, especially when micro lesson was video recorded.
- (viii) Stop and replay the tape at any point for discussion.
- (ix) Concentrate on the specific skills of teaching his subject rather than general problems of class management.
- (x) Knowledge of immediate feedback by the student-teacher leads to a significant teaching effectiveness.
- (xi) The teaching skills acquired by the student-teachers during microteaching persist over a long time.

Demerits of Microteaching

Critics of Microteaching claim that:

1. It is student-teacher centered rather than pupils (peers) centered.
2. It is said to be unreal in terms of the number of pupils taught, skills, duration of the lesson and lesson content.

Impediments to successful use of innovative instructional strategies

The following factors could constitute hindrances to the effective implementation of an educational innovation. Farrant (1980) categorized them under geographical factors, historical factors, economic factors, procedural difficulties and personal. The categories are explained further.

Geographical Factors: problem of distance, poor transport links, isolation, poor climatic conditions and difficulty in communication.

Historical Factors: colonial effects, irrelevant curriculum, traditions opposed to change.

Economic Factors: lack of financial support, inflationary effects.

Procedural Difficulties: late delivery of materials, lack of skilled manpower, lack of adequate co-ordination and consultation, insufficient materials, lack of agreement on the project.

Personal- Insufficient rewards, persons in key roles unsympathetic to the change, key persons not fully understanding the programme, personality conflicts.

Conclusion

Innovative instructional strategies are objective oriented approaches or techniques which are essential to achieving excellence in classroom teaching-learning communication process. It is important to upgrade and update classroom practice by innovation and experimentation and by applying the new communication media and the allied technology. Thus educational radio and television, language laboratories, teaching machines, programmed learning, computer assisted instruction, films and the whole range of other hardware and soft wares means of communication would become increasingly relevant in contemporary Nigerian education enterprise.

As our knowledge changes in response to books we read, discoveries we make or experiences we have so our teaching must respond to those changes. If ever education were to become so mummified, that it did not change, then society itself would die (Farrant, 1980). Just as knowledge changes, so does society, for it is a living dynamic organism that exerts pressure in its members to conform to its ideals and standards. At one time, a particular goal may be emphasized, at another time, a quite new goal may take over.

Recommendations

1. The education industry should be computer revolutionized making sure that every teacher at any level of education is computer literate and own a laptop.
2. Computer education should even start from the primary school level with emphasis on the practical aspect.
3. Our educational planners and policy-decision makers should be educators who are sound in policy formulation and implementation and not just politicians or job seekers.
4. There is need to 'import' innovative instructional techniques that have excelled in developed countries and adapting them in our setting.
5. SAll teacher training institutions should have well equipped language laboratory microteaching laboratories and standard resource centres.

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THE RELEVANCE OF EDUCATIONAL RESOURCES CENTRE IN SCHOOL SYSTEM IN NIGERIA

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Abstract

Education can only be deemed effective if it enables the individual to seek, discover and therefore continue its own education. The non-human resources are the devices of technological revolution that can be combined with human resources for effective communication in teaching and learning process. This paper focuses on the relevance of educational resource centre in the school system. The paper discusses the meaning and various categories of educational resource centre. The paper also explains various ways by which school learning resources centre can enhance effective teaching and learning process and also improve the professional skills of the teachers. The paper further discussed barriers in the effective use of educational resource centre in school. The paper concludes by discussion possible solutions to some limitations confronting the effective use of educational resource centre in schools. Suggestions and appropriate recommendations were also discussed in the paper.

Introduction

The place of non-human resources for the purpose of classroom instruction have been lightly emphasized in the Nigeria educational system-primary, secondary and post secondary. The non-human resources are the devices of technology revolution that are essential for effective communication. The relevance of these non-human resources or materials has led to the establishment of department of educational technology (instructional technology) and library resource centres in most of Nigerian schools.

Definition of Educational Resource Centre

Adewoyin (1991) represents an environment in which the motivated learner may gain full concentration, study, source information as the first process of self discovery, gain self-actualization and be able to apply information to his own purpose. The term Educational Resource Centre (ERC) can also be used to depict an instructional centre where instructional materials and learning resources are made available for student and teachers. Other places where similar services could be found include: Media resource centre, instructional resource centre, educational resource centre, and learning resource laboratory. Notwithstanding the structures and the space it provides, the relevant resources materials provided in this centre whose purpose is to make learning real by exposing both learners and teachers to a concrete seaming experience can as well be provided, or even assisted by employing the use of Information Communication and Technology (ICT) hardwares and softwares. To Abimbade (1997) educational resource centre is a setting (space) where educational resources such as materials, tools, and equipment can be designed, developed, utilized, borrowed and stored. It varies in terms of its arrangement ranging from a classroom corner to an entire complex building, depending on the objectives, curricular emphasis and financial ability.

Categories of Educational Resources Centre

Tayo Omoniyi (2005), categorized educational resource centre into three:

- 1) Centralized educational resource centre
- 2) Decentralized education resource centre
- 3) Coordinated educational resource centre

Centralized Education Resources Centre: These functions as the sole resource centre within an educational system or geographical areas i.e. local government area or state. It has the major function of harnessing all available resources to solve educational problem in the system. With this structure, wastage is minimized through a holistic and rationalized approach to purchase, maintain and use of resources in the system.

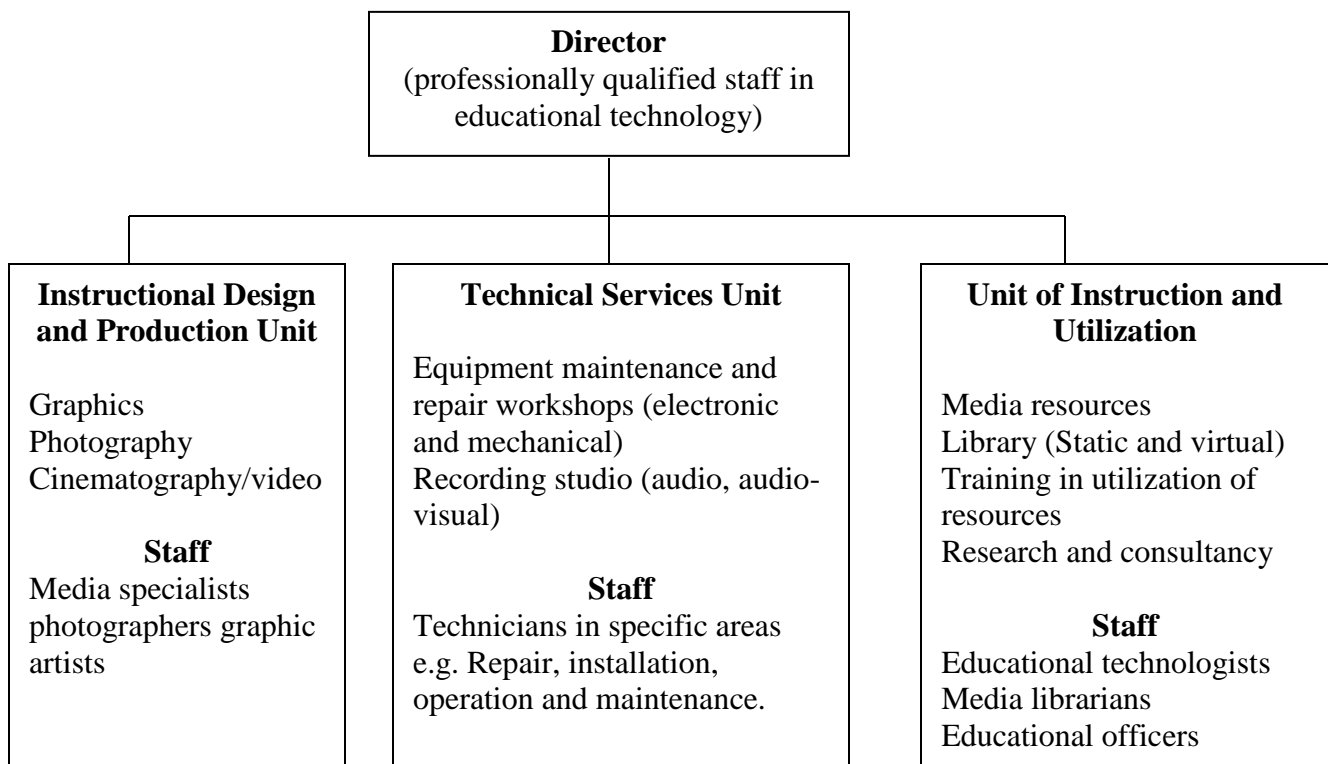
Decentralized Education Resource Centre: This is the one which function independently a given sub-system – a department, faculty or governmental agency. Such include educational resource centres in libraries, faculties, colleges or research institute. Existence of resource centres in faculty of education, college of medicine, library and faculty of science of the same university is a typical example.

The coordinated educational resource centre: This is a response to effective management of the resources as the exist in each unit of a system, with network of resource centres in various units of the same system. A central unit exists to coordinate and supplement activities of the other units. The main centre has the essential and expensive hardwares stocked in it for other units to access.

Goals of Educational Resources Centre

The National Policy on Education (FGN 2004) identified educational resource centre as one of the educational services. The educational services as enumerated on page 51 section II have the following as goals:

- i. To develop, access and improve educational programmes;
- ii. To enhance teaching and improve the competent of the teachers;
- iii. Make learning experiences more meaningful for children;
- iv. Make education more cost-effective.
- v. Promote in service education; and
- vi. Develop and promote effective use of innovative materials in schools.



Organizational Structure of an Educational Resource Centre

Source: Federal Ministry of Education, Lagos – Committee Report on Educational Technology, May, 1991.

Relevance of Educational Media Resource Centre to School System

Education is a continuous process and school works should be planed so that both the learners and the teachers are given the opportunity to make use of the school learning resource centres for information and materials needed. Obala (2005) claimed that learners should be encouraged to visit educational resources centre individually out of their own free will to consult, information materials in both books and non book materials such as text-book, periodicals, records, audio tapes, slides, films and film strips, sound films, maps, pictures, photographs, postal, chart, specimen, toy, model games and realia. The use of all these

materials are great sources of information to both the teachers and the learners to enrich themselves academically.

In addition, many school educational resource centres however provide more than a wide range of resources and services but play a developmental role through the introduction of new learning technologies which can be used to meet the current challenges in teaching and learning process. Beswick (1997) described the role of school library and learning resources centre as that of selection and acquisition of resources, classification and indexing for retrieval, storage, guidance, lending, evaluating of resources production and use of resources for enrichment of learning on the part of both the teachers and learners.

Educational resources centre (ERC) especially school learning resource centre is also viewed as a learning laboratory that provide opportunities for learners to develop information skill and develop a commitment to informal decision making Metzgen (1992). In the course of designing and production of learning materials in the school learning resource centre, learners' creativities skills could be developed and sustained. Furthermore, educational resource centre especially in schools is also viewed as a resources centre that supports and influences a dynamic educational programme within the school by providing information services that respond to the information needs of teachers and fosters their professional development.

Foskett (2005) identified the role of the school education resource centre (ERC) as an aero plane who can see what goes on in any field because it is not engaged in tilling them. Educational resource centre is seen as a place where teachers can demonstrate practical skills. And this will enable the teacher to offer expertise advice in the area of curriculum planning and developments of language and study skill programmes. Obada (2005).

Educational resource centre especially school learning resource centres help both the teachers and the learners to gather information and use appropriate learning materials for the purpose of research. School learning resource centres are provided to satisfy the information, research, recreational and the cultural needs of both the teachers and the learners. Appropriate use of various materials and equipment in the school learning resource centres by the learners and their teachers can promote effectiveness in the teaching and learning of various subjects in schools.

Challenges of Using Educational Resources Centres (ERC) in Schools

The following factors have been identified as various challenges of effective use of (ERC) in schools:

- Inadequate infrastructures in most of the ERC
- Resistance to change from traditional pedagogical methods to more innovative technology based teaching and learning method by both teachers and academics.
- In effective coordination of all the various ERC for education initiatives
- The overall education system is under funded, therefore, available funds are used to solve more urgent and important survival need by schools. The over-dependence of educational institutions on government for everything has limited institutions ability to collaborate with the private sector or seek alternative fund sources for provision of educational resource centres.
- Inadequate skill manpower to manage available resources and inadequate training facilities for effective use of educational resource centre in schools.
- **Poor Maintenance:** Poor maintenance culture on the part of the technical and other supporting staff of most of the educational resource centre has been identified as a great bottleneck in the effective use of the resources centres. Majority of the supporting staff of the centre are not well trained on how to maintain some of the resources at the centre. While few that are trained always demonstrate poor attitude towards maintenance of materials and facilities at educational resources centers.
- **Inadequate Opening Hours:** Most of the educational resources centres especially at the school system do not open at the regular hours when the learners could have access to various available facilities and materials the centre. Even when these centres open, learners are often denied of having access to where some equipments and materials especially expensive ones are kept. And this always prevented learners from utilizing them for their academic works.
- **Inadequate and Irrelevant Materials:** Most of the school learning resources centres are often stock with obsolete and inadequate materials. Most of these obsolete materials could not meet the need of both the teacher and the learners in this current information age.

Possible Solution to the Problems Militating Against the Effective Use of Educational Resource Centre in School

- **Proper Organization of Resources at the Centre:** To facilitate effective use of the educational resource centre's collections, the resources must be properly organized by all the supporting staff and librarian (for print materials). This involve cataloguing and classifying the materials and arranging other materials and equipments properly for easy accessibility to both the teacher and the students.
- **Financial Support:** Government at all levels in Nigeria should allocate reasonable amounts of money for the building of learning resource centres in each schools. Efforts should also be made to equip the centres with appropriate learning materials through acquisition, purchase, design and production stakeholders in education sectors should also assist in supporting the centres financially.
- **Workshops and Training:** Many workshops and trainings which could assist the users of educational resources centre especially the teachers and students on how to integrate the use of modern and ICT equipment to the classroom should be organized. Abanikanda (2005) also asserted that teachers should be essentially trained on how to use ICTs in the classroom. He further emphasized that it is necessary for both the teacher and students to be ICT compliance because ICTs are one of the major contemporary factors shaping the global economy and producing rapid changes in society. They have fundamentally changed the way people learn and communicate. They can transform the nature of education – where and how learning takes place and the roles of students and teachers.
- **Employing Resourceful Supporting Staff and Librarian in Learning Resources Centre in each School:** The supporting staff of the centres should be resourceful in the provision of locally available material. This is necessary because some of the topics taught in the class could best be illustrated with local examples. Obada (2005) explains that it is the duty of centre's staff and school librarian to locate learning resources that could be used to enrich the lesson taught in schools so as to add quality to the Nigerian education system.

Conclusion and Recommendation

In conclusion, this paper has been able to highlight the relevance of educational resources centre in school system. The paper explains various way by which the learning resource centre can be used to facilitate effective teaching and learning in Nigerian schools.

It is recommended in the paper that if government at all levels can invest and establish learning resource centre in all institutions of learning as stated in the National Policy on Education (2004), this will go a long way to make educational resources and facilities available in Nigerian schools.

In addition, government should stock the learning resource centres with necessary materials and equipment which can be used by teachers to facilitate effective teaching and learning of various school subjects.

Trainings and workshops should be organized for teachers on how to handle and integrate modern and ICT equipment to classroom activities.

Finally, I will see in the nearest future a situation whereby each state government makes it compulsory for every school to have a learning resource centre with certain laid down standard as to what to stock, reading space, furniture, books, non-book materials such as audio tapes, slides, computer systems, film and film strips, sound film, map, pictures projectors, etc. and personnel. This will go a long way to make appropriate learning resources available to both the teacher and the learners.

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COMPARATIVE ANALYSIS OF TEACHING PRACTICE SCORES FROM LIVE AND VIDEOTAPED LESSONS OF STUDENT TEACHERS BY THREE CATEGORIES OF ASSESSORS

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Abstract

The study compared the teaching practice scores of live and videotaped lessons of student teachers by three categories of assessors. The design of the study is sample survey of student teachers supervision. Teaching Performance Assessment Form (T.P.A. Form) was the only instrument used to collect the required data. One research question was formulated. Using the descriptive statistics and anova, the assessment scores of teaching performance of student teachers watched from live and videotaped by three categories of assessors were not significantly different. Recommendations were made.

Introduction

Teaching as an art has been considered to be a complex exercise always undertaken by teachers, and the ways to manage these complex undertakings to bring about effective results have been the pre-occupation of educators. The effectiveness of education in Nigeria right from nursery school to university is dependent in large measure on the quality of its teachers and their teaching. The exercise carried out for the purpose of training the would-be teachers in institutions of learning is the teaching practice programme.

Bolarinwa and Akinpelu ((as cited in Adedapo, 2009) noted that during the period of teaching practice, student teachers are provided with the opportunity to engage in profitable experiences under the guidance and supervision of professional supervisors and the regular teachers of the co-operating schools. The merit in this practice is that student-teachers are guided and trained to become competent professionals in their chosen career. Teaching practice upgrades student-teachers professionally, and prepares them for the effective performance of their functions as classroom teachers. According to Olaniyan (1988), since professions like Law, Medicine, Architecture, Engineering and Pharmacy have their practical sides and specific professional skills acquired through practices such as attachment, housemanship, internship and apprenticeship, teaching practice is the similar aspect that gives teaching an attribute of a profession. Good teaching practice includes providing opportunities for students to be active learners, taking into account individual differences in learning styles and providing encouragement for students to seek solutions independently (Derek Bok Center for Teaching and Learning 2002, 1). Elements of good teaching and learning practice include:

- the actual teaching, including explanations, examples, illustration, and learning support in the form of professional advice, comment and encouragement.
- the students' work, including reading, research, discussion groups and all course-required practical activities.
- the assessment procedures, which will need review and may need to be changed to meet the needs of a distance education programme.

The annual teaching practice exercise embarked upon by student-teachers in all teachers' education programmes leaves many minds in doubt as to its effectiveness particularly in the area of supervision. A lot of reasons may account for this poor teaching practice exercise. Among the various factors are large number of students that make it difficult for the few supervisors to cope with, inadequate funding to take care of supervisors, travelling risks experienced by supervisors, long distance to cover that make it difficult for supervisors to watch student-teachers during scheduled period, to mention a few. One other problem is the peer-assessment by the internal and external assessors, who watch students at different times and yet expected to return a well correlated set of grades.

The nature of teaching practice exercise provides the opportunity for student-teachers to acquire professional training through participation in teaching within a specific period of time. However, as

effective as this method might prove to be, it is rather cumbersome, complex and in fact time consuming for a supervisor to visit a large number of student-teachers at their various schools of practice at least twice. According to Dada and Iyeke (as cited in Enamiroro, 2008) “but unfortunately this is not the case as at now. The teacher training institutions tend to allow certain circumstances to compel them into compromising in such areas as duration of teaching practice, the practice centers, the supervision modalities and other interacting factors. In the long run, the purpose of the teaching is hardly achieved”.

The objectives of teaching practice are laudable. If these objectives are to be achieved, the need for effective instructional supervision becomes very crucial. However, the external supervision of student-teachers entirely by their lecturers may not result into the production of competent teachers, because of their inability to acquire certain competences. Hence, there is need for adequate and positive involvement of principal and cooperating teacher of secondary schools in the daily professional assistance and guidance of student-teachers. In a study conducted by Enamiroro (2008) on contributions of secondary school personnel towards the achievement of teaching practice objective, he reported that secondary school personnel contribute towards the achievement of teaching practice objectives by providing assistance in writing and use of lesson notes, curriculum interpretation and implementation, classroom management and the application of teaching methods.

Continuous instructional supervision cannot be carried out by lecturers from teacher training institutions alone. Fagbahi (1994) have questioned the value and quality of teaching practice supervision and Balogun (1996) assert that supervision can affect the quality of teaching. Hence there is need for adequate and positive involvement of cooperating school of practice in the daily professional assistance and guidance of student-teachers, and in the assessment of student teacher performance. This study was designed to investigate the comparability of cooperating teacher’s scores, internal and external supervisors’ assessment based on videotaped teaching practice exposures of students of Emmanuel Alayande College of Education, Oyo. In other words: Do the assessments made from live teaching and those made from videotaped teaching significantly differ?

An attempt to solve these problems led to micro-teaching. But now, with the coming of high products of science and technology, teaching practice may also benefit. Most disciplines and professions (such as medicine, engineering) are making use of the opportunities provided by science and technology through the use of products of technology in their profession. Teacher training can make use of products of technology for qualitative growth as the situation is in other professions. One of such technology is video. The benefits of video in a teaching context are numerous and have been documented. Video provides a natural medium for enhancing the sense of context and realism in case studies. It provides vast amounts of rich detail using images and sound that capture the immediacy or a real classroom that all students can draw upon as common examples of authentic learning experiences (Yusuf,1998; Nwachukwu, 2003; LeFevre ,2004). It can also capture all that transpire in the classroom during teaching practice. This can be playback for assessment purpose.

Purpose of the Study:

The major purpose of this study is to compare assessments from live and videotaped teaching exposures of teaching practice of sandwich students of Emmanuel Alayande College of Education, Oyo. To achieve this goal, scores of the three categories of supervisors on student teachers teaching competencies on lesson plan, use of teaching aids/devices, delivery of the lesson, knowledge of subject matter, class management and teacher’s personality were analysed.

Research Questions

Is there any significant difference in the assessment scores of teaching performance of student teachers watched live by cooperating teacher and supervisor on one hand and videotaped watched by another supervisor in:

- (i) appropriateness of lesson plan,
- (ii) use of teaching aids/devices,
- (iii) delivery of the lesson,
- (iv) knowledge of subject matter,
- (v) class management, and
- (vi) teacher’s personality?

Methodology

The design of the study is sample survey of student teachers supervision. The researcher adopted observational method through video recording. Live teaching exposures of student-teachers during teaching practice exercise were observed by cooperating teachers and the supervisor. Video tapes of these

lessons, which provide vast amounts of rich detail using images and sounds were watched by another set of supervisors using the same teaching practice assessment form. Scores obtained were used for analysis.

The population for the study consisted of all 300 and 400 levels degree sandwich student teachers of Emmanuel Alayande College of Education, Oyo in affiliation with University of Ado-Ekiti, Nigeria. Fifteen student teachers who were randomly allocated to the researcher during teaching practice exercise of Year 2010 Contact session constituted the sample. They were located at Oluyole, Ona Ara and Ibadan North-East Local government areas of Oyo State. Six of them were male and the remaining nine were female.

The measurement tool used in this study is the Teaching Performance Assessment Form (T.P.A. Form) that was developed by the Teaching Practice Committee and approved by the Faculty of Education Board of Studies, University of Ado-Ekiti, Nigeria.

Results and Discussion

Table I: Descriptive Statistics of Scores on Teaching Practice as Returned By Three Categories of Supervisors

Aspect of Teaching Practice	Supervisors	N	Mean	Standard Deviation
Appropriateness of lesson plan	Live Assessor I	15	10.33	.900
	Live Assessor II	15	10.33	1.345
	Video Assessor	15	10.13	1.060
	Total= 45		10.27	1.095
Use Of Teaching Aids/Devices	Live Assessor I	15	9.00	1.648
	Live Assessor II	15	8.40	1.682
	Video Assessor	15	8.80	2.042
	Total= 45		8.73	1.776
Delivery Of The Lesson	Live Assessor I	15	1.534	1.534
	Live Assessor II	15	1.302	1.302
	Video Assessor	15	1.486	1.486
	Total= 45		1.433	1.433
Knowledge Of Subject Matter	Live Assessor I	15	6.33	.900
	Live Assessor II	15	6.40	1.056
	Video Assessor	15	6.47	.990
	Total= 45		6.40	.963
Class Management	Live Assessor I	15	5.33	.816
	Live Assessor II	15	5.33	.900
	Video Assessor	15	5.53	.990
	Total= 45		5.40	.889
Teacher's Personality	Live Assessor I	15	3.40	.507
	Live Assessor II	15	3.47	.516
	Video Assessor	15	3.33	.488
	Total= 45		3.40	.495
Total	Live Assessor I	15	56.40	4.067
	Live Assessor II	15	56.60	4.911
	Video Assessor	15	56.07	4.183
	Total= 45		56.37	.642

Table 2: Anova of Scores on Teaching Practice Presented by Three Categories of Assessors

Aspect of Teaching Practice		Sum of Squares	df	Mean Square	F	Sig.
Appropriateness of lesson plan	Between Group	.400	2	.200	.160	.852
	Within Group	52.400	42	1.248		

	Total:	52.800	44			(NS)
Use Of Teaching Aids/Devices	Between Group	2.800	2	1.400	.432	.652 (NS)
	Within Group	136.000	42	3.238		
	Total:	138.800	44			
Delivery Of The Lesson	Between Group	2.711	2	1.356	.650	.527 (NS)
	Within Group	87.600	42	2.086		
	Total:	90.311	44			
Knowledge Of Subject Matter	Between Group	.133	2	.067	.069	.934 (NS)
	Within Group	40.667	42	.968		
	Total:	40.800	44			
Class Management	Between Group	.400	2	.200	.244	.784 (NS)
	Within Group	34.667	42	.819		
	Total:	44.800	44			
Teacher's Personality	Between Group	.133	2	.067	.262	.770 (NS)
	Within Group	10.667	42	.254		
	Total:	10.800	44			
Total	Between Group	2.178	2	1.089	.056	.945 (NS)
	Within Group	814.133	42	19.384		
	Total:	816.311	44			

Findings are presented in the tables. Table I is descriptive statistics of scores of three categories of supervisors and table II is the ANOVA of the scores of three categories of supervisors. On appropriateness of lesson plan, the mean score of live assessor I, who was a cooperating teacher, is 10.33, while the mean score of the second live assessor II who was allocated to supervise the student teachers from the college is 10.33. The mean score of assessor who watched videotaped is also 10.13. F-test of the mean score is 0.160 which is also not significant at 0.05 alpha. On the use of teaching aids/devices, the table reveals that the mean scores of live assessor I is 9.00, live assessor II is 8.40 and while that of the third assessor who watched videotaped lesson is 8.40. F-test of the mean score is 0.432 which is also not significant at 0.05 alpha.

As can be seen from Table 1 the mean scores of the three categories of assessors on delivery of the lesson by student teachers don't vary very much and Table 2 reveals that the difference between and within groups which is 0.650 is not statistically significant at 0.05 alpha. On knowledge of subject matter the three categories of assessors' mean scores also don't vary very much and the difference between and within groups which is 0.069 is also not statistically significant at 0.05 alpha. On class management as can be seen from the table, the same mean score of 5.33 was calculated for live assessors I and II while that of assessor who watched the videotaped lesson mean score is 5.53. F-test of the mean score is 0.244 which is also not significant at 0.05 alpha. On teacher's personality, the mean score of live assessor I is 3.40, while the mean score of the second live assessor II is 3.47. The mean score of assessor who watched video taped is also 3.33. F-test of the mean score is 0.262 which is also not significant at 0.05 alpha. The total mean score of live assessor I is 56.40, while the total mean score of the second live assessor II is 56.60. The total mean score of assessor who watched video taped is also 56.07. F-test of the total mean score is .056 which is also not significant at 0.05 alpha.

Discussion and Conclusion

Findings from this study indicate that the assessment scores of teaching performance of student teachers watched live by cooperating teacher and supervisor on one hand and watched from videotaped lesson in appropriateness of lesson plan, use of instructional aids, delivery of the lesson, knowledge of subject matter, class management and teacher's personality were not significantly different. The expectation was that there would be a wide margin in the mean scores of the three categories of assessors.

While the above study supports the use of cooperating teachers, the finding of the study has support in other studies that have been reported the writing and use of lesson notes, use of classroom management techniques, assess to and positive utilization of instructional materials as some of the contributions of secondary school personnel towards the achievement of the objectives of teaching practice (Ukasoanya, 1999; Dada & Iyeke, 1999, Emamiroro, 2008).

In conclusion, the results of this study within its limitations indicate that one can rely on scores of cooperating teachers and rely on scores returned by watching videotape of lesson. Watching videotape of lesson presentation will reduce cost of transportation especially that of external moderator because they will be watching the same lesson and it makes the scores to be more acceptable. The videotape can be playback and review by many other assessors if need be and can be presented to the candidates to see their weaknesses and strengths thereby convincing them of their grades. It eliminates victimization.

In view of the findings of this study, it is therefore recommended that videotape of student teachers teaching exposures should be given emphasis during teaching practice exercise. It can be used as models for teaching either way as good or bad teaching.

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BROADCAST MEDIA AND THE CONSTRAINTS ON SECONDARY SCHOOL STUDENTS LEARNING IN NIGERIA

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Abstract

The need for Broadcast Media in education is becoming imperative as a result of increase in school enrollment. Yusuf, (2002) said Educational Broadcasting Media can go a long way in ameliorating the poor state of education as they can be used to stimulate students learning, enrich the quality of instruction and improve teachers' competence. The use of media broadcast in education will reduce the burden of financing educational infrastructure in schools on the part of the government and also help parents to some extent to cope with the ever increasing cost of financing their wards education. This paper examines constraints of television and radio educational media broadcast on secondary school learning, they include lack of time and materials, incessant power outage, lack of experts for script writing in various subject areas, stand-by generators, satellite dish to boost reception of programmes and funding because hardly will a programme succeed without adequate funding. Recommendations made were that there should be practice in recording the programme during transmission for play-back at convenient time to your class, stand-by generators be made available in-case of power failure among others.

Introduction

Broadcasting is the act of spreading information through sound and vision to an individual, a group of people either in homes, at listening or viewing centers through electronic devices (Ogunmilade, 1988). The two major media involved in educational broadcasting are the television and the radio. Broadcast media is a term used to refer to the delivery of information through various media. Educational media broadcast are used to facilitate distant learning programmes using the same curriculum as it is obtained in the formal school system. Television and radio broadcast are two of the modern technologist to the teacher. They are effective means of reaching large population, over large areas of territory, irrespective of location and terrain. Both radio and television have been used to improve primary and basic education. Also because of the wider availability of portable low cost, battery operated radio cassette recorders are used in rural and urban areas alike. Educational television is educational broadcast that combines audio with visuals to facilitate learning. It is concerned with disseminating of information in curricular areas like physics, chemistry, language, arts etc. it also circulate educational news through advertisements, entertainment, educational dramas, folklores, poetry and music (Ramatu,1998). Television is more than just messages, it is a production system for creating the message and distribution system for delivering the messages to the intended audience. Schools are becoming more and more aware of the potentials of television for production, distribution and display of instructional messages. Few years ago television in schools consisted of a dusty television set that was infrequently and inappropriately used to display broadcast programmes that often had little or no relationship to the curriculum. Today, many schools not only have TV sets, they also have the equipment to design and produce their own programmes. Educational TV broadcast are either used at scheduled broadcast time or if that is not appropriate they are video-taped for display play back. A major concern with TV educational broadcast is the copyright problem, it is advisable to obtain permission from copyright holder or producer. It should be noted that TV can be used for presentation of information to large groups, present stimuli to generate an interaction and for individualized instruction and self-evaluation. Radio broadcast has similar features to television, the only difference is that while radio is audio, television is both audio and visual. The medium was initially perceived as great boon to public education, but its promise was never fully realized instead it turned to entertainment. However, today many developing nations are rediscovering radio as a promising means of mass education. Radio is the preferred choice perhaps partly because of the trained staff in a country with very low literacy rate. According to survey conducted by Saidou, (2003) it indicated that among all media, radio had the greatest impact on people. It played a major role in supporting developmental programmes especially educational broadcasting for both rural and urban setting. Radio broadcasting while essentially and primarily European at its origin has encountered exceptionally favorable conditions in a variety of ways ranging from education to politics, economics and technological development. Radio broadcasting is regarded today as an ICT4

and whose development shares many similarities with New Information Communication Technology (NICT) particularly the internet, computer and telephones. Yusuf, (2002) stated that the two major media involved in educational broadcasting are the television and the radio. Educational radio broadcasts are transmitted through two major interrelated ways. These are the open radio broadcast and instructional radio broadcast. Open Radio Broadcast: These are broadcast by commercial and public radio station. Educational broadcast through these stations are sandwiched into the broad entertainment, information and other main programmes. This type of broadcast is common in developed and developing countries like Nigeria where Private, State and Federal radio stations formal school lessons, general informal educational programmes on civic, health, agriculture and religion, among others. Instructional broadcast covers wide subject areas and thus serves to improve learning gained by students. It has a major limitation of being unorganized and thus listeners and feedback are treated as by-products and success is left to chance. Instructional Radio Broadcasts: These are broadcast by radio stations established solely to provide systematic instructional audio programme for school use. This is common in developed countries like Britain, Germany and United States. This approach is better than the open radio broadcast because instructional delivery is not distributed by commercial broadcast. Instructional television employs *five* major delivery systems through which instructional television programmes are transmitted to viewers. These are through commercial and non-commercial stations, closed circuit television, cable television, microwave and the video delivery systems. Portable video delivery system refers to the several methods of playing back instructional television programmes in the classroom by means of video recorder. It is preferable to other forms of television broadcasting because it has the advantages of been adaptable to school programmes without disruption in schedules, teachers involvement can be built into instruction and clear image is also assured. This paper focuses specifically on constraints of educational broadcast for secondary school learning in Nigeria. However, it should be noted that secondary school education is not limited to formal system of education alone, it embraced non- formal system of education hence they operate using the same syllabus and write uniform examinations for certification such as National Examination Council (NECO), West African School Certificate Examination (WASCE) and General Certificate in Education(GCE). other groups that could benefit from the programme are Nursery and primary schools, students of tertiary institutions, Adults education learners, nomads, migrant fishermen including public interested in any of the broadcast educational programmes.

Advantages of Television and Radio Educational Media Broadcast

Television is a widely viewed medium, nearly every home has it. It is strongly believed that if the programme is well handled its video plus audio format is capable of delivering information easily. Radio is a creative medium because it is audio only, some people refer to it as theatre of the mind, it allows playback of recorded or broadcast information. The latest development appropriate for school broadcast use is the cassette recorder, this eliminate the problem related to threading and adds the advantage of portability when compared to television. It is less expensive and less cumbersome to purchase and handle, both television and radio can reach specific target audience, its broadcast are immediate and can still be aired the next day. The use of television and radio promote developmental objectives, on the other hand radio has been used specifically to bring good quality education in literacy, problem solving, skills, values, attitudes and a wide range of knowledge to a large section of the population. In the area of teacher education, programmes are developed to introduce teachers to new syllabus, new teaching and learning patterns, and to discuss common problems with mutual benefits. The idea is to improve teachers' knowledge to perform his or her duties more effectively, or cover those areas of the syllabuses where many teachers are found to be inadequate like in Mathematics, Science and Languages. Sydney, (2005) said television and radio are great assets in broadcasting education, the television very much represents the physical teaching because of its audio-visual nature besides bringing reality, the television is useful in teaching great audience at the same time. Broadcasting media have inherent qualities which have both direct and indirect significant influence on the quality of school instruction and thus make the quality and the process of teaching and learning in schools more lively, more motivating, more concrete, more efficient and more effective (Lefranc, 1983, Coldevin, 1988, and Coe,1990). Kahn and Master et al, (1992) in their researches called for inclusion of media education in school curriculum, they argued that it makes students critically aware of what they see, hear, and read, stressing that it should be used regularly in elementary and secondary schools.

Disadvantages of Television and Radio Educational Media Broadcast

Television as a medium of broadcasting is expensive, both television and radio have too many channel choices resulting in major audience fragmentation. Radio broadcast is available only in the instant in which it is been delivered. Generally, most radio listeners have very little real loyalty to any one station. On the other hand radio is only audio on like television that is both audio and visual which permit better knowledge delivery, comprehension and retention. Time allocated to television and radio educational programmes if not well managed to enable listeners tune-in to the various channels at the schedule time it may lead to failure and also frustrate the learner. There is also absence of proper training for those using technological tools such as the computers and the internet in addition to finance to ensure maintenance of these media, it is also believed that broadcasting media makes learners to be passive because of their one-way interaction.

Constraints Of Broadcast Media On Secondary School Students Learning In Nigeria

The absence of experts who will be responsible for scripts writing in different subject areas is an issue worthy of attention as well as technologist or technical support hands in terms of production of soft-wares such as disc, cassette recorded programmes and to ensure maintenance of equipment and continuity or flow of programmes. Bradford, (2002) reported that lack of time and materials are the most common barriers in media education. Programme schedule may not fit into the class time table, It is therefore advisable that you practice to record the programme during transmission and play it back at a time convenient to your class or you can get a taped copy of the programme from the producers. The medium of instruction are electronically operated, that means electricity must be constant so that educational radio and television programmes will be on air as at when due. Another problem that will directly affect the students is the fact that they can listen to the programme either directly or play back of recorded programme but cannot ask questions as it is done in the normal class instruction. It is also observed that in formal school system students have the opportunity to form study groups and share ideas among themselves but in the case of students not in the formal school system e.g distance learning programme, the gap can hardly be consolidated except brilliant students who can easily grasp instruction. Other issues that could serve as drawback to the programme are disruptive problem of incessant power outage in the country will serve as a limiting factor, absence of television sets, tape-recorders with playback, absence of Stand-by generators, secondary schools in rural areas require battery system as source of power to television and radio, Satellite dish to boost reception of programmes and the problem of funding. Wulfemeyer et al, (1990) said that teachers see media education as important but lack of time, limited resources, and inadequate training make their efforts to educate students through media seem over whelming. In line with the above observation, survey results in the 20th century believed that media education is important, but putting it into practice is not easy stressing that barriers that contribute to media ineffectiveness in education are mainly lack of time and materials. However, it has been argue that these barriers can be overcome with increase awareness of easy- to use media education resources.

Recommendations

Time and materials have been identified as major barriers in educational media broadcast but very crucial for its success, it is therefore advisable that time schedule for educational programmes be adhered to in order not frustrate listeners. Media materials cannot function without electricity, to reduce problem of power failure, generators should be at stand-by including satellite dish to boost reception of programmes. Experts for script writing in various subjects areas should be on ground to enable them work as a team including technologist for equipment maintenance. It should be noted that the educational media broadcast has its root with Federal Radio Co-operation Lagos, it should therefore be given the mandate alongside National Educational Technology Centre, Kaduna to organize the programme while sub-stations for television and radio be attached to Educational Resource Centre in each state of the Federation and Abuja in order to facilitate grass root educational broadcast while strictly monitored by Federal Ministry of Education with a view to remove politics of state ministries of education that could hinder the success of the programme. Equipment relevant for good production of television and radio broadcast should be made available to NETC Kaduna, FRC, Lagos and all state Education Resource Centre in order to boost their performance and enhance efficiency. There is also need for a well stock libraries in schools as it constitute store house of knowledge, this will compliment broadcast media experience while separate radio and television stations should be established for the use of institutions.

Conclusion

Television and radio educational broadcasting in spite of the constraints observed in this paper, it still stands a good chance of transmitting knowledge to large population of Nigerians, although these media are not and cannot be a substitute for the teacher but with careful planning a lot could be learnt from the broadcast of television and radio programme. Furthermore, it is strongly believed that if government take it as a challenge to contribute to the growing body of knowledge by adequately funding, recruit able hands to manage the programme, better results are sure to come as a huge relief to thousands of Nigerians and also reduce illiteracy rate in Nigeria.

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EFFECTIVENESS OF WEB-BASED SOFTWARE IN ACHIEVING VIRTUAL LEARNING PRACTICES IN LAGOS STATE

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Abstract

A virtual learning (VL) is a form of teaching and learning designed to enhance a student's learning experience by including computers and the internet in the learning process. The principal components of a VL package include curriculum mapping, student tracking, online support for teacher and student, electronic communication and internet links to outside curriculum resources. All these can only be achieved with web-based instructional software which this paper has sought to do. Two hundred and seventy (270) students in Senior Secondary School One (SSS1) from Epe Grammar School, Epe, Government College, Ketu, and Federal Government College, Ijanikin were purposively selected, for experimental study, randomized, pre-test, post-test, and three groups with ninety (90) student in each group. Three levels of treatment were used (Collaborative Web-based Instruction (Group A), Individualized Web-based Instruction (Group B) and Conventional Instruction (Group C)). The researchers generated and tested three (3) hypotheses using t-test. Results of these hypotheses showed that there was no significant difference in the achievement of Mathematics students exposed to Individual Web-based Instruction and Conventional Instruction {13.3 (t= 5.930; p > .05) and 11.2 (t= 5.930; p > .05), no significant difference in the achievement of Mathematics students exposed to Collaborative Web-based Instruction and Conventional Instruction {14.3 (t= 13.441; p > .05) and 11.2 (t= 13.441; p > .05), and there was significant difference in the achievement of Mathematics students exposed to Individualized and Collaborative Web-based Instruction {13.3 (t= -2902; p < .05) and 14.3 (t= -2902; p < .05). It was recommended that both Federal and State Ministry of Education should give attention to the development of Virtual Learning using web-based technology in both Federal and State-owned schools. Curriculum planners of Teacher Training Institutions should evolve a means of integrating computer into the educational systems; Government should give maximum support to web-based software developers in developing software suitable for Virtual Classroom and address the problem of irregular power supply since electricity is a key factor for web-based learning.

Introduction

There is an increasing worldwide drive to the utilization of technologies based around the World Wide Web as a means of addressing a number of challenges which face education. The World Wide Web itself has brought about the prospect of a global education marketplace and with it the advent of non-traditional corporate education providers. At the same time, every successive government has recognized the need for a greatly widened mass access to education and the need to equip students with the initial solid foundation and lifelong learning skills which will be needed to provide the responsiveness and flexibility required for an ever-accelerating rate of change. It is worthwhile, therefore, to lay emphasis on what is being developed in the individual learner. The process is concerned not just with the acquisition of subject-specific knowledge and skill but also the development of more general, or strategic, approaches and skills.

A Virtual Classroom is a teaching and learning environment located within a computer-mediated communication system. Rather than being a building of bricks and boards, it is a set of group communication work "spaces" and facilities constructed in software. Some of its communication structures resemble facilities or procedures used in traditional classrooms; others support forms of interaction that would be difficult or impossible in the "face-to-face" environment of the traditional classroom are all possible in a Virtual Classroom (VC). All its features are accessed not by traveling to a university but by typing into, and reading from, a personal computer which connects to a mini or mainframe computer operating the Virtual Classroom (VC) software. Participation is asynchronous; that is, participants access at any time from any location in the world (Starr, 1990).

Virtual Learning Environment (VLE) is education via computer-mediated communication (CMC) or Online Education (Wikipedia, 2010). Virtual Learning Environment (VLE) or Learning Management System (LMS) is a learning system designed to act as a focus for students learning activities, their management and facilitation, along with the provision of content and resources required to help make the activities successful. It is also a computer programme that facilitates computerized learning or e-learning. Such e-learning systems are sometimes also called Learning Management System (LMS), Content Management System (CMS), Learning Content Management System (LCMS), Managed Learning Environment (MLE), Learning Support System (LSS), Online Learning Centre (OLC), OpenCourseWare (OCW), or Learning Platform (LP).

The potential benefits of Web-Based Instruction (WBI) cannot be underestimated in the contemporary world. There are several findings on the instructional value of web-based learning, particularly in advanced countries on different subjects. It is obvious that the current trend in research all over the world is the use of ICT facilities and resources to enhance students' learning. This might be connected with why Handelsman, et. al. (2004) opined that many exercises that depart from traditional method are now readily accessible on the web, even though teachers do not use these facilities. Studies have shown that WBI is one of the best systems that provide the same opportunities for the teaching and learning process beyond the physical limits of the conventional classroom walls (Hsu, 1999 and Holmberg, 2001). This is in consonance with Kerstey's view in Charakup (2002) that teaching in an on-line environment is quite different from the traditional classroom setting. On-line teaching and learning activity allow for increased flexibility in scheduling and location. It allows for intensive interaction among learners and instructors to take place. Elusoji (2010) also stressed that web-based software would offer significant independence to students to learn at their own pace. In addition, the ability to link to related sites on internet is also a key advantage over the traditional text book method of study whereby learning is made more interesting and study resources can be easily widened and enriched. Thus, a multi-media based approach to teaching ethics is likely to be more effective than a traditional textbook approach. Access to instruction through the web is flexible and ensures greater educational opportunities. However, the Federal Government, in a bid to improve education in Nigeria, established at least nine ICT education initiatives at various stages of development being carried out by the education coordinating agencies of government and the Ministry of Education. The School Net project was established for the Secondary Schools.

Since virtual learning environments are a new generation of computer-based educational systems, it is worth looking at whether computer web-based learning with virtual learning is more effective than learning in a traditional classroom. According to Kulik et al., (1985), studies showed a light advantage for computers especially when considering the time for learning. These results have been questioned but even if they were granted, how could policy makers generalize from these studies? Until recently, one of the main advantages associated with computer use in schools is seen in terms of the individualized learning. The most important feature in computerized instruction is that it permits a high degree of individualization. This, in effect, means that, students can proceed at their own pace, following a path through the curriculum, as suited to their particular interest and talent. As a result of the great speed of operations, many students can access a computer-based instruction simultaneously, each having the feeling that he has control over the system. A student making exceptionally good progress may be moved ahead in the lesson sequences or branches out to special materials designed to enrich his understanding of the curriculum. On the other hand, a student having difficulties may be directed to review earlier materials or to a special remedial sequence {Babalola 1998}.

In collaborative learning, there is a great interaction and cooperation among learners. Collaborative learning is defined as learning that emphasizes group or cooperative efforts among faculty and students. It stresses active participation and interaction by both students and instructors. Knowledge is gained through an active dialogue that enables the sharing of ideas and information (Starr, 1990). However, since schools generally have more students than computers, students often work in groups on the computer. Several empirical results suggest that group work at least dyadic work on the computer may enhance the benefit derived from the collaborative learning situation (Blaye et al, 1990). The specific questions to be addressed here deal with the extent to which learner(s)-computer interaction and human-human interaction can reciprocally enhance one another. For instance, interfaces which induce a specific distribution of roles between learning partners help to foster social interaction (O'Malley, 1992; Blaye et al., 1991). Such interfaces can serve to scaffold the executive and regulative aspects of the collaborative task.

How effective is web-based instruction in teaching and learning? This paper is out to provide an answer in the study carried out in three Senior Secondary Schools in Lagos State, Nigeria.

Objectives Of The Study

The objective of the study is to

- (a) examine the effectiveness of web-based software in achieving virtual learning practices in Mathematics in Senior Secondary Schools in Lagos State.
- (b) identify the difference in the performance of students exposed to web-based teaching and those exposed to traditional teaching.

Research Hypotheses

Arising from the objectives of the study, three hypotheses were tested for the study.

HO₁: There will be no significant difference between the performance of Mathematics students exposed to individualized web-based teaching and conventional instruction.

HO₂: There will be no significant difference between the performance of Mathematics students exposed to collaborative web-based teaching and those exposed to conventional instruction.

HO₃: There will be no significant difference in the performance of Mathematics students exposed to collaborative web-based teaching and those exposed to individualized web-based teaching.

Methodology

Research Design

The research design is an experimental design. The design consisted of two experimental groups collaborative web-based teaching, individualized web-based teaching and control group. The subjects were exposed to posttest three (3) weeks after the pretest.

Population and Sample

The target population for this study comprised of all the Senior Secondary School One (SSS 1) Mathematics students in Lagos State. From these, three Secondary Schools were selected. The choice of SSS 1 students for this study hinged on the fact that the students have not been exposed to any of the selected topics for the study.

Sampling Procedure

The nature of this study required the purposive selection of the research sample since a study on web-based teaching must be conducted in schools where student are computer literate, availability or easy access to computers, constant electricity, internet access, a Local Area Network (LAN) and other needed equipment are readily available for students' use. A total of Two hundred and seventy (270), that is, ninety (90) SSS 1 Mathematics students from each of the three schools were purposively selected. SSS 2 and SSS 3 students have been taught the topic for the study; hence they were not qualified for the study.

Research Instrument

The instruments for this research were the treatment instrument Web-Based Software (WebSoft) and the test instrument, Mathematics Performance Test (MAPET). The researcher developed the WebSoft on Mathematics using Blackboard Learn 9. Blackboard Learn 9 is the first version of the new totally rewritten/redesigned Blackboard Next Generation teaching and learning platform. It offers an intuitive Web 2.0 interface, drag-and-drop simplicity, context-sensitive menus, notification dashboards, new learning

tools, blogs, journals, significant accessibility improvements, and others. The software was interactive, and learner centered. It was structured using some selected topics in Mathematics and relevant information necessary to comprehend the topics developed by the researchers. The lesson lasted for 2 hours. After the lesson, the students answered the multiple choice questions that followed and 2 marks were awarded for each question. WebSoft was used for group A and B while Group C was exposed to conventional instruction. The Mathematics teacher used the structured lesson note to teach the students, and they had the opportunity to ask questions where they were in doubt. Group A and B were guided severally by the researchers on how to use the software effectively. Group A and B were exposed to the same topic simultaneously in order to prevent interaction effect.

Validity and Reliability of the Instrument

The face and content validity of the MAPET was established by giving it to colleagues who are versed in the field of Mathematics. Also, the WebSoft passed through educational software developers in the Department of Science and Department of Science and Technology Education, Lagos State University, Ojo. The instruments were also given to experts for further face and content validity. The reliability of the instrument was tested using the test-retest method. The reliability coefficient (r) for the instrument was 0.84 (that is $r = 0.84$) which was suitable and reliable for the study.

Administration of the Instrument

Students in group A and B were assembled in their school computer laboratories at different times and the twenty multiple choice test items were administered on them by the researchers as pre-test. Same test was conducted for Group C in the conventional classroom. The tests were marked and recorded. The post-test was conducted after three weeks and possible interactive effects were highly controlled.

Data Analysis and Interpretation

Results

The scores of students in the three groups were analyzed using t-test technique and Statistical Package for Social Scientist (SPSS) was used for the analysis.

HO₁ There will be no significant difference in the performance of mathematics student when exposed to individualized web-based teaching and conventional instruction?

Table 1: mean table of pretest achievement of mathematics students in individualized web-based instruction and conventional instruction

Group Statistics					
TEACHING METHODS		N	Mean	Std. Deviation	Std. Error Mean
pretest achievement 1	individualized web-based instruction	90	10.2778	1.34104	.14136
	conventional instruction	90	11.2111	1.35327	.14265

Table 1 shows the result of the mean scores of students exposed to individualized web-based instruction (mean= 10.2778) and conventional instruction (11.2111) respectively. The pretest score indicated that students in the individualized group performed better than those in the conventional group.

Table 2: mean table of posttest achievement of mathematics students in individualized web-based teaching and conventional instruction

Group Statistics					
TEACHING METHODS		N	Mean	Std. Deviation	Std. Error Mean
posttest achievement 2	individualized web-based instruction	90	13.2778	3.01691	.31801
	conventional instruction	90	11.2111	1.35327	.14265

The table 2 above shows the result of the mean scores of students exposed to individualized web-based instruction (mean= 13.2778) and conventional instruction (11.2111) respectively. The posttest score indicated that students in the individualized group performed better than those in the conventional group.

Table 3: t-test table of mathematics students in individualized web-based teaching and conventional instruction

Independent Samples Test										
	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
posttest achievement 2	Equal variances assumed	67.291	.000	5.930	178	.000	2.06	.34854	1.37	2.75
	Equal variances not assumed			5.930	123.421	.000	2.06	.34854	1.37	2.75

From table 3, the test analysis of students exposed to individualized web-based instruction and conventional instruction respectively were analyzed. The results shows that there is a no significant difference in the performance of students with the mean score {13.3 (t= 5.930; p > .05) and 11.2 (t= 5.930; p > .05) when exposed to individualized web-based and conventional instruction. The null hypothesis of no significance difference was therefore not rejected.

HO₂ There will be no significant difference in the performance of mathematics student when exposed to collaborative web-based teaching and conventional instruction?

Table 4: mean table of pretest achievement of mathematics students in collaborative web-based teaching and conventional instruction

Group Statistics					
TEACHING METHODS		N	Mean	Std. Deviation	Std. Error Mean
pretest acheivement 2	collaborative web-based instruction	90	11.6000	.93376	.09843
	Conventional instruction (Group C)	90	8.4000	1.18795	.12522

Table 4 shows the result of the mean scores of students exposed to collaborative web-based instruction (mean= 11.60) and conventional instruction (8.40) respectively. The pretest score indicated that students in the collaborative group performed better than those in the conventional group.

Table 5: mean table of posttest achievement of mathematics students in collaborative web-based teaching and conventional instruction

Group Statistics

TEACHING METHODS		N	Mean	Std. Deviation	Std. Error Mean
posttest achievement 1	collaborative web-based instruction	90	14.3444	1.74923	.18438
	Conventional instruction (Group C)	90	11.2111	1.35327	.14265

Table 5 shows the result of the mean scores of students exposed to collaborative web-based instruction (mean= 14.34) and conventional instruction (11.21) respectively. The pretest score indicated that students in the collaborative group performed better than those in the conventional group.

Table 6: t-test table of mathematics students in collaborative web-based teaching and conventional instruction

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
posttest achievement 2	Equal variances assumed	67.291	.000	5.930	178	.000	2.06667	.34854	1.37887	2.75446
	Equal variances not assumed			5.930	123.421	.000	2.06667	.34854	1.37678	2.75655

Table 6 shows, the test analysis of students exposed to collaborative web-based instruction and conventional instruction respectively were analyzed. The results shows that there is a no significant difference in the performance of students with the mean score {14.3 (t= 13.441; p > .05) and 11.2 (t= 13.441; p > .05) when exposed to individualized web-based and conventional instruction. The null hypothesis of no significance difference was therefore not rejected.

HO₃ There will be no significant difference in the performance of mathematics student when exposed to collaborative web-based teaching and individualized web-based teaching?

Table 5: mean table of posttest achievement of mathematics students in collaborative web-based teaching and individualized web-based instruction

Group Statistics

teaching methods		N	Mean	Std. Deviation	Std. Error Mean
posttest achievement 3	individualizd web-based instruction	90	13.2778	3.01691	.31801
	collaborative web-based instruction	90	14.3444	1.74923	.18438

Table 6: t-test table of mathematics students in individualized web-based teaching and collaborative web-based teaching

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
posttest achievement 3	Equal variances assumed	31.015	.000	-2.902	178	.004	-1.06667	.36760	-1.79208	-.34126
	Equal variances not assumed			-2.902	142.763	.004	-1.06667	.36760	-1.79331	-.34003

Table 6 shows, the test analysis of students exposed to collaborative web-based instruction and conventional instruction respectively were analyzed. The results shows that there is a no significant difference in the performance of students with the mean score { 13.3 (t= -2902; p < .05) and 14.3 (t= -2902; p < .05) when exposed to individualized web-based instruction and collaborative instruction. The null hypothesis of no significance difference was therefore not rejected.

Discussion of Findings

The study investigated the relative effectiveness of web-based instruction in achieving virtual learning practices in Lagos State. In hypothesis one, the t-test analysis indicated a no significance difference in the academic achievement of Mathematics students' exposed to individualized web-based instruction and conventional instruction. It means both learning strategies enhance students' academic achievement in Mathematics. Individualized web-based instruction however proved to be more effective (mean score = 13.23). The reason for this may be the exposure of individual student to the learning strategy that makes him/her learn at his/her own pace, and the interactivity the individualized web-based instruction has over the former. The findings of this study is in support of Kulik, 1985; Kerstey in Charakup (2002).

The result of this study showed that students taught through collaborative web-based instruction method achieved significantly higher than those taught through conventional instruction. This is probably due to the opportunity of the former to learn in groups and at their own pace over the latter group. This finding agrees with the earlier findings of (Starr, 1990) and (Blaye et al, 1990).

The result of the third hypothesis shows that students exposed to individualize web-based instruction and collaborative instruction achieved equally in their academic performance. It means both learning strategies enhance students' academic achievement in mathematics since both of them are Web-based instruction.

Conclusion

Instructors have to decide on a learning strategy that is most productive for accomplishing their particular objectives in learning such as developing conceptual understanding and experiencing what science is. Computer Education has opened new frontiers in Science Education. From the result of this study, it is clear that Virtual Learning practice using web-based technology is a necessity in Lagos State and Nigeria at large since it give equal opportunity for learning. Virtual Learning strategy using web-based technology is an indispensable modern strategy in the teaching-learning process, and its adoption in Lagos State will go a long way to remove those barrier usually created by age, gender, religion, distance and traffic jam. If properly implemented, content creation, self-assessment, self-study, collaborative learning, and task-oriented activities will be facilitated.

Recommendations

Based on the findings, the following recommendations were made.

1. The Federal Ministry of Education should, as a matter of urgency, give attention to funding the development of Virtual Learning practice using web-based technology in all Federal and State-owned Secondary Schools.
2. Curriculum planners of Teacher Training Institutions should integrate computer education in the curriculum of the pre-service teachers who should also be exposed to Virtual Learning practice during their course of study.

3. Government should give maximum support to web-based software developers in developing software suitable for Virtual Classroom (VC).
4. Government should address the problem of irregular power supply and find permanent solution to the problem.
5. Students should be able to embark on Virtual learning practices at minimal cost.

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EFFECT OF KOLB'S EXPERIENTIAL LEARNING THEORY AND MODEL (KELT&M) ON LEARNING OF FINE ART AND PRAXIS IN UYO SECONDARY SCHOOLS, NIGERIA

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Abstract

The prevalent rate of poor academic performance of secondary school students in Fine Art subject in Uyo, within the context of empirical evidence and government official records, is very high. This has become great concern to Art Educators. The reason for this poor performance has been attributed to lack of specific learning theories and models for Fine Art instructions and the ineffectiveness of conventional expository instructional strategy among other variables. Against this background, this paper examines the academic relevance of the concrete-abstract-continuum concept of Kolb's Experiential Learning Theory and Model (KELT&M) to learning and praxis of Fine Art at secondary level of education. Based on the assumption that by integrating Kolb's theory into the artistic process, a new paradigm in Art Education might evolve, having potency of stimulating greater cognitive, psychomotive and emotive development among students, the study adopts a non-randomized pre-test, post-test, control group quasi-experimental design. In order to test the efficacy of Kolb's theory and model on learning and praxis of Fine Art in secondary schools, two groups; experimental and control, are exposed to the same instructional treatment. The study reveals that students in the experimental group performed better than those in the control group.

Introduction

The prevalent rate of poor academic performance in Fine Art subject amongst secondary school students in Uyo, makes it expedient to seek effective learning intervention. This phenomenal adverse experience at secondary level seems to have negative spillover effect at the tertiary level of Art education and practice. Available evidence indicates fewer and fewer number of students who passed and were admitted to study Fine and Industrial Arts as careers. (See appendices A and B)

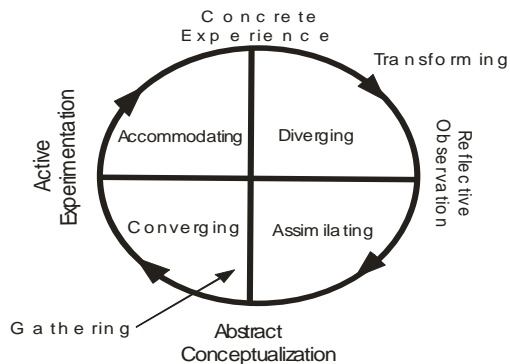
Several reasons have been posited for the poor performance among other variables. Of relevance, are lack of specific learning theories and models for Fine Art instructions and the predominantly ineffectiveness of conventional expository instructional strategy. Fundamentally, lack of specific learning theories and models for Fine Art instructions appear to be the crux of the problems responsible for poor performance. In view of this, Kolb's experiential learning theory and model (KELT&M) specifically, the 4 – stage process appears very appropriate support for the management of learning experience for Fine Art. Experiential learning circles are commonly used to help structure experience-based training and educational program. A good model can greatly aid research and praxis, while a poor model, either one which is wrong or misinterpreted can create more problems than it solves. Neill (2004).

The Experiential Learning Theory and Model

Experiential learning theory connotes knowledge acquired from actual contact with real life situation. The underlying theory is the idea that people can learn very effectively through direct, hands-on experiences, as long as these experiences are well designed and facilitated. Kolb, Boyatzis, & Mainemelis (2000), described Experiential Learning theory as the process whereby knowledge is created through the transformation of experience. They claimed that knowledge results from the combination of grasping and transforming experience. Kolb, et al. (2000) further observed that, in Experiential learning, this process occurs within a four stage framework which includes concrete experience, reflective observation, abstract conceptualization and active experimentation.

The first stage frame work would require the creation of conducive social learning environment where students can interact with teacher and concrete or abstract instructional materials and among themselves to construct knowledge. Thus, the attributes of social learning theory and constructivism are implied in the Experiential learning theories.

Within the context of Experiential learning which posits that knowledge results from the combination of grasping and transforming experience. The Kolb Experiential Learning Cycle (KELC) illustrates the “grasping and transforming” of experience from two continuums (Atkinson & Murrell, 1988). The concrete-abstract continuum, portrayed in the model presented in figure 1, has the vertical line running between Concrete Experience and Abstract Conceptualization, representing how learner gathers or grasps new information (Atkinson & Murrell,1988). The horizontal line running between Active Experimentation and Reflective Observation portrays the reflective-active continuum which represents how the learner processes or transforms the new information that has been gathered (Atkinson & Murrell, 1988).



**Fig.1 Kolb Experiential Learning Cycle
(Kolb and Kolb, 2008)**

The way the continuums vertically and horizontally intersect the Experiential Learning Cycle (ELC), suggests that within the cycle the learner alternately passes through periods of grasping new knowledge, followed by periods where that new knowledge is processed and transformed.

Moreover, the alternate processes of gathering and transforming, further alternately occur at opposite ends of the two continuums, which Kolb suggests require learning abilities that are polar opposites (Kolb, et. al, 2000). This concept is important to this present study as it influences how learning of Fine Art as a teaching subject fits into the Experiential Learning Cycle.

The researcher’s instructional communication model design (showed in appendix C), integrates Kolb’s Experiential Learning Theory and Model (KELT&M) into artistic process by, firstly exposing students to a prototype 2- Dimensional manipulative fish sculptures mounted on display board as instructional material. This is in line with the concept of Experiential Learning Cycle model which suggests that learning starts with concrete experiences, forming the bases for reflective observation.

Similarly, the 2-dimensional manipulative fish sculptures used in the experimental group of this study allow the students to see, touch and interact with abstract concepts, such as line, shape, texture, dominance, rhythm and unity, thus, facilitating abstract conceptualization in a vertical continuum. Thereby, grasping of new knowledge occurs. The students then assimilate the reflections with little assistance from the teacher, which forms the basis for horizontal continuum and actively testing of new ideas.

Actively testing these new ideas as the lesson progresses through teacher-led-demonstration technique, holistically, provides the “concreteness” of concrete experiences, thus, starting the Experiential Learning Cycle, afresh. This cyclic nature of Kolb’s Experiential learning model (showed in fig. 1), also supports the cybernetic principle adopted in the researcher’s designed instructional model (in appendix C), used to facilitate condition for recall and transfer of learning during the experiment.

The “Concreteness” and Relevance of Kolb’s Concrete Experience

The concreteness and relevance of Kolb’s Concrete Experience is subsumed in his theory that knowledge is created through the transformation of experience and in the (ELC) model. Therefore, the validity and justification of this theory and model are situated, firstly, within the context of instructional communication

and secondly, within the Experiential Learning Cycle's (ELC's) treatment of learner's subjective experience as of critical importance in the learning process. Neill (2004).

Within the context of this submission, it is postulated that for effective desired learning outcome in the Fine Art, there is need to facilitate learner's contact with concrete or raw experience or better still, real-life situation. Subsequently, this contact generates interactivities centered on the exposed concrete "experience" (the 2-Dimensional manipulative fish sculptures). The ultimate benefit of such interactivities begets a social process which produces common understanding and unity within the social group. This makes communication becomes an interaction having shared meaning. In his book, "learning in infants and Young Children" Michael Howe states that the term "experience" is synonymous with exposure to the environment, it is usually inferred that learning has taken place when changes in behaviors occur as a result of experience, practical and training. (Azi 2006)

Relatively, Rogers (1969); Rogers and Freiberg (1994) opined that Experiential learning is equivalent to personal change and growth. They are of the view that all human beings have a natural propensity to learn and that the role of the teacher is to facilitate such learning. These include; setting a positive climate for learning; clarifying the purposes of the learners; organizing and making available learning resources; balancing intellectual and emotional component of learning and sharing feelings and thoughts with learners but not dominating.

Therefore, the peculiar subjective nature of Fine Art, both as a teaching subject and as a medium of human communicated messages justify the application and appropriation of Kolb's ELT&M in learning of Fine Art. In addition to these qualities, teaching, learning and praxis of Fine Art entail processes which embrace the cognitive, the psychomotive and the affective sphere of influence subsumed in the Kolb's Experiential Learning Cycle adopted for this study.

Learners' Subjective Experience / Perception in Art learning

In the domain of the visual arts, Fine Art serves as a means of communication of human experiences which meaning are shared by perception. For instance, an artist shares his experience by coding his thoughts or feelings in objectified shapes which are appreciated through visual interpretation. This process of translating thoughts or feelings from an abstract state into concrete and tangible shapes, describes the power of visual arts as instructional communication media in coding and decoding events. In corroboration, Dickinson (2002) seems to have presented a resume of the perception in the Art learning inferred to in this study, when he claimed that through artistic experience, perception of the environment is required in clarifying, intensifying and enlarging knowledge.

Supporting this view, Steveni (1968) saw art product as useful form of personal expression which acts as a means of self-understanding and a palliative of civilization. He went further to expound that just as language encapsulates a certain kind of thought that is definitive and conceptual, so does artwork or visual response (art form) promote a type of thought (idea, concept).

Analytically, Steveni (1968), perceives art work as an effective outcome of the progression of three processes which he called the elements namely: the conceptual element, the operational element and the synthetic element. In his view, an art work can only result after the idea must have been conceived first in the mind of the artist as (conceptual element) and then further processed through the (operational element) which deals with the material, media and techniques of handling same, and finally through the (synthetic stage which is the perception and actualization of the idea in the visual form. An illustration of this perception is presented in a chart form thus;



Fig. 2 Illustration chart of Art Process. Steveni (1968).

The illustration clearly shows a one-directional flow in which the idea must first be conceived before the art work can originate. This is the conceptual framework within which the 2-dimensional manipulative fish sculptures (Fig. 3) used in this study as instructional materials were utilized in the experimental group. The fish was conceived firstly as an "abstract" idea which was generated through operational process into an art form in the final synthetic stage of actualization. This entire process describes the connectivity between art process as "abstract – concrete –continuum" and Kolb's experiential circle of "concrete-abstract-

continuum”. This paper therefore posits that for effective “grasping and transforming of knowledge” in the Fine Art’s abstract conceptualization, Kolb’s idea of Concrete- abstract- continuum, becomes appropriate. Thus the assertion posited by Mcloughlin, & Oliver (1999), that designers should know that 90% of communication is non-verbal, conveyed through visual means such as gestures and images especially in the early stage of mental growth.

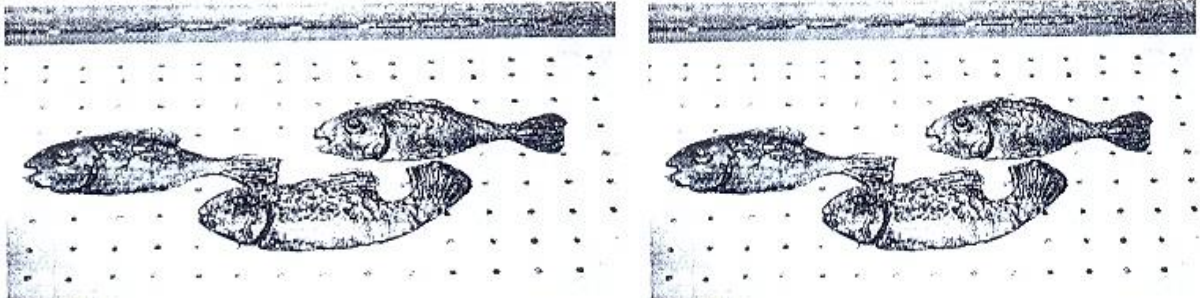


Fig 3. 2-dimensional manipulative fish sculptures on display board

In order to determine the academic connectivity between KELT&M and learning of Fine Art, this paper endeavors to compare the effect of Kolb’s Experiential learning Theory and Model (KELT&M) on instructional interventions such as Teacher-led demonstration and Expository techniques on students’ performance in Fine Art, in secondary schools in Uyo. However, gender performance only becomes imperative on basis of male and female students. The 2-dimensional manipulative fish sculptures provide “concrete experience” and lesson contents.

Objectives of the Study

1. To compare secondary school students’ performance in Fine Art when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M.
2. To compare male secondary school students’ performance in Fine Art when taught using teacher- led demonstration technique with KELT&M and Expository without KELT&M.
3. To compare female secondary school students’ performance in Fine Art when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M.

Research Questions.

- 1) Will secondary school students perform better in Fine Art, when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M?
- 2) Will male secondary school students perform better in Fine Art, when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M?
- 3) Will female secondary school students perform better in Fine Art, when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M?

Research Hypotheses

The following null hypotheses are made:

- 1) There is no significant difference between secondary school students’ performances in Fine Art, when taught using teacher-led technique with KELT&M and Expository without KELT&M
- 2) There is no significant difference between male secondary school students’ performances in Fine Art, when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M
- 3) There is no significant difference between female secondary school students’ performances in Fine Art, when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M

Methodology

Research Design

The study adopted a pre-test post-test non-randomized control group design. It was specifically a quasi-experimental design made up of two groups; experimental and control. The relative comparability and equivalence of the groups were ensured by the use of intact classes. It is structurally shown as below:

$0^1 \times 0^2$ (E)

$0^3 \times 0^4$ (C)

Where, 0^1 and 0^3 are pre-tests of the experimental group and control groups, respectfully.

Where, 0^2 and 0^4 are post-tests of the experimental and control groups, respectively. X represents the treatment, E represents experimental group while C represents the control group.

Area of Study

This study was carried out in public secondary schools in Uyo Local Educational Committee (LEC) in Akwa Ibom State, Nigeria. All the public secondary schools within Uyo Local Government Area fall within the Uyo Local Educational Committee. Seven out of the 14 public secondary schools within the Uyo Local Education Committee are situated within the semi-urban area, while only two schools in the study area are girls' secondary schools.

Population of study

The population for this study was made up of all SSI Fine Art students in two senior secondary schools in Uyo Local Educational Committee, Akwa Ibom State. Out of the existing 14 secondary schools in Uyo Local Educational Committee, only 2 schools offer Fine Art at the Senior Secondary School Certificate Examination (SSSCE) level. These represent a total of 173 senior secondary one (SS1) Fine Art students. The decision to use SSI students is based on their presumed levels of maturity and competency. Moreover, it is at the end of SS1 that the students select subjects for their final Senior Secondary School Certificate Examination.

Census

A census of 173 students was utilized for this study, thus no sample was taken. The census consisted of four streams from SS1a and SS1b in each of the 2 secondary schools offering Fine Art in Uyo Local Education Committee (L.E.C), Akwa Ibom State. The census used for the study was in an intact class situation.

Description of the Instruments

In order for this study to generate both quantitative and qualitative data, the researcher made use of two instruments. These were the Entry Point Assessment Checklist (EPAC) and Students' Achievement Test on Fine Art (SATFA).

The EPAC consisted of 10 items. The first part of EPAC sought information on name of school and students' gender. It also enquired whether Fine Art is taught and offered or taught but not offered at SSCE level. The second part sought response from students on production process of 2 -dimensional manipulative fish sculptures used as instructional materials. The students were required to tick the appropriate alternate answers to the test questions, numbered **a-e**.

The first part of SATFA sought demographic information on the students and sought to know whether Fine Art was taught and offered at SSCE level in the school. It contained 20 items set to determine the students' performance level on lesson contents of principles and elements of design and production process of 2 dimensional manipulative fish sculptures. Alternative answers were provided to each of the questions, from which the students chose by ticking the correct answer.

The entry point assessment checklist (EPAC) was used as reliability test and also as preliminary investigation to determine the entry point behavior of the students. This was necessary as a follow-up to EPAC, allowing modification in the pre-test, post-test instrument used in the main study. The Students' Achievement Test in Fine Art (SATFA) was the researcher's designed pre-test, post-test instrument used to determine the effect of the instrumentation or treatment on the Students' Performance in Fine Art.

(Teacher-Led Demonstration)

The treatment for teacher-led demonstration in the experimental group was the development and utilization of a set of 2-dimensional manipulative fish sculpture composition as the instructional materials. During the development process, the students became familiar with the abstract lesson contents referred to as the elements and principles of design in a sculptural composition. For the purpose of this study, **line, texture** and **shape** were studied as elements while **rhythm, dominance** and **unity** constituted the principles of design used as the lesson contents. The students were expected to acquire knowledge of artistic techniques and terminologies, processes, the use of materials and maintenance of tools and equipment. These are the requirements stipulated in the senior secondary school certificate examination (SSSCE) syllabus of the West African Examination Council. (WAEC 2004).

A period of 120 minutes of lesson package on principles and elements of design and production process of 2-Dimensional fish sculpture composition was given to the students in the experimental group.

The adaptation of KELT&M in the experimental group enabled the students to physically interact with the 2-D instructional materials by handling and manipulating the fish sculpture models into two-dimensional visual composition.

Expository Method (Control Group)

In the control group the students were taught the same lesson as in experimental group, but without the KELT&M and materials (2-dimensional manipulative fish sculpture on display board). Only the usual expository method (the conventional verbal and chalkboard) was used. The production process of 2-dimensional fish sculpture was verbally and elaborately described to the students, with occasional chalk sketches of the sequence drawn on the black board.

Validation of the Instruments

In order to establish the extent to which the instrument (SATFA) measured and controlled what it should, it was subjected to face, content and construct validation by the researcher's supervisor and three other experts in measurement and evaluation from the Faculty of Education and Department of Fine and Industrial Arts, Faculty of Environmental Studies, University of Uyo, Uyo, in Akwa Ibom State, Nigeria.

The experts were required to effect corrections, classification of ideas, coverage format and appropriateness of the test items. Through their help and suggestions, the ambiguous items in the SATFA were revised and restructured. Few of such inputs were as follow: the request for the researcher to use multiple choice questions (MCQ) in the SATFA instrument instead of the two-optional type (true or false) that was previously used; the

number of test questions was increased from 10 to 20 to accommodate appropriateness and adequate coverage of the items. Also, the word P.O.P. was written in full to read plaster-of-Paris (P.O.P) instead of its abbreviation. These views were incorporated into the final draft of the instrument before they were finally administered.

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Reliability of the Instrument

In order to establish whether the instrument measured consistently what it is supposed to measure, a trial test was undertaken using equivalent group. That is, a group similar to the study sample but was not part of the study.

The research applied the same test as the previous one after two weeks of interval (test-retest method). The usual flaw for test-retest was avoided by ensuring that the subjects were exposed to similar and stable characteristics such as emotions (calmness), time, age and intelligence. The scores were subjected to Pearson Product Moment Correlation Co-efficient using the Statistical Package of Social Science (SPSS). The test-retest reliability analysis shows the reliability coefficient of 0.582.

The value is in agreement with the opinion of some experts who stated that the reliability coefficient 0.5 will suffice at the early stage of investigation. The obtained reliability coefficient for the pilot study of the variables shows that it meets these criteria. The obtained value 0.582 was high enough to justify the use of the research instrument.

Procedures for Data Collection

The researcher visited the two secondary schools offering Fine Art. A total of 173 question papers were personally distributed to the 173 Fine Art students in the two secondary schools. Not many students offered

Fine Art. Thus, only two streams of intact classes were used in each school. Research assistants, who were Fine Art graduates from each of the schools, helped in the data collection.

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Methods of Data Analyses

The data collected from the respondents was analyzed using the independent t-test, analysis of covariance (ANOVA) and multiple classification analysis (MCA) statistical tools.

Analyses

Research Question 1

Will secondary school students perform better in Fine Art, when taught, using teacher-led demonstration Technique with KELT&M and expository without KELT&M?

1

Will secondary school students perform better in Fine Art, when taught, using teacher-led demonstration Technique with KELT&M and expository without KELT&M?

The result of the analysis of data on corresponding hypothesis shows that there is difference between secondary school students' performances in Fine Art, when taught using Teacher-led demonstration technique with KELT&M and Expository without KELT&M. This indicates that the teacher-led demonstration technique with KELT&M is a better technique.

Research Question 2

Will male secondary school students perform better in Fine Art, when taught using teacher-led demonstration technique with KELT&M and expository without KELT&M?
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The result of analysis of the corresponding hypothesis revealed that there is difference between male secondary school students' performance in Fine Art, when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M. It also indicated that male secondary school students taught using teacher-led demonstration technique with KELT&M performed better than those taught using expository without KELT&M.

Research question 3

Will female secondary school students perform better in Fine Art, when taught using teacher-led demonstration technique with KELT&M and expository without KELT&M?.

Based on the result generated from the corresponding analyses, there is difference between female secondary school students' performance in Fine Art, when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M.

Hypothesis One

There is no significant difference between secondary school students' performances in Fine Art, when taught using teacher-led demonstration technique with KELT&M and expository without KELT&M. The emphasis was to find out the difference in performance between students taught Fine Art using teacher-led demonstration technique with KELT&M and expository without KELT&M?. The covariate to the post test is the pre-test which was derived and used for the analysis, hence analysis of covariance was used in testing the hypothesis and the result is as presented in table1.

e
 There is no significant difference between secondary school students' performances in Fine Art, when taught using teacher-led demonstration technique with KELT&M and expository without KELT&M. The emphasis was to find out the difference in performance between students taught Fine Art using teacher-led demonstration technique with KELT&M and expository without KELT&M?. The covariate to the post test is the pre-test which was derived and used for the analysis, hence analysis of covariance was used in testing the hypothesis and the result is as presented in table1.

Table 1. Analysis of variance of the Difference in students' performance in Fine Art when taught using Teacher-led Demonstration and Expository Techniques

Source of variation	Sum of square	df	mean square	F	significance of F
Covariate	230.133	1	230.13	2.71	.103
Pretest	230.133	1	230.13	2.71	103
Main Effects	8454.17	1	8454.17	99.41	.000
Techniques	8454.17	1	8454.17	99.41	.000
Explained	8654.31	2	4342.15	51.06	.000
Residual	9354.63	110	85.04		

Total 18038.94 112 161.06

The main effects are teacher-led demonstration technique with KELT&M and Expository without KELT&M. The calculated value as shown on the table resulted in a value of 99.41 with a corresponding significance of F at .05 probability level of .000, thus, showing that the result is significant. This implies that the main effect which is the KELT&M on teaching Fine Art is significant. To determine which of the groups was more significant, there was need to examine the mean scores and the result indicated that the mean students' performance of those taught using teacher-led demonstration with KELT&M method was 54.07 while those taught using the expository without KELT&M method was 37.78. This means that the teacher-led demonstration with KELT&M method resulted in a higher mean score than those taught using the expository technique without KELT&M. The student achievement score in the experimental group (teacher-led) is higher than that in the control group (expository).

Based on this finding, the null hypothesis is rejected while the alternate hypothesis is upheld that there is significant difference between secondary school students' performance in Fine Art, when taught using teacher-led demonstration with KELT&M and expository without KELT&M. The result revealed that the teacher-led demonstration with KELT&M is a better method.

Hypothesis Two

There is no significant difference between male secondary school students' performance in Fine Art, when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M.

In this hypothesis, the intention was to find out whether male students taught Fine Art using teacher-led demonstration with KELT&M will perform better than those taught using expository without KELT&M. To do this, scores derived from the use of teacher-led with KELT&M and those for expository without KELT&M method, for male students, were compared and the covariate to the post test which is the pre-test was gained and used for the analysis, using Analysis of covariance and the result is as presented in table 2.

Table2 Analysis of variance of the Difference between male students' performance in Fine Art when taught using Teacher-led Demonstration and Expository techniques

Source of Variation	Sum of Square	df	Mean Squares	F	Significant of F
Covariate	1.332	1	1.332	0.14	.906
Pretest	1.332	1	1.332	0.14	.906
Main Effect	3295.271	1	3295.271	34.882	.000
Techniques	3295.271	1	3295.271	34.882	.000
Explained	3296.603	2	1648.302	17.448	.000
Residual	3873.283	41	94.470		
Total	7169.886	43	166.742		

The main effect as presented on the table resulted in an F-value of 34.882 with a corresponding significant F of .000, showing that $p < .05$. This implied that the main effect which is the treatment is significant. Following from this, the null hypothesis is rejected and the alternate hypothesis is upheld that, there is a significant difference between male secondary school students' performance in Fine Art, when taught using teacher-led demonstration with KELT&M and expository techniques without KELT&M.

Hypothesis Three

There is no significant difference between female secondary schools' performance in Fine Art, when taught using teacher-led demonstration technique with KELT&M and Expository without KELT&M.

The intent of this hypothesis was to examine whether the performance of female Fine Art students taught using teacher-led demonstration with KELT&M method was significantly different from their counterparts taught using expository technique without KELT&M. The post-test score of the female students taught using the two techniques were derived while the pre-test score was used as the covariate and analysis of covariance used to test the hypothesis. The result is as presented in table 3.

Table3 Analysis of variance of the Difference between female students' performance in Fine Art when taught using Teacher-led Demonstration and Expository techniques

Source of Variation	Sum of Square	df	Mean Squares	F	significant of F
Covariate	483.564	1	483.564	6.238	.015
Pretest	483.564	1	483.564	6.238	.015
Main Effects	5205.237	1	5205.237	67.148	.000
Techniques	5205.237	1	5205.237	67.148	.000
Explained	5688.801	2	2844.401	36.693	.000
Residual	5116.271	66	77.519		
Total	10805.072	68	158.898		

Findings from the table revealed that the main effect gave an F- Value of 67.148 which when compared with the significant F of .000 was found to be significant even at the .05 level. This implied that the mean effect which is also the treatment is significant and therefore the null hypothesis is rejected in favor of the alternate hypothesis. This means that there is a significant difference between female secondary school students' performance in Fine Art, when taught using teacher-led demonstration with KELT&M and expository method without KELT&M.

Discussions.

The result of the analysis of data on corresponding hypotheses has established that there is significant difference between secondary school students' performances in Fine Art when taught using teacher-led demonstration with KELT&M and expository techniques without KELT&M. It therefore indicates that the teacher-led demonstration with KELT&M is a better technique and gender friendly, than the expository method without KELT&M.

This result appears to be attributable to the efficacy of the application of Kolb's Experiential learning theory and the assertion that Experiential Learning theory is the process whereby knowledge is created through the transformation of experience. (Kolb, Boyatzis, & Mainemelis 2000). The claim that knowledge results from the combination of grasping and transforming experience becomes validated. The four stage framework which includes concrete experience, reflective observation, abstract conceptualization and active experimentation are in tandem with the teacher-led demonstration method. The findings also indicate that KELT&M support the importance of observational learning with strong psychological (perception) and social disposition (Experiential) on learning of Fine Art in Secondary schools in Uyo.

Besides the enabling intrapersonal and physical interaction between teacher and student and 2-Dimensional instructional materials, the teacher-led demonstration method with KELT&M proved to be a better method for introducing new skills, developing understanding and showing the appropriate ways of doing things than the expository method without KELT&M.

Conclusion

The need to determine the appropriate instructional communication theory and model suitable for teaching and learning of a technical subject such as Fine Art became necessary, especially due to the prevailing rate of poor performance in secondary schools in Uyo, Akwa Ibom State.

The result of the findings in the study indicated that KELT&M supports teacher-led-demonstration and that adapting KELT&M as the appropriate instructional model for teaching and learning of Fine Art as a technical subject in secondary schools yielded the following expected learning outcome:

- Embed learning in complex, realistic and relevant environments.
- Provided for social negotiation as integral part of learning.
- Supported multiple perspectives and the use of multiple modes of representation.

The following attributes of teacher-led-demonstration with KELT&M, influenced effective behavioral change noticeable in the Fine Art students' performance in secondary schools in Uyo:

1. Blended learning which allowed combined methods of seeing, touching, telling and reflecting.
2. Physical contact, interaction and activities between teacher and students and with manipulative 2-Dimensional instructional materials which promoted concrete experience, reflective observation, abstract conceptualization and active Experimentation.
3. Tasking of the cognitive, psychomotive and affective domain of learning.

Recommendations

Based on the findings, the following recommendations are made:

1. Instructional system design that supports the concrete – abstract-continuum model should be explored.
2. The use of improvised manipulatives and other hands-on experience as instructional materials which support and strengthen experiential learning should be encouraged in the learning of Fine Art subject in Secondary Schools in Uyo. ;

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Appendix A

Academic Session	2000/2001	2001/2002	2002/2003	2003/2004
Candidates who sat for SSCE in Fine Art.	1028	1050	950	1162
Candidates who made at least a “C” grade in SSCE Fine Art	8 0.8%,	7 0.7%,	9 0.9%,	9 0.8%,

A “C” grade is the minimum basic requirement for admission into Nigerian Universities.
(Source: West African Examination Council Records)

Data on Senior Secondary School Students who sat for SSCE in Fine Art in Akwa Ibom State.

Appendix B

Academic Session	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005
Candidates who sat for examination in Fine Arts and made Uniuyo their 1 st and 2 nd choices	100	108	92	90	85	150
Candidates who passed and were admitted	8 8%	7 6%	9 9.7%	9 10%	7 8.2%	18 12%

Data on Admission into BA (Hons) Degree of the Department of Fine and Industrial Arts, University of Uyo.

(Source: Admission Office, University of Uyo)

Appendix C

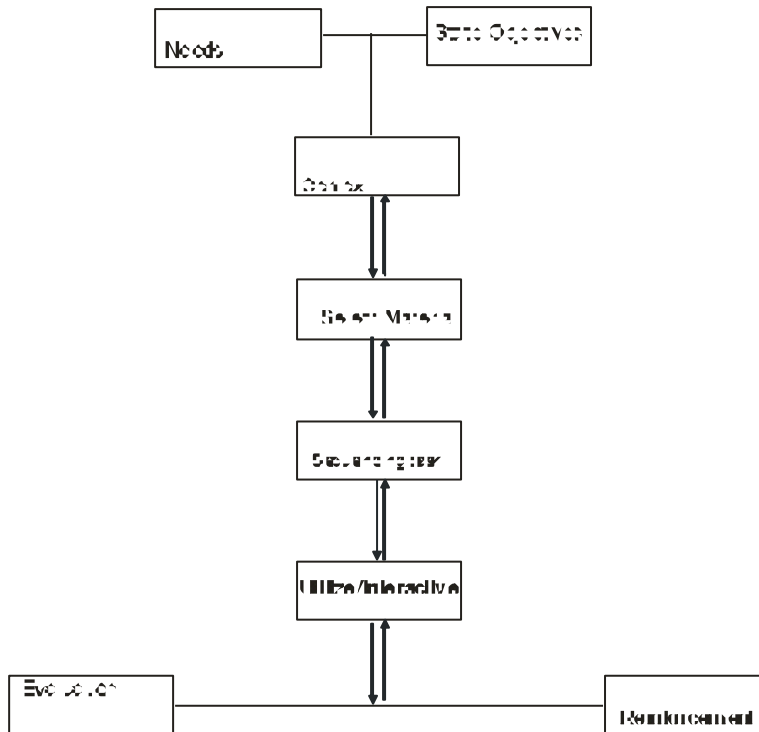


Fig. 2. The Researcher's Instructional Communication Model.
 Adapted from A-D-E (1988), ASSURE (1982) and Belland (1981) models.

THE ASKO GAME—AN INNOVATIVE INSTRUCTIONAL STRATEGY FOR ENVIRONMENTAL SUSTAINABILITY

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Abstract

The paper advocates an activity oriented instructional strategy, specifically the ASKO game as an efficient instructional tool for creating awareness and sensitizing our young ones to increased sustainability. The ASKO game provides an entertaining way of acquainting learners with a continuous repeated activity that would lead to the understanding and mastery of the facts related to land and forest management

Introduction

Nagle (2001) described a game world as an artificial environment in which practice and iteration become a necessary part for adapting behavior to rules of the game. That adaptation was referred to as “learning” and its usefulness depends on how realistically the game is mapped to the real world. Instructional strategies such as games result in an enriched learning environment. An enriched learning environment makes learning meaningful and memorable. Learning should be a pleasant experience, affording joy, fun and humor where possible. Games can be accommodated in large classes as large groups can be broken up into smaller groups, which will facilitate cooperative learning. Cooperative learning leads to improved academic achievement, improved behaviour and attendant increase in self confidence and motivation and increased positive attitude to school and class mates (Bonwel & Eison, 1991; Jones, 1997; Mcleod, 2002; Adprima, 2003). Games ease the learning process through repetition of concepts, which leads to mastery learning, reinforcement of facts, assessment of knowledge on a variety of topics (Hassell-Corbiell & Sinasohn, n.d). Games are introduced within a frame of reference as in clearly stated instructional objectives. The rationale for using games is that they help create a classroom atmosphere in which students at various levels of ability can collaborate in order to promote interest, motivate and enhance critical thinking and decision-making skills and retention of information. It also fosters greater learning and retention. Cooperative learning facilitates creativity, constructive feedback, conflict resolution skills and problem solving skills (Adprima, 2003). Furthermore, learners who may be reluctant to present their ideas in a large group may find some comfort in a smaller cooperative group as depicted in a game. Mackenty (2006) remarked that using games as instructional tools is a bit of a “jump” as there is rarely a problem encouraging kids to use games to learn rather it is the teachers that need to be encouraged and motivated to engage in the use of games in order to create excitement in the classroom.

Hassell-Corbiell & Sinasohn, n.d; Mcleod, 2002 and Eko, 2009 highlighted some of the factors which may limit the use of game as an instructional strategy. These include:

- The “fun” of the game especially if it is not properly directed may overshadow its purpose.
- The myth of games as an avenue for recreation/relaxation and fun as opposed to being a viable serious learning resource limit their use in developing countries.
- Designing, developing and production of materials for a gaming session may be time consuming and also expensive..
- Most of the available instructional games are based on alien cultural experience which may be valid in its own right but difficult to transfer to other settings
- Inadequate skill on the part of the teacher may limit its use for instruction.

These barriers can be overcome through a careful and thoughtful planning though!

The ASKO Game

“ASKO” in colloquial Yoruba language means question. The ASKO game is a self developed instructional game which asks questions and gives answers to concepts related to land and forest management in

Agricultural Science. It serves as a means of promoting and conserving environmental resources which creates awareness to learners in a “fun-like and entertaining manner.” It also creates an appreciation of environmental resources among learners in schools. It is important to note that pictures/sketches/symbols are widely used in depicting concepts related to forest and land management in the game as these are used to create awareness, raise questions, present problems, develop a sense of critical judgment which eventually leads to the proffering of solutions to issues raised. These pictures also help to demonstrate a process/describe a situation.

The ASKO game incorporates some elements of programmed instruction as the chance and concept cards present information which require frequent responses by learners.

Similarly, immediate feed back to the learners informing him/her of the status (right/wrong) of responses made are evident. The chance and concept cards widen the range of information the teacher is able to present to learners at any given time on the related concepts. The ASKO game can be accommodated in large classes which can be broken up into smaller groups to ensure cooperative learning.

Considering the numerous environmental degradation plaguing the nation, the ASKO game can serve as a means of sensitizing learners on the means of protecting and sustaining our environment through effective agricultural practices. With ASKO, concepts are presented to learners in a practical, fun-like and entertaining way. Student’s motivation is increased as they are active participants in the instructional process. Learning becomes a social activity where interaction is enhanced, interpersonal skills and relationships are developed. ASKO exposes learners to a simulated experience as situations are pictorially observed. Learners are involved in decision making process during gaming.

Similarly, the use of ASKO will relieve Agricultural Science teachers of the stress of dealing with uncontrollable and cumbersome large classes. Large class sizes are reduced to smaller groups during gaming sessions. The teacher as a facilitator will be encouraged to ensure cooperative learning during instruction. Similarly, the teacher has more time to devote to other dynamic and challenging ways of helping students to learn and sustain interest in the subject. This will consequently improve performance of students in the subject. Furthermore, concepts in the game are seen in the “eyes” of the students as meaningful, timely, important and useful.

Goal of ASKO –The ASKO game is intended to increase an awareness of land and forest management in the community through an interactive and activity based instructional process.

Instructional objectives derived from the goal: The use of the game will stimulate in learners a knowledge of the following;

- agricultural and non agricultural uses of land in the community
- various ways by which a farm land can appreciate and depreciate
- factors which affect availability of land for agriculture
- importance /uses of forest and its resources
- forest management practices
- forest development processes e.g. selective exploitation, reforestation, afforestation and regeneration.
- afforestation programmes (Taungya system, farm forestry and forest plantation systems).
- side effects of deforestation on the soil.

Game format

ASKO can be played by 2-4 players at a time with a moderator and card/time keeper on the side. There are 4 counters-red, green, blue and yellow, with a dice. Each player takes a counter of his/her choice. The motherboard for ASKO has a grid numbered 1-100. No 1 has a slot “START” while “100” has another slot “FORESTLAND”. On the motherboard, there are slots randomly occupied by sketches of concepts related to land usage, forest management and “CHANCE” options. A CHANCE option embraces either concept related to land or forest management. On the motherboard, 15 slots have chance options, 14 blanks, 38 slots on forest management and 33 slots on land usage.

Gaming Procedure

- ASKO is initiated by the first player to throw a dice of six (6).
- The “6” indicates “start” for the particular player

- After the throw of six, the player now makes another throw and counting now starts from slot No 1.

During the course of gaming, a player may land on a chance, forest or land use slots. When a player lands on a chance slot, he/she is given the topmost chance card in the park of well-shuffled chance cards by the card taker. The player or the moderator reads out the content of the chance card. The content is related either to concepts in forest or land use, however, the content and expected response will determine the next move of the player.

If a player lands on either a land use or forest management slot, a card corresponding to the sketch/picture on the slot landed upon is given to the player by the card taker. Questions, explanatory notes, opinions may be asked in the chosen card. If the player answers the question correctly, the card indicates the no of steps to advance, or the scores to award. If otherwise, the penalty is also indicated, if it is only an explanatory note, the player is only expected to take note of the concept embedded in the card. The winner is either: the 1st player with the exact throw that can conveniently be counted up to the slot with “FOREST LAND” or the highest scorer at the end of the game.

Note :- The moderator determines the players for the next round through a ballot system and he/she maintains peace during the course of the game.

The card/time keeper keeps the cards well shuffled and intact. He/she is responsible for time checking. 10 seconds is given for a player to answer questions asked.

Conclusion

The paper has attempted to describe the effectiveness of game –specifically the ASKO game as an effective instructional tool that can be used for reinforcing the learning of land and forest management practices in the community.

The use of a low cost technology (typified by ASKO game) in the classroom can assist in the creation of a relaxed atmosphere which is devoid of intimidation. It may also help to combat the persistent problem of the over bloated classroom situation as learners can conveniently be placed in several groups during gaming. Similarly, infusing game into the classroom setting in our schools would imply a shift in the role of the teacher. The teacher becomes a facilitator rather than a dominant figure during the instructional process.

The ASKO game is equally beneficial to the citizenry as concepts in it exposes people to the various uses of land, means of land degradation and conservation practices. ASKO creates awareness and sensitizes communities to the need for sustainability.

Furthermore, Education Authorities can successfully adapt the ASKO game for use in schools as a means of promoting and conserving environmental resources. More publicity and widespread of ASKO as an educational game will ensure its infusion in to the co-curricular activities of societies such as the Young Farmers and Climatic Change club amongst others .

Conclusively, ASKO provides a radical means, i.e. a departure from the traditional methods of instruction, as concepts embedded in it are inherently fun, challenging, interactive and rewarding. Furthermore, it contains guided discovery features, provides appropriate feedback and ensures an enjoyable instructional session for learners. If appropriately used and implemented under any given environment, games could be the most effective and appropriate way to teach and the best way to learn. As dynamic teachers, it is our responsibility to ensure that the classroom is a made place learners will long to come to. What better way to do that than to create and sustain a fun filled classroom!

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DESIGNING AN INSTRUCTIONAL PACKAGE FOR HOME ECONOMICS STUDENTS IN SS1 ON FOOD AND NUTRITION

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Introduction

Living things feed or take in nutrient for survival. The mode of nutrition vary from one organism to the other but each possesses feature of adaptation which enable it to feed. Educational technology deals with all sources of educational problems in a systematic way and also results oriented. However, the innovative instruction strategies to be used in this paper will indicate the small step-by-step programmed learning approach which the students will use to solve the teaching problems and eventually achieve the stated objective.

Class: This lesson kit is designed for the SS1 in a secondary school who have opted to offer Home Economics in both secondary school certificate examination and national examination council.

Topic: The lesson topic is Food and Nutrition

Objective: By studying this unit, you will be able to:

- (a) Define what is food and nutrition
- (b) Identify different categories of classes of food
- (c) List some examples of different categories of food we eat.
- (d) List the functions of each category of food.

How to Study this Unit

Instructions

- A. (i) In order to study this unit effectively, you should get the following learning materials ready:- an exercise book, dictionary, pen, ruler, and pencil.
- (ii) Study the new words explained under the word study below
- (iii) Look up for the difficult words in the dictionary and note their meanings
- (iv) Try the activities at the end of each section, ensure you get the correct answers
- 2
to the activities before going to the next section.
- (v) Check the answers to the activities at the end of this booklet.

Instructional Materials

- (i) Get concrete objects/materials around you like food items, yam, rice, eggs, milk, beans, onions, banana, vegetable, oranges, groundnuts, palm oil.
- (ii) Study the pictures of kinds of food attached to this paper at the back before you start.
- (iii) Study also the chart containing the classification of the food attached in this package.
- (iv) Time yourself in order to make the lesson meaningful and assessable to you.

WORD STUDY

Adaptation – Change in a organism that make it adjust to its environment

Acids – The simplest form of fats.

Circulation – Act of moving around

Calcium – Metallic element, the basis of line

Digestion – The breakdown of large food molecules into smaller absorbable form

Glucose – Grapes, sugar

Glycerol – Colourless sweet liquid

Iodine – Non-metallic element used in medicine

Muscular – Part of body which produces movement by contracting

Magnesium – Metallic element (white powder compound)

Potassium – White metallic element

Respiration – Breathe through nose/mouth

Sodium – Metallic, alkaline element

Vitamin – Factor in various food stuffs essential to health

Food and Nutrition

Food - is any substance that people or animals eat or drink or that plants absorb to maintain life and growth.

Nutrition is the study of the processes of growth, repairs and maintenance of the living body resulting from the intake of food. The substances contained in the food which can be used by the body for any of these functions are called nutrients. Lack of any one essential nutrient, or excess of certain nutrients may seriously impair health.

Activity 1

- (1) What is Nutrition?
- (2) Excess of nutrients in the body causes
- (3) List five types of food you eat.

Carbohydrates A carbohydrate is a nutrient which can be converted (changed) into stored fat. Energy is required for;

- (a) Maintaining the process of living, that is the beating of the heart, circulation, respiration, digestion and maintenance of body temperature.
- (b) Everyday activities such as standing, eating, moving and
- (c) Muscular works

Food rich in carbohydrates are rice, yam, cassava, potato, maize or corn, guinea corn and other starchy foods. All carbohydrates change to glucose before they can become nutrients. Carbohydrates consist of carbon, hydrogen and oxygen ($C_x H_2 O_y$) include starches, sugars and cellulose.

Activity II Write five kinds of carbohydrate you know

- (1) Write three activities carbohydrates help us to do
- (2) Why do you eat carbohydrates?

Fats- Fats maintain body heat, supply energy for body activities, furnish essential fatty acids and carry fat soluble, vitamins, fats consist of fatty acids and glycerol, combined together. Fats are in solid Fats are in solid firm while oil is in liquid state. Before they become nutrients in the body, they are divided up again into their constituents and this process is called specification. Fats are found from both plant and animal sources, examples are vegetable oil, margarine, butter, oil, meat, groundnuts, coconut, and cashew nuts.

Activity III

- (a) What do you understand by the word fat?
- (b) List examples of fats you know.
- (c) What are the components of fats?

PROTEINS

Proteins build and repair body tissues and also supply energy when there is a shortage of carbohydrates and fats in the body. Proteins are found in foods of both animals and plant origin e.g meat, fish, crayfish,

beans, milk. Animal products usually provide higher quality proteins than the plant sources. They are also necessary in the formation of hormones and enzymes.

ACTIVITY IV

- (1) List four examples of protein you know
- (2) What are the uses of proteins in the body?
- (3) Mention two major kinds of proteins

MINERALS

Salt regulate chemical and metabolic action in the body. They are essential to the body although they are only present in small amounts. Calcium, phosphorus, and magnesium are needed to form bones and teeth, iron, phosphorus and sulphur help in the formation of body cells. Sodium and potassium are necessary to give fluids to their composition. Most foods contain small amounts of mineral salts. They help in clotting of blood. Lack of iron in the body causes anemia. Food rich in mineral salts are common salts, bones, plantain, egg, liver, green vegetable, onions, milk, and fish.

Activity V

- (1) List four examples of mineral salts
- (2) Mention three mineral salts needed to form bones and teeth
- (3) Which mineral salts form the body cells?

5

Vitamins

Vitamins are vital to health. They protect the body against diseases, promote growth and keep eyes, skin, bones, teeth and other parts of the body healthy. There are many vitamins and each vitamin has its specific function. Examples are vitamins A, B, C, D, E, and K. Vitamins D can be synthesized by mild sunlight (ultraviolet rays). Vitamins are two types, namely, those soluble in water are known as water soluble vitamins e.g. A, D, E and K. Foods rich in vitamins are pineapple, banana, orange, carrot, sour sops, melon, avocado pear, guava, apple, tangerine, vegetable, onions, cherry, lemon, tomatoes, paw-paw, mango and strawberry.

Activity VI

- (1) List five types of vitamins you know
- (2) Mention two groups of vitamins
- (3) Which vitamins do we get direct from the sunlight?

Water

Water regulates body temperature and transports substances to where they are needed. The lost of water in the body through the skin is called perspiration, the lost of water in the body through the nose is called respiration while the lost of water the excretory organs is called excretion. Water forms about 75% of the human body. Other sources of water in the body are vegetable and fruits. Food substance must be dissolved before the body can absorbed them.

Activity VII

- (1) How many percentage of the body does not contain water?
- (2) What are the uses of water in the body?
- (3) Mention two other sources the body gets water.

Evaluation

With a high nutritional standard in the home, what classes of food would be included in the daily menu?

Answers to Instructional Package

Activity I

- (1) Nutrition is the processes of growth, repairs and maintenance of the living body resulting from the intake of food .
- (2) Impair growth
- (3) Yam, garri, rice, beans, and potatoes

Activity II

- (1) Rice, yam, corn, cassava and garri
- (2) Eating, standing, running/moving
- (3) To get energy

Activity III

- (1) Fats maintain body heat and supply energy for body activities.
- (2) Palm oil, margarine, groundnuts, cashew nuts
- (3) Components of fats are solid fats and liquid fats

Activity IV

- (1) Meat, fish, beans, crayfish
- (2) Proteins are used for growth and tissue building
- (3) Animals and plants proteins

Activity V

- (1) Common salt, bones, plantains, eggs
- (2) Calcium, phosphorus, and magnesium
- (3) Iron, phosphorus and sulphur

Activity VI

- (1) Orange, mango, paw-paw, apple and pineapple
- (2) Fat soluble vitamins and water soluble vitamins
- (3) Vitamin D

Activity VII

- (1) 25%
- (2) Regulation of body temperature and transportation of food substances
- (3) Vegetables and fruits

A Chart on Classification of Food

TYPES	KINDS OF FOOD	USES
CARBOHYDRATES	Rice, Yam, Corn, Cassava, Potatoes, Flour, Millet	They are main source of energy to the body
PROTEIN	Meat, Fish, Egg, Beans, Crayfish	They are used for growth and tissue building
FAT	Palm oil, Margarine, Groundnut, Cashew nuts	They help starch digestion. They are source of energy in time of need.
MINERAL SALT	Common salt, Bones, Plantain, Eggs	They help in the digestion of food
VITAMINS	Pineapple, Banana, Orange, Apple, Carrot, Avocado pear, Mango, Guava, Paw-paw, Tomatoes, strawberry, melon	They protect the body against diseases, promote growth and keep the body healthy.
WATER	Water, vegetables, Fruits	They regulate body temperature and transport food substances to where they are needed.

THE KNITTY – GRITTY OF VIRTUAL LEARNING PRACTICES IN TERTIARY INSTITUTIONS

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Abstract

The knitty-gritty of virtual learning practices in tertiary institutions and the prospects of virtual learning practices in school system contribute the focus of this paper. Most schools in Nigeria are deplorable conditions due to inadequate funding. This manifests in schools having few virtual learning resources, staff shortages, deterioration of families' inadequate equipment and even buildings. Such situations are not conducive environment for reading. The virtual learning project has the capability of resolving these problems. In this period of Information explosion, there is the need for University School system in Nigeria to use appropriate technology to access the world information in order to enable universities carry out their traditional functions of Technology, research and public service effective and efficiently.

Introduction

Students' learning in tertiary institutions all over the world has undergone tremendous transformation especially since the advent of information and communication technology (ICT). There is a shift from the traditional approach of teacher directed/didactic to modern methods where computer technology plays a significant role. The information and communication technology has promoted learning and made it more meaningful, where students can stay even at the comfort of their homes or classrooms and receive lectures without seeing the lecturer. The aspect of information and communication technology that has brought about this revolution in students learning is virtual learning (Bakari and Mboma 2010). According to Bugajie (2007), the 21st century is a knowledge century and they would be Engineers Doctors, Architects, Professors/Educationist, and other professionals to be produced in Nigeria must be current in knowledge. Unfortunately, the diminishing funding of higher educational institutions in Africa, coupled with increased students enrolment has led to a decline in the quality of education (Ngambi 2005). Although, this is an African problem but it seems it is most prevalent in Nigeria. Nwaka (2005) observed that as a consequence Nigerian Universities are now only a shadow of their former glory. The quality of scholarship and of the knowledge generated is constrained by limited exposure of our scientists to current literature and modern techniques. This has resulted in their isolation from global discourse and trends in their field.

In Nigeria, awareness to virtual learning started gathering momentum some decades ago. The early exposure came from lecturers who studied abroad and had opportunities of attending conferences on e-learning technologists. Even at that, what was obtainable as was the case with Alvan Ikoku Federal of Education was the lowest aspect of ICT such as print, audio/video tapes and digital radio (World Bank, 2002). This situation is similar in other tertiary institutions in the country. This position is not a surprise then because Nigeria has no specific policy for ICT in education. It is only in February, 2007 that the Federal Ministry of Education created its ICT department in education (Wiki Educator, 2007).

However, a semblance of virtual learning exist, more in the medical, engineering, environmental services and computer science where the synergy between research and teaching was strongest, and the essential infrastructure for course development and delivery were most accessible. Similarly, synergistic opportunities existed in research, marketing or programme development which stimulated involvement by schools of education, and by Department of Continuing education and extension studies (current and fox,

1999). The slow pace in virtual learning development may have in part accounted for the low rating of Nigerian tertiary institutions globally in terms of impact and productivity in web-related activities. Interestingly no Nigerian university was ranked among the first 50 in the world in terms of web size, papers, rich files and scholarship.

In Africa, Nigerian institutions took the 44th position, while in the world it ranked 5,834 (Internet lab, 2007). According to Saint (1999), the core medium of instruction on the African continent remains print, with other technologies acting as a supplementary means of delivery. Hence Sheltima (2005) pointed out that tertiary institutions of the 21st century must embrace virtual learning as a strategy for delivering quality teaching and offer services for its students. Pushing further he maintained that virtual learning include digital library, computerization of administrative service, smart classroom, video conferences and audio conferences and e-journals. Tertiary institutions could take advantage of new technological development to address some of the problems of resource constraints, which is currently plaguing the university system in particular and higher education in general. For virtual learning to succeed in developing countries (such as Nigeria) it needs to build on another important pillar, which is the existence of infrastructure, along with some degree of connectivity (Gunanwardana, 2005). Net tom (2007) opined that cognitive gains from virtual learning include hypertext learning which is non-linear and can be structured to engage learners into making greater use of critical thinking skills. Educational gains of virtual learning include being forced to consider the requirements of learning and becoming more flexible with curriculum. Also it enables learners to look towards teachers for perspective interpretation, analysis, motivation and guidance and teachers will expect learners to become more critical users of information and to generate their own contributions to knowledge.

The Concept of Virtual learning

A Virtual Learning Environment (VLE) is a software system designed to support teaching and learning in an educational setting as distinct from a Managed Learning Environment (MLE). A virtual learning environment will normally work over the internet and provide a collection of tools such as those for assessment (particularly of types that can be marked automatically, such as multiple choice) communication, uploading of content, return of students work, peer assessment, administration of students groups, collecting and organizing student grades, questionnaires, tracking tools and so on (Kersten and Kranendork 2007) while originally created for distance education, virtual learning environment are now most often used to supplement traditional face to face classroom activities, commonly known as Blended learning. These systems serves usually run on servers, to serve the course to students' multimedia and web pages. Holomnes (2002) sees virtual learning as a computer program that facilitates computerized learning or e-learning. Such e-learning systems are sometimes called Learning Management System (LMS), Content Management System (CMS), Learning Content Management System (LCMS), Managed Learning Environment (MLE), Learning Support System (LSS), Online Learning Centre (OLC), Open Course Ware (OCW), or Learning Platform (LP), it is education via Computer-mediated- Communication (CMC) or Online Education (OE). Virtual Learning platform describes a broad range of ICT systems used to deliver and support learning. Through a learning platform, hardware, software and supporting services are brought together to enable more effective ways of working within and outside the classroom. At the heart of any learning platform is the concept of a personalized online learning space for the student. This space should offer teachers and students access to store work, e-learning resources, communication and collaboration with peers and the facility to track progress. A virtual learning should make it possible for a course designer to present to students, through a single consistent and initiative interface, all the components required for a course of education or training.

Open learning centre (2007) saw virtual learning as the effective teaching and learning process created by combining e-digital content with local community and their support along with global community engagement. It is also an effective and efficient system of self-paced personal training, available over the internet. Erah (2006) stated that the term virtual learning refers to computer-enhanced training as opposed to the computer-based training of the 1980's. It is usually delivered in a personal computer and includes learning delivered by other technologies. According to him, virtual learning is an approach to facilities and enhances learning through both computer and communication technologies. The devices often used for this purpose include personal computers, CD Rom, television, Personal Digital Assistants (PDA) Hand Held Devices (HHD) that were originally designed as personal organizers, but became much more versatile over the years, MP3 players and mobile phones. Communication technology enables the use of internet, e-mail, discussion forums, collaborative software, classroom management software, team

learning system, intranet, extranet, Local Area Network (LAN) Wide Area Network (WAN), audio and videotape, satellite and interactive lectures, satellite-delivered learning, virtual educational networks, satellite downlinks, computerized diagnostic assessment, competency certification and electronic portfolios' (kaplian-leieron in Asogwa (2006).

Net Tom (2007) held that a virtual learning should be seen, as offering solutions to several challenges currently facing higher education. These include the more towards lifelong learning, with its ongoing demand for continuous professional development, and the drive to wider participation. These challenges come out at a time of increasing pressure on resources and the increasing diversity in the student population and their modes of attendance, including learning that is part time, at a distance open or flexible, and work based virtual learning can improve the flexibility and equality of learning by:

- (a) Providing access to a range of resources and materials which may not otherwise be available or accessible for example graphics, sound, animation, multi-media.
- (b) Giving control to students over when and where they study.
- (c) Allowing students to study at their own pace.
- (d) Proving a student with centered learning environment which can be tailored to meet the learning needs of individual students.
- (e) Creating an environment that promotes an active approach to learning.
- (f) Supporting increased communications between staff and students and amongst students.
- (g) Providing frequent and timely individual feedback, for example through computer assisted assessment and positive reinforcement.
- (h) Motivating students through appropriate use of interactive course ware.
- (i) Support and encouraging collaborative learning.
- (j) Supporting economic rescues of high quality, expensive resources.
- (k) Encouraging students to take responsibility for their own learning.

Tertiary Institutions and Elements of Virtual Learning

Higher Education, also called tertiary, third stage, or post secondary education, is the non compulsory educational level. Tertiary education generally results in the receipt of certificate, diploma or academic degrees (Hunter 2002).

Virtual Meetings in Tertiary Institutions

There are several ways in which people can conduct virtual meetings that don't entail physical travel in tertiary institutions. These include but not limited to:

1. **Vide Conferencing/videophones**-video conferencing is the use of television video and sound technology as well as computer networks (including the internet) to enable people in different locations to see, hear, and talk with one another. Two types of videoconferencing are:
2. **Workgroup Computing**: it is also called collaborative computing, teams of co-workers, often in different sites, use networks of microcomputers to share information and to cooperate on projects.
3. **Virtual Office**: The virtual office is an often non permanent and mobile office run with computer and communication technology. Participants use pocket pages, portable computers, fax machine and various phones and network services to capture information/discussions.

Challenges of Virtual Learning

Universities fail to meet the needs of academics because of inadequate funds failure to anticipate future needs and to keep pace with technology. Universities have many instances of marginalization in the academics community and are not seen as a center of learning to be enhanced and expanded. Other factors that equally contributed to the deplorable state of school system in Nigeria include teaching methods that center on classroom learning rather than independent research, breakdown of physical facilities, failure to keep pace with expanding enrolment inadequate collection, poor communications between the teachers and the students. Many schools have no e-mail, far telephone and computers services. The inability of schools to procure adequate staff, cum equipment led to conscientious efforts made on the part of the Nigerian government to come up with virtual learning initiatives and other relevant information and communication technology to provide higher institutions access to relevant and current information resources.

Conclusion

The virtual learning can be referred to as a child of necessity arising from the need to use technologies in accessing the world information. There is a need to access information globally through the internet because we are in the period of information explosion. In order for the universities in the world in general

and Nigeria in particular to function effectively and efficiently it is necessary to have a virtual learning system. The application of virtual learning practices through the application of ICT provide enhanced access to national and international formation for quality education and research towards national development.

Recommendations

1. The Government makes sure that there is a need for Nigeria to join the information super high way. The information in digital format is more spare-saving and it is easier and cheaper to communicate via telephone over long distances. The need for virtual learning system has therefore become the most urgent necessity in universities in Nigeria.
2. Government should create Web technology skills which are needed to maintain web services and that host locally digitalized materials and other digital resources.
3. Other non governmental agencies should join hand with the government to make sure that electric power supply in Nigeria is steady.
4. The Government should embark on massive renovation of the existing infrastructure ought to be done to accommodate new trends, facilities and services.
5. The school authority should see the need to have adequate human and infrastructure facilities for sustainable development of virtual learning is the country.
6. There is a need for the government to put in place policies and strategies that will enable students achieve the objective of virtual learning.
7. The government should make effort to provide funds for policy implementation, provide necessary technology training for virtual services and develop information infrastructure.

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**CENTRE FOR EDUCATIONAL TECHNOLOGY AND THE INTEGRATION
OF ICT IN THE COLLEGES OF EDUCATIONS IN NIGERIA**

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Abstract

The study investigated the Centre for Educational technology (CET) in the colleges of education (COE) in the North- east geopolitical zone of Nigeria to find out the extent of their ICT integration in teaching and learning Six research questions guided the study. All the 37 lecturers in the COE constitute the population. A 54- item questionnaire was used to gather information from the respondents. The data collected were analyzed using mean and standard deviation. The result of the study indicated that the entire COE offer one educational technology course. The student lecturer ratio is inadequate. Six out of the 10 COE have ICT laboratory the personnel and their qualifications are also inadequate. All the facilities investigated are being used to some extent. In terms of usage computers and public address system are used to a very great extent, others are used to a great extent except close circuit television which is used to a less extent. All the course contents are being taught with elements of ICT to a very great extent. There are barriers to the use of these ICT facilities. Lecturers are not making enough efforts to overcome these barriers. Based on the findings some recommendations were made

Introduction

Educational technology has been variously defined by different authors. There are three major areas of perception of the concept which include: hardware, software and systems approach. The hardware approach which is the oldest concept sees it as mechanizing or automating the process of teaching with devices. On the other hand the software approach looks at it from the point of view of learning theories and reinforcement principles in the design and presentation of stimulus materials. Systems approach sees it as a systematic way of designing, presenting and evaluating instruction. The association for Educational Communication and Technology AECT in 1982 gave a comprehensive definition as

“a systematic way of designing, carrying out and evaluating the total process of teaching and learning in terms of specific objectives based upon research in human learning and communication and employing a combination of both human and non-human resources to bring about a more effective instruction.” (Adewoyin 2007).

From the definition it is seen that it covers the various earlier concepts mentioned. An important aspect of educational technology is instructional design which according to Siemens (2002) is the systematic process of translating general principles of learning and instruction into plans for instructional materials and learning. This should involve real application of Information and communication Technology (ICT) competencies in the teaching process.

In this era of globalization, one of the major concepts that cuts across all human endeavors is Information and communication technology (ICT). Government the world over has realized the importance of ICT in all facets of human growth and development. Hence the introduction of various aspects of ICT education into the different levels of educational system by different countries. In Nigeria for instance, computer education has been introduced into the different levels of educational system to impart computer literacy on learners.. Acquisition of ICT literacy and skills is different from actual ICT integration into the teaching process. This of course cannot be ascertained without looking at the welfare of teachers. Consequently, the place of teachers in the integration of ICT into the classroom needs to be addressed.

In Nigeria, the purposes of Teacher Education according to the national policy on education include:

- ◆ To produce highly motivated, conscientious and efficient classroom teachers for all levels of our educational system.
- ◆ To encourage further the spirit of enquiry and creativity in teachers.
- ◆ To help teachers to fit into the social life of the community and society at large and to enhance their commitment to national objectives
- ◆ To provide teachers with intellectual and professional background adequate for their assignment and to make them adaptable to any changing situation not only in the life of their country, but in the wider world.

◆ To enhance teachers' commitment to the teaching profession.(FGN,2004:58)

From the stated purposes above, teachers need to be given opportunity to learn how to integrate ICT into teaching since it is the current thing that is bringing a lot of changes into all spheres of life. So the study hinges on number four purpose: to provide teachers with the intellectual background adequate for their assignment and to make them adaptable to any changing situation not only in the life of their country, but in the wider world. This is of greater essence for basic education level because they lay the foundation for higher levels of education.

The National Policy on Education (2004) has prescribed the National Certificate in Education (NCE) as the minimum qualification for teaching at the Basic Education level. Colleges of education are the awarding institutions for NCE. Centre for Educational Technology (CET) is a unit in a college of education entrusted with educational technology and microteaching. This centre if established according to the minimum standard set up by National Commission for Colleges of Education (NCCE) ought to help in acquainting the pre- service teachers with ICT competencies and skills.

Nigeria started implementing its ICT policy in April 2001 after the Federal Executive Council approved it by establishing the National Information Technology Development Agency (NITDA),⁸ the implementing body. The policy empowers NITDA to enter into strategic alliances and joint ventures and to collaborate with the private sector to realize the specifics of the Country's vision of, "making Nigeria an IT capable country in Africa and a key player in the information society by the year 2005 through using IT as an engine for sustainable development and global competitiveness." (Osei 2007) This vision is yet to be fulfilled.

Outlined below are some of the objectives of Nigeria's ICT policy:

- To ensure that ICT resources are readily available to promote efficient national development
- To guarantee that the country benefits maximally, and contributes meaningfully, by providing the global solutions to the challenges of the Information Age
- To empower Nigerians to participate in software and ICT development
- To encourage local production and manufacture of ICT components in a competitive manner
- To establish and develop ICT infrastructure and maximize its use nationwide
- To empower the youth with ICT skills and prepare them for global competitiveness
- To integrate ICT into the mainstream of education and training
- To create ICT awareness and ensure universal access in promoting ICT diffusion in all sectors of national life
- To create an enabling environment and facilitate private sector (national and multinational) investment in the ICT sector
- To encourage government and private sector joint venture collaboration
- To develop human capital with emphasis on creating and supporting a knowledge-based society
- To build a mass pool of ICT literate manpower using the NYSC, NDE, and other platforms as a train-the-trainer scheme for capacity-building (Osei 2007)

Hence this study looks at the 7th objective which is: to integrate ICT into the main stream of education and training. Particularly the study wants to explore the role of CET units in the integration of ICT for training of NCE teachers

The purpose of this study is to asses the Educational technology units of Colleges of Education in the North- east zone to find out how they prepare their student teachers with regards to integration of ICT in the teaching process. Specifically the study intends to find out

1. The demography of the CET in COE in the zone.
2. The status and qualifications of the CET personnel.
- 3 ICT facilities available in the CET in the colleges of education in the North-east geopolitical zone of Nigeria
4. The extent the course contents of educational technology are being taught with ICT facilities.
5. The barriers to the use of ICT facilities in teaching and learning in colleges of education.
6. The personal efforts being made by lecturers to overcome these barriers.

Research Questions

1. What is the demography of the CET in the COE in the zone?
2. What is the status and qualifications of the personnel of CET in the COE in the zone?

3. What ICT facilities are available in the CET in the colleges of education in the North-east geopolitical zone of Nigeria?
4. To what extent are the course contents of educational technology taught with ICT facilities?
5. What are the barriers to the use of ICT facilities in teaching and learning in the COE?
6. What personal efforts are being made by lecturers to overcome these barriers?

Research Methods

The design of the study is survey research, designed to ascertaining the role of CET in integrating ICT in the training of NCE teachers for basic education. The population of the study consists of all academic staff of CET unit in the colleges of education in the North-east geopolitical zone of Nigeria. The data were collected using a 54-item questionnaire, which was administered to all academic staff of CET in the ten colleges of education in the North-east. The data were analyzed using mean and standard deviation. A mean score of 2.5 was used as cut-off.

Results

Table 1: Demography of the colleges of education in North- east geopolitical zone

SN	NO OF COURSES	STD POPULATION	NO OF LECTURERS	ICT LAB
1	1	1400	3	Yes
2	1	450	4	No
3	1	900	4	Yes
4	1	2000	4	Yes
5	1	900	2	Yes
6	1	1200	3	Yes
7	1	1250	4	Yes
8	1	600	4	No
9	1	1230	4	No
10	1	1320	5	No

Table 1 shows the number of courses, student population, number of lecturers and presence or absence of ICT laboratory.

Table 2: CET PERSONNEL AND THEIR QUALIFICATIONS

SN	STATUS	QUALIFICATIONS
1	Coordinator	1PhD,5MED,2BED&1 BSC
2	Other lecturers	1PhD, 2MED,8BED,2MSC
3	Secretary	1OND & 1HND
4	Computer operators	3OND & 1HND
5	Graphic artists	1HND & 1OND
6	Projectionists	2WAEC & 1 OND
7	Video camera men	1WAEC, 5OND, 1HND
8	Computer technicians	2OND

Table 2 shows the status of the personnel and their qualifications which are not adequate according to the NCCE minimum standard.

Table 3: Mean responses on the availability and extent of usage of ICT facilities.

	FACILITIES	NO	EXTENT OF USAGE			
			N	Mean	SD	Decision
1	Closed circuit television	20	37	1.73	.93	LE
2	Video camera	111	37	2.65	.75	GE
3	Video player/ Recorder	108	37	3.0	.71	GE
4	Public address system	116	37	3.5	.56	VGE
5	Multi-media projector	68	37	3.0	.82	GE
6	Projection screen	119	37	3.2	.67	GE
7	Computers	1225	37	3.54	.65	VGE
8	Cable satellite facilities	38	37	3.22	.85	GE
9	Audio tapes	155	37	3.49	.61	GE
10	Video cassettes	1050	37	3.43	.60	GE
11	CD-ROMs	259	37	3.35	.68	GE
12	Internet facilities	14	37	3.03	.96	GE

Table 3 shows that apart from closed circuit television other facilities are in high usage. Also all the facilities are available to some extent.

Table 4: Mean Responses on Educational technology course content and the extent of usage of ICT facilities for teaching them.

S/N	Course content	Extent to which they are taught with ICT			
		N	Mean	SD	Decision
1	The concept and history of educational technology in Nigeria	37	3.62	.89	VGE
2	The place of educational technology in communication and the teaching-learning process	37	3.68	.82	VGE
3	The concept and process of communication	37	3.7	.78	VGE
4	The concept of Systems Approach to instruction	37	3.68	.78	VGE
5	Multi-media in Education, major characteristics of Educational media.	37	3.43	.80	GE
6	Use of multi-media in promoting interdisciplinary / integrated studies	37	3.62	.79	VGE
7	Computer-Assisted Teaching / Learning	37	3.59	.83	VGE
8	Enter-Educate approach to teaching of POP/ FLE	37	3.49	.90	GE
9	Principles and practice of design, production, improvisation, use, maintenance, storage and retrieval of educational media	37	3.65	.86	VGE
10	Community resources in education	37	3.65	.82	VGE
11	Photocopy and video production (with practical)	37	3.49	.99	GE

POP = Population

FLE = Family Life Education

Table 4 shows that all the units in the educational technology course are being taught with ICT facilities to great extent (GE) or very great extent (VGE)

Table 5: Mean Responses on Barriers to the use of ICT facilities in teaching and learning.

S/N	Barriers	N	Mean	SD	Decision
1	Lack of facilities	37	3.59	.55	Agree
2	Lack of electricity supply	37	3.62	.68	Agree
3	Frequent power outage	37	3.70	..57	Agree
4	Lack of ICT skills by personnel	37	3.59	.69	Agree
5	Lack of technician to assist.	37	3.54	.73	Agree
6	Lack of co-operation from the college administration	37	3.27	.99	Agree
7	Lack of viewing center	37	3.54	.83	Agree
8	Inadequate funding	37	3.75	.43	Agree

Table 5 shows that all the items listed are serious barriers to the effective use of ICT in the teaching learning process at colleges of education.

Table 6: Mean Responses on Personal efforts being made by lecturers to overcome the barriers.

S/N	PERSONAL EFFORTS	N	Mean	SD	Decision
1	Encouraging students to have e-mail accounts	37	1.38	.68	Disagree
2	Encouraging them to exchange e-mails	37	1.97	.60	Disagree
3	Giving assignments that require the internet services	37	2.21	.82	Disagree
4	Encouraging group e-mail accounts/newsgroup	37	1.89	.77	Disagree
5	Opening a web-site for the course	37	1.37	.68	Disagree
6	Posting assignments to group e-mail address or website	37	1.51	.84	Disagree
7	Use of personal generators	37	2.19	.94	Disagree
8	Preparing lectures with power point and presenting accordingly	37	2.13	1.03	Disagree
9	Possession of modem for private networks	37	2.30	1.02	Disagree
10	Chatting with students on the net	37	1.78	.87	Disagree

Table 6 shows that out of the ten possible efforts that could be made by lecturers to overcome barriers to ICT usage in the colleges of education for training of pre-service teachers, none was up to the cut off mean of 2.5.

Discussion

The result of the study revealed visible presence and utilization of ICT facilities in the colleges of education in the North-east. Table 1 showed that all the CET in the zone offer one educational technology course which is EDU212; Educational Technology: theory and practice. This is in agreement with the NCCE minimum standard. The student lecturers ratio is however inadequate. Six out of the ten colleges in the zone have ICT laboratory while four do not have. The implication is that with absence of ICT laboratory and inadequate student: lecturer ratio, ICT integration into teaching learning process may be poor.

Table 2 showed that the personnel is very inadequate especially technical personnel. Bailey (2001) insisted that adequate technical support is essential for effective technology integration in tertiary institutions.

Table 3 showed that all the listed ICT facilities are available to some extent. Out of the twelve ICT facilities examined only Close circuit television has a mean that is below the cut-off mean. This in agreement with the findings of Nojim-Yusuf, Adebisin, Taiwo & Ishola 2008. However the procedure of usage is not indicated. From the quantity of these facilities and the average population of students as shown in the NCCE Digest it is obvious that the level of availability could not give room for effective student participation, hence poor ICT integration by the centres.

Table 4 showed that all the units in the educational technology course are being taught with one form of ICT facility or another. The unit that has the highest mean was the concept and process of communication, followed by the place of educational technology in communication and the concept of systems approach. This is however not surprising because these units deal directly with communication.

Table 5 showed that all the items are serious barriers to the use of ICT in teaching and learning in colleges of education. The item that shows greatest barrier being inadequate funding. This also is in consonant with the findings of Ofoegbu 2008 with regards to the extent of technology integration in University of Nigeria Nsukka. Funding has continued to pose problems in tertiary institutions. Various institutions are gradually devising means of increasing their internally generated funds.

Table 6 showed that lecturers in the CET in the COE in North-east are not making enough personal efforts to overcome the barriers to ICT application. Bailey (2001) also suggested that technology integration should involve technology leadership. Technology leaders are those who see technology as a central tool for transforming teaching. These ought to make personal sacrifices and efforts towards that goal.

Conclusion

Colleges of education play important roles in the country's education system because they produce NCE teachers. The fact that NCE is now the minimum teaching qualification implies that teacher educators at that level should align their programmes to technology integration which is one of the targets of the National Economic Empowerment Development Strategy (NEEDS) and the Millennium Development Goals (MDGs). CET is a unit in the school of Education which acquires produces and houses instructional resources to facilitate effective teaching and learning in colleges of education. ICT being an important aspect of instructional resource for the 21st century need to be part and parcel of CET. Hence CET should be in a position to play vital role in technology integration.

Recommendations

CET is a very important unit in the colleges of education. For its effective operation in technology integration, the following are recommended:

1. Student lecturer ratio should be balanced for closer interaction.
2. The personnel establishment as stipulated in the NCCE minimum standard should be adhered.
3. The course content of EDU 212 should be reviewed to include more creativity oriented content.
4. Lecturers should make personal sacrifices and efforts to overcome some of the barriers to effective ICT integration.
5. Students should be encouraged by giving them assignments and projects that require constant interaction with ICT facilities.
6. Colleges of education should explore means of improving their internally generated funds and develop linkages so as to be less dependent on government.

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**DEVELOPMENT AND EVALUATION OF A SELF INSTRUCTIONAL PACKAGE FOR JUNIOR
SECONDARY SCHOOL BASIC TECHNOLOGY**

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Abstract

The challenge of designing and developing innovative instructional materials is one that many teachers have always had to struggle with. Meanwhile, this is the area that practically reveals the commitment and expertise of those in the field of educational technology who are concerned with instructional designs, development, evaluation and utilization of instructional media and technology. Thus, this paper seeks to evaluate a self-instructional package designed and developed for the Junior Secondary School Basic Technology. The study used the Educational Technology (Postgraduate) students of the University of Ibadan, Nigeria. Also, the paper considers the meaning and characteristics of self-instructional package as well as criteria for its design development and evaluation.

Introduction

In Nigeria, the junior secondary school Basic Technology (formerly known as Introductory Technology) is a core course as stated thus in the National Policy on Education (NPE, 2004), the 6-3-3-4 system of Education was actually designed to produce individuals who would have acquired at the end of each stage not only the academic knowledge, but meaningful practical skills which would make them more functional and self-reliant in the society. One aspect of the system is its recognition of end application of education through a large spectrum of technical skills derived from a diversified curriculum. The policy is a deliberate departure from the dogmatic and unimaginative curriculum which has existed in Nigeria since the colonial era (Abimbade, 2006).

According to NERDC (2004), one reason why the Junior Secondary idea is worthwhile venture is that the traditional grammar schools have failed to measure up to expectations. Whereas the traditional grammar schools were more academic and stereo typed, the Junior and the Senior Secondary Schools were designed to be pre-vocational, technical and academic. All basic subjects which would help to develop the knowledge and vocational skills of students are to be taught at the Junior Secondary school level. Those students who have the ability will proceed to Senior Secondary School or to Vocational training institutions.

At the Junior Secondary School level, the curriculum has been structured into the following:

- a. Core Subjects: Mathematics, English, Nigerian languages (at least 2, including the pupils' language) science, social studies, Art and Music, practical Agriculture, Religious and Moral Institutions, Physical and Health Education.
- b. Pre-Vocational Subjects: Woodwork, Metal work, Electronic, Mechanics, Local Crafts, Home Economics and Business Studies.
- c. Non-Vocational Electives: Arabic studies, French, etc.

It is therefore of great necessity to produce teachers who will be competent enough to include right kind of knowledge of technology as stated in the curriculum of subject.

To see to the attainment of the stated objectives for teaching the subject, certain things are needed for effective teaching and learning such as adequate teachers, textbooks, laboratory to mention a few. However, these stated essentials are not adequate (Ogunsanya, 2002).

In the light of the problem stated above, Oladele (2005) states that media with the use of modern techniques for teaching and learning could be used to enhance instruction. She states further that where teachers are available, such techniques can still be used to enhance effective teaching and learning. Such techniques of instruction include the individualized instruction.

Individualized or self-instruction assists students to learn at their own pace and to be self-reliant (Oladele, 2005). Given the fact of individual differences, it is generally accepted that an important device for making teaching-learning meaningful is to individualize the instruction. Educational Research Associates (2009) defines self/individualized instruction as a method of instruction in which content, instructional materials, instructional media, and pace of learning are based upon the abilities and interests of each individual learner. The Associates state that individualized instruction is not the same as a one-to-one student/teacher ratio or one-to-one tutoring, as it may seem, because economically, it is difficult, if not impossible to have a teacher for each student. Even the most expensive public school system in the United States may require at least 5 students per teacher to pay teacher' salaries, without anything left for buildings or non-teaching staff.

According to Aggarwal (1995), self instruction takes its source from educational technology which is defined as system in education in which machines, materials, media, men and methods are inter-related and work together for the fulfillment of specific educational objectives.

Review f Literature

Ogunsanya (2002) describes instructional materials as those resources employed to facilitate effective teaching-learning process. They are used to provide the richest possible teaching-learning interaction between the teacher and the learners by promoting effective communication process. According to Oladele (2005), instructional materials are information carrying technologies that are used for instructional purposes with the hope of delivering educational information very quickly and very widely. They are information carriers designed specifically to fulfill objectives in a teaching-learning situation. The resources include: Educational radio, educational television, computer, printed materials. The latter, includes programmed instructions which enable learners to learn at his own pace on the learning tasks. The programmes instruction is a type of self-instructional package.

In addition, while instructional package can be described as a programme or text designed for study, self-instructional package connotes the programme or text designed for self study. In this, learner work at their own rates, but upon preset objectives. This implies that all students may use the same materials to reach the same objective(s) only the rate of progress is individualized.

Development of Self Instructional Package

In developing self instructional package, the term design evolves. According to Oladele (2005) design is a deliberate process of analysis and synthesis that begins with a communication problem and concludes with a plan for an operational solution. Abimbade (2006) opines that design involves method and media-how to select appropriate instructional task.

In the view of Oladele (2005), instructional designs are the sums of teaching-learning structures, teaching theories and structures of content. They are concerned with the application of modern skills and techniques for the requirements of education and training. This includes facilitation of learning by manipulation of media, methods and control of environment in so far as this reflects on learning.

Again Oladele (2005) recalled that efforts to individualize instruction started in the 1950's as a protest against group oriented and teacher-centered methods of instruction which hardly made any provision for individual differences of the learners. This was based on the premise that learners are different in terms of natural ability, disposition, and that no two students are exactly alike in class. Thus, the conventional complete teacher-contol approach is likely to be inadequate. Individualized instruction which gives room for frequent feedback and more frequent progress checks could make a difference.

In individualized instruction, many of the instructional events carried out by instructor with a group of students are now presented to the individual student through instructional materials (Nada, 2009). The instructor's role is different, and even more important than in lockstep instruction. The instructor is still the motivator, the counselor, the evaluator and the decision maker who is responsible for each student's mastery of the objective. In short, he plays the role of a facilitator.

Theoretical Framework

This study is based on constructivist theory (a movement in education, started by Jean Piaget) which states that the student should build his or her learning and knowledge. It suggests that all knowledge takes place as people construct their own meaning from their experiences, backgrounds and attitudes. Some specific constructivist strategies include: advance organizers, chunking, mnemonics, semantic mapping and framing. This study employed the framing strategy.

Design and Development of the Instructional Package (SIPBT)

The design and development of the Self-Instructional Package in this study is based on the modified Reiser and Dick model of 1996. The model is as illustrated below:

1. Target Audience and Prerequisites

2. Identify Instructional Goals	3. Identify Enabling Objectives	4. Plan Instructional Activities	5. Choose Instructional Media	6. Develop Assessment Tools	7. Implement Instruction
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8. Revise Plan

Characteristics of Instructional Package

Ideally, an instructional package should contain a number of components. According to Hoepfl-Wellenhofer, (2009), the three major components of an instructional package are instructional materials, assessments and course management information. The instructional materials contain the content either written, mediated or facilitated by an instructor. Instructional materials refer to any pre-existing materials that are being incorporated, as well as to those that will be specifically developed for the objectives. The assessment component may include a pretest and/or a post test, while course management information is a general description of the total package. However, the course management information should be presented in simple and straightforward language.

Evaluation of Instructional Package

The instructional package evaluation process is dynamic in nature, and it is focused at ensuring that the set objectives are actualized. This suggests that information regarding quality effectiveness and instructional use accrue.

Criteria for Evaluating Instructional Package

The evaluation criteria when selecting existing instructional package may be applicable to the packages developed by a designer. According to Hoepfl-Wellenhofer (2009) evaluation criteria includes:

- a. Goal-Centered Criteria for Evaluating packages. They are focused on the content of the instruction. Specific criteria in this area include congruence between content in packages and objectives, adequacy of content coverage and completeness, authority, accuracy, currency, and objectivity.
- b. Learner-Centered Criteria for Evaluating packages: They are focused on the appropriateness of instructional materials or the target group. The learner analysis documentation should provide the foundation analysis evaluation. Specific criteria in this area include the appropriateness of the materials for the learner with regards to their vocabulary and language levels; developmental, motivation, and interest levels; backgrounds and experiences; and special language or other needs.

- c. **Learning-Centered Criteria for Evaluating Packages:** They are focused on the adequacy of existing materials/packages (do they need to be adapted or enhanced prior to use?). Packages can be evaluated to determine whether the following items are included and adequate (i) Pre-instructional packages, (ii) content sequencing and presentation, (iii) student participation and congruent practice exercise, (iv) feedback, (v) assessments, (vi) follow-through directions for enhancing memory and transfer, (vii) delivery system and media formats, and (viii) learning guidance to move students from one component/activity to the next.
- d. **Context-Centered Criteria for Evaluating Packages:** They are focused on the appropriateness of existing materials for the instructional and performance context. Judge if existing package can be adopted, if not, you are in instructional packages development business. Criteria in this area include the authenticity of the materials for content and learners, the feasibility of the materials for setting and budget. Here examine the technical quality of existing packages with regards to Packaging, Graphic design and typography, Durability, Audio and video quality, Interface design, Navigation, and Functionality.

Model for Evaluating Instructional Package

The Reiser and Dick Model (1990) states that the primary criterion to judge the effectiveness of package is the extent to which students learn the skills the package in intended to teach. The twelve steps suggested by the model are:

- Step 1: Identify package of interest.
- Step 2: Identify general characteristics of package.
- Step 3: Still interested in the Package?
- Step 4: Identify or develop instructional objectives.
- Step 5: Identify or develop test items and attitude questions.
- Step 6: Conduct one on-one evaluation.
- Step 7: Is further evaluation necessary?
- Step 8: Need to change test items
- Step 9: Make changes to test items
- Step 10: Conduct small group evaluation
- Step 11: (two weeks later): Administer retention test.
- Step 12: Write evaluates report.

Research Questions

1. Are the objectives of the package clearly stated?
2. Are the contents of the package suitable for the intended users?
3. Does the package meet the stated objectives as documented in the curriculum?
4. Is the printing of the package bold and legible?
5. Would the package be easy for learners to use?

Methodology

This paper involves the development and evaluation of a self-instructional package (Programmed Instruction) in Basic Technology for Junior Secondary School (J.S.S.). The programmed instruction wasevaluated by Educational Technology Postgraduate students.

Design

The research involves the design, production and evaluation of the programmed-instruction. After the production, Educational Technology Postgraduate students were asked to evaluate the product regarding its quality and appropriateness/effectiveness. The package was produced in print form.

Instrument for Data Collection

The self-instructional package together with a well structured questionnaire were used. The respondents were asked to study the package on self basis and attend to the questionnaire attached to it in order to check their opinions on the quality and appropriateness of the package.

Data Analysis

The data collected were analyzed using simple percentages.

Result and Findings

This explains the result of the research carried out on the quality of the instructional package for the development of the package in basic Technology for Junior Secondary School. Nine questionnaires were distributed among postgraduate students of Educational Technology (700L), but eight were returned and correctly filled. These were analyzed. The Respondents' views on the quality of the package are thus presented.

NO OF ITEM	SA	% OF SA	A	% OF A	D	% OF D	SD	% OF SD
1	4	50%	4	50%	-	-	-	
2	4	50%	4	50%	-	-	-	
3	4	50%	4	50%	-	-	-	
4	-	-	3	37.5%	5	62.5%	-	
5	3	37.5%	5	62.5%	-	-	-	
6	4	50%	4	50%	-	-	-	
7	-	-	-	-	3	37.5%	5	62.5%
8	-	-	8	100%	-	-	-	-
9	3	37.5%	5	62.5%	-	-	-	-
10	4	50%	4	50%	-	-	-	-
11	3	37.5%	5	62.5%	-	-	-	-
12	2	25%	6	75%	-	-	-	-
13	3	37.5%	5	62.5%	-	-	-	-
14	-	-	-	-	5	62.5%	3	37.5%
15	2	25%	6	75%	-	-	-	-

In response to the view of students on the quality of the instructional package, the eight (100%) respondents that administered the questionnaire, affirmed on item 8 that the language level is appropriate for the users of the package. Four (50%) affirmed and four (50%) strongly affirmed on items one, two, three, six and ten that the objective of the package are clearly stated, the programmed – instruction is relevant to curriculum content, the contents are suitable for the users, the package is highly appropriate, and the package does not create confusion on the students.

Five (62.5%) affirmed and three (37.5%) strongly affirmed on items five, nine, eleven and thirteen that the programmed instruction would likely arouse students' interest, the printing is bold and legible, the package would enhance effective teaching and learning and the package meets stated objectives. Six (75%) affirmed and 2 (25%) strongly affirmed on items twelve and fifteen that the content is arranged logically and the package is capable of leading users to mastery.

Five (62.5%) affirmed on item four that there is no provision for users meaningful participation while three (37.5%) are of contrary opinion. Three (37.5%) disagreed and five (62.5%) strongly disagreed on item seven that the pack will not increase students' creativity. Five (62.5%) disagreed and three (37.5%) strongly disagreed on item fourteen that the use of the package do not make the teacher an initiator.

Summary of Major Findings

Responses from the questionnaire administered indicate that the use of instructional package in Teaching Basic Technology for Junior Secondary Schools is an essential method which enhances effective teaching and learning. It is therefore needful that the package be developed.

Hundred percent (100%) positive responses of the majority of the respondents indicated that the instructional package is of high quality. It will make students to be more creative. It intimates the students with the spirit of self-dependency. It encourages the learners to learn at their own pace.

The difference in the response of the respondents is as a result of individual differences. Some students found it convenient to learn on self basis while some prefer learning collectively.

Nevertheless, the package is of high quality and its usage should be encouraged in teaching Basic Technology at Junior Secondary Schools.

Recommendation

It is the view of the researcher that the development of the instructional package for the teaching of Basic Technology can be carried out to the barest standard if the following suggestions are utilized. The first approach is for the teachers to design and produce the package that is relevant to the syllabus. After this has been done, the package should be effectively utilized. This will help the students in the sense that they will consider themselves to be self-reliant since they have been encouraged to learn at their own pace.

Conclusion

In conclusion, the development of instructional package in teaching Basic Technology for Junior Secondary Schools encourages the use of individualized method of teaching. It provides more frequent feedback and more frequent progress checks than is the case for conventional instruction. It may permit more freedom of choice on the part of the learner, depending on the extent to which objectives are “optional” or “required”. Usually, as a minimum, the learner sets his own pace in learning activities.

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EDUCATIONAL RESOURCE CENTRES AND THE SCHOOL SYSTEMS

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Abstract

The thrust of this paper is that a well-planned and an integrated approach should be adopted in the development of educational resource centres in Nigerian school system. It holds that the organization and management of educational resources centres offer one of the best possibilities for developing and using various educational resources. The paper then briefly describes some functions of educational resource centres and the status of educational resource centres in Nigeria. In conclusion, the paper believes that governments, Universities, and even schools should play conscious leadership role in the development of educational resources and the needed manpower.

Introduction:

An Educational Resource Centre (ERC) is a place where learning materials, services and facilities are acquired, produced, classified and stored for easy retrieval when needed. It promotes the education of users, encourages interaction and cross-breed of ideas.

Educational resource centers are known by different names such as media centre, learning resource centre, resource centre, centre for curriculum and instructional development and so on. Centres can be established for specific areas as in the cases of mathematics centre, science centre, centre for language development, and French language centre. It can be for specific age groups, professionals or gender. For instance, the women's centre, children's centre, centre for Handicapped children, teacher's centre and press centre.

ERC is a setting (space) where educational resources such as materials, tools and equipment can be designed, developed, utilized, borrowed, and stored. It varies in terms of its arrangement ranging from a classroom corner to an entire complex building, depending on the objectives, curricular emphasis and financial ability etc.

Types of Resource Centres

An educational technology centre can be centralized, decentralized or co-ordinated, depending on many factors such as: fund, objectives of the organization and available resources (human and material). A centralized resource centre is one that functions as a sole facility within a state or local government responsible for acquiring, cataloguing and storing instructional materials. Because of the need to loan resources to individuals or schools, the emphasis shifts towards decentralization.

A decentralized resource centre is the one which functions independently within a given school building. It is responsible for acquiring, cataloguing and storing instructional materials. Such a resource centre is available for use by students, as well as teachers and so designed to serve the single school in which it is located.

A co-ordinated resource centre operates as a system. It contains a network of schools' resource centres, but it is supplemented and served by a central one, which provides additional equipment and services. Equipment, tools and resources that each school cannot afford to procure, are bought and kept in the centre, for example, buying expensive TV studio equipment, overhead projectors, computer hardware etc. in this way, the centre co-ordinates the operation of the entire system and serves as a supplement to each of the subordinate resource centres.

Educational resource centres play a prominent role in the designing, planning and implementing of instructional process as part of educational technology. Educational technology, according to the task force committee on nomenclature for positions in educational technology, uses combined human and technical media to reach the greater number of learners with the most adequate information, knowledge and stimuli.

The place of Educational Resources Centre in the Nigerian National Policy on Education

Educational resource centre is a service unit in education system. Its functions therefore must be in line with the objectives of educational services which according to the National Policy on education (FRN 1998) are:

- i. to develop assets and improve educational programmes;
- ii. to enhance teaching and improve the competency of teachers;
- iii. to make learning more meaningful for children;
- iv. to reduce educational cost;
- v. to promote in-service education;
- vi. to develop and promote an effective use of innovative materials in schools.

In addition to the specification of service objectives, the National policy on education (2004) made some promising statements with reference to educational resource centre. It stated:

Educational Resource Centre will be established at State and federal levels. Audio-visual Aids centres will be set up under the auspices of the Federal and State Governments, and there will be a close co-operation constant consultations between the centres and all educational institutions for their development and effective utilization (p.42).

...Teachers' Resource Centres where teachers will meet for discussions, investigations, study, short courses and conferences, will be set up in each State/Local Education area. The centres will also be used for the development and testing of teaching materials (42).

The position therefore is that the services of Educational Resource Centres are in line with the service objectives of educational units stated in the National Policy.

However, the policy stated and re-emphasized the need for such centres to be established at different levels for the purpose of enhancing education. The policy also promised the establishment of language, Science and mathematics centres and workshops.

Uniform Nomenclature for educational Resources Centre: Functions and Organization in Nigerian Education System

The Joint Consultative Committee (JCC) on Educational Technology in its meeting of April 1985, at Owerri, set up a task force led by Professor A.I.Imogie, to develop a uniform nomenclature for educational Technology in Nigeria. Among the recommendations of the taskforce were the functions and organization structures of educational resource centres at the Federal, State, Local Government and Institutional Levels.

- a. At the Federal level, the National educational Technology centre (NETC), Kaduna should be retained but upgraded to the status of an Institute/Parastatal i.e. National Educational Technology Institute (NETI).
- b. At the State level, Education Resource Centre (ERC), as recommended in the National Policy on Education (1981), should be established with Zonal Offices in each local government area.
- c. At Institutional levels
 - i. University level- Centres for Educational Technology (CET) should be established in Universities.
 - ii. Each College of Education or Polytechnic should have well equipped Centre for Educational Technology (CET) which would give wide services and satisfy their academic programmes.
 - iii. Each Teachers College should establish a Learning Resource Centre (LRC) as an integral part of the Departments of Education while in the secondary schools; the LRC should be an integral part of the library, serving all the departments. The primary Schools will be catered for by the Zonal Offices of the ERC in each local government areas.

Functions of Educational Resource Centres

The major functions of resource centres are:

- i. identifying, acquiring, organizing and disseminating materials, information and supplies that are pertinent to the curricula;
- ii. serving as a clearing house, where teachers and students have easy access to variety of teaching and learning materials and equipment;
- iii. giving teachers and students optimal assistance in preparation and production of teaching and learning materials;

- iv. organizing micro-teaching sessions for students/teachers as well as for lecturers, to develop new teaching skills and also to revitalize already acquired ones;
- v. planning and executing in-service training programmes for both academics and non-academic staff through seminars, workshops and conferences, as a way of updating knowledge and skills in tune with present day educational practices.

Materials and Equipment in ERC

Apart from consumable materials such as cardboards, drawing materials, chemicals, papers etc we have:

(a) Projector Materials

- i. 16mm or 8mm sound films, filmstrip slide projectors, opaque projectors;
- ii. video-tape recorders and players;
- iii. record players, tape recorders, headphones, records, tapes, cassettes;
- iv. television and radio set;
- v. microfilm, microfiche, and micro print readers;
- vi. cameras for photography, 35mm films slide cameras;
- vii. language teaching laboratory facilities;
- viii. Braille;
- ix. Photocopiers;
- x. Ink duplicators;
- xi. Computer and its accessories.

(b) Non-projector Materials

- i. a large bulletin board;
- ii. display boards;
- iii. pictures, drawings, illustrations, photographs and photographic materials;
- iv. posters, charts, graphic materials and maps;
- v. models and mock-ups;
- vi. miniature;
- vii. instructional programming documents.

Advantages of School Resource centre

- i. a school resource centre helps individual learners to plan, inquire, to become involved and engaged in self directed search.
- ii. It provides learners and teachers with skills and competencies in the design, production, utilization and distribution of resource materials.
- iii. It helps to ameliorate the relative isolation of the classroom from learning materials. It guarantees learners immediate access to materials.
- iv. It makes learning more purposeful and more productive since there is flexibility of time to study.
- v. It provides easy access by teachers and pupils to a wide variety of instructional materials. Skilled guidance in the selection and use of these tools is necessary.

The Need for Learning Resource Centre in the Schools

A learning Resource Centre can be established by a school within its premises. Two or more schools that are closely located can also pool their resources together to establish a centre to serve their teachers and students. The building can be an abandoned public building such as political party houses, closed down schools or some parts of the schools with low population.

There are many reasons for centralization of resources:

- 1. It provides a wider range of materials to the users than an individual collection.
- 2. It brings the materials close to the users and in a place too. The school LRC is closer to the pupils/students than the state and local government centres.
- 3. It affords teachers and students the opportunity of sharing ideas on the production and utilization of materials including having the knowledge of variety of learning resources.
- 4. It lessens for the teachers the burden of producing materials each time he/she is planning to teach and encourages him/her to use instructional materials while teaching.
- 5. It makes for effective and efficient utilization of the available human and non-human resources. One resource produced by a teacher or students under the guidance of a teacher can be used by different teachers for several years.

6. Though some teachers may not support the idea of submitting their materials to a central pool, it makes for better storage and protection of the materials. However, such teachers should be allowed to withdraw their materials when they want, especially, if they financed the production without the support of the school authority.
7. It will be difficult for any Nigerian teacher to effectively teach a large class how much more of individualizing instruction without learning resources. School LRC is an imperative.
8. The Nigerian schools' time tables are already packed full with subjects within the limited available time, the teachers are expected to cover the curriculum contents or the syllabi. In addition, knowledge is expanding everyday. New problems that should be reflected in the school learning are being identified. To be more realistic, we have to admit that a teacher does not know everything and there is no way a teacher can teach a student everything that he/she is required to learn. We therefore, need school resource centres where the learners can discover certain things for themselves.
9. School learning resource centre will help to argument the deficiencies of the teacher due to poor training. What students could not learn from the teachers they learn from the LRC. They learn to produce and use various learning materials, and also, learn about innovations in their teaching areas. LRC is a school-based in-service education and training centre for the teachers.

Summary

The National Policy on Education recognized the need for Educational Resource Centre and stipulated its establishment at different levels. The JCC on Educational Technology, in 1985, provided a uniform nomenclature for the establishment of resource centres. It provides the names, organizational structures and functions of resource centres at federal, state, tertiary and secondary school levels.

Central collection of learning resources provides the users with wide range of materials, encourages user's interaction, reduces the cost of repeated production, makes for better storage, helps in individualization of instruction makes for efficient utilization of study time and augments teachers' defects. A functional centre is organized into units. Each unit must be equipped with the right type of materials and personnel for its functions. Some of the criteria that guide acquisition of learning resources include relevant to content, suitability to users characteristics, physical appearance of the materials, authenticity, currency, presentation style, scope of coverage, availability of basic equipment, security demand level and previous users comment.

Conclusions

So far, there is a National Resource Centre- National Educational Technology Centre at Kaduna. This centre caters for the national interests as far as educational material resources are concerned. There are states Educational Resource Centre (ERC) in most of the states' capitals. It is hoped that states without physical structure to house the resource centre will do so soon. Many higher institutions-Universities, Polytechnics, Colleges of Education have centres for Educational Technology. While some are based in the education departments/faculties, others stand as autonomous centres. The development of school resource centres, demands the encouragement of school administrators and decision-makers. However, school resource centre could start with a handful of materials produced by the teachers during training in their colleges (especially the trained ones). But this has to be effectively coordinated in the school and heads of schools should support such efforts. The school resource centre would need the support of state Education Resource Centre (ERC). It should be possible for school resource centre to borrow equipment and materials from state ERC.

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AN INSTRUCTIONAL PACKAGE FOR THE DEVELOPMENT OF LEADERSHIP SKILLS AND ETHICAL VALUES AMONG YOUTHS IN POST BASIC SCHOOLS

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Abstract

The youths are a nation's future manpower; the productivity and advancement of any nation depend heavily on the attitude and values they imbibe. The inculcation of desirable values and attitudes in our youths is both an informal and formal process. The Federal Government of Nigeria has made various efforts to provide formal training for Nigerian youths on social and civic values and leadership skills. However, there is a gap in these formal training attempts. Ethical value orientation is being included in the Basic Education and Civic Education in the tertiary level, but in the Post Basic Education where the youths are at their most vulnerable stage, there is no formal structure to assist them in learning the proper values. This instructional package is designed to fill this gap. The package consists of an instructional module, a teacher's guide and some resources to accompany the training. The module is a simplified training course on positive ethical value orientation and good leadership skills to be used alongside the normal school curriculum in the second year of Post Basic Education. The course applies Instructional System Design to training for behavioral skills acquisition and attitudinal change.

Introduction

Most nations of the world are experiencing gradual decline of ethical, moral and societal values. Although the sudden downward slide of values in recent times may be attributed to the present global economic recession as people tend to throw values to the wind and put survival first. These attitudes of adults tend to be imbibed by the youths. Irrespective of the global economic recession, it is not out of place if one insinuates that the gradual decline in value reverence has always been ingrained in societies. It has progressively become a worrying issue "Moral and Social decadent among youths". One can rightly say that the values upheld as a child are no longer regarded by today's youths. Nigerian governments have continuously made efforts to arrest the situation through formal and non formal education. Courses like Citizenship Education have been included in the curriculum of tertiary institutions in the country.

Recently the curriculum of the Universal Basic Education scheme (UBE) has included Guidance and Counseling; this according to its implementation guide lines is to among other things "ensure the acquisition of appropriate levels of ethical, moral and civic values" (Nwosu, 2009). Government has also at various times organized youth summits with the purpose of creating opportunities for values orientation, sound attitudinal development and the deepening of the spirit of enterprise" (NYLES, 2010). In spite of these efforts, the level of ethical and civic values have remained low. This can still be attributable to lapses in the schools and homes (Obiunu, 2005).

Youths of a nation possessing the right values point towards a generation of citizenry that would be responsible and enterprising, a manpower that would be performance driven and not bound to compromise or cut corners. In other words, inculcating proper values in the youths of this nation is sine qua non for building a future generation of industrious and dynamic manpower.

The acquisition of these behavioural traits is a process and certainly not one shot exercise as shown in the model below. The Parents, Society, Peers and the School all play an informal role in the process. However the schools should also formally provide ethical values orientation to refine and complement the informal

tutoring that goes on outside their purview. The students at the Post Basic level of education are most vulnerable at this stage of their adolescence; they can easily imbibe improper behaviours and negative attitudes. Aside the training they receive at home and what they learn informally from the school and their peers there is no formal training on values for students at this level of education.

Model of Youth value development:

Students at this level are at some stage selected to lead others as Student Leaders or Prefects. These groups of leaders can be used to impart positive attitudes on their subordinates. Student leaders should be assisted to acquire such skills and abilities in decision making, communication, and motivation. Moreover, they should be able to lead by example. They can only give what they have. Formal training on ethical values and leadership skills at Post Basic year two may become an imperative to enable these students impact positively on their school mates, the society and their future.

The Design of the Module

The module integrates the basic concepts of Instructional Systems Design (Analysis, Design, Development, Implementation and Evaluation) with the Intuitive Task Approach in lesson planning. The training nature of the module has necessitated the inclusion of an analysis of the task the student may have to perform as leaders, their present job task capabilities and the task required for training to enable the formulation of the training objectives and use of the technique of objective analysis to identify the instructional content (Gagne & Merrill, 1995). The Analyses of Learners' Characteristics include their entering competencies. The integration of these techniques are to enable the instructional package serve as an effective training tool and also bring the instruction down to the level of the learners.

In order to facilitate the acquisition of the skills required in the course objectives a series of cognitive knowledge is imparted to the participants alongside expository and discovery learning strategies and a variety of learning activities including analytic discussions and reflections, simulations and gaming techniques. These are recommended for development of interactive skills Romiszowski A. J. (1982).

The instructional strategy format presented in the design is adapted from Walter D. and Carey L. (1979):

- i. The sub skills are organized into lesson periods or a number of objectives into lesson periods.
- ii. Time is then allocated to each period,
- iii. The objectives for each lesson period are then stated and the instructional events analyzed.

Need Assessment

The instructional package was conceived out of the observed need for a formal education of youths in the Post Basic Level of Education on proper values and conduct as individuals and as leaders. The need for the package was established through the observed behaviour of youths in the Post Basic Education and testing of their perception of ethical values and good leadership qualities using a questionnaire. A questionnaire, "Students' Leadership and Ethical Value Perception Scale" was given to 180 year two Post Basic youths to fill. The results revealed that the youths indicated a moderate level of Ethical Value (2.6) and a high level of leadership qualities (3.1). However, it was observed that these students did not exhibit these traits when not under the supervision of their teachers and principals; they are instead aggressive and badly behaved. They require a formal training on proper values and good leadership qualities to complement what ever they have learned from their parents, peers and the society.

Job Task Analysis

As students, they are expected to perform the following tasks and behaviors when selected as leaders:

1. Enforce discipline in the school: The Prefects should be able to discourage acts of indiscipline by other students, such as vandalism, fighting, bullying, and noise making etc.
2. Enforce the school rules and regulations: The prefects should know the school rules and regulations, and then, they can monitor the compliance to the rules by other students and take measures to check disobedience.
3. Organize and direct various activities in the school: This involves the students being able to:
 - (i) Communicate effectively with the other students,
 - (ii) Win the respect and trust of other students,
 - (iii) Have good relationship with their subordinates and
 - (iv) Exhibit good leadership qualities.
- v. Exhibit obedience and respect for authority: The prefects should know the school administrative hierarchy and follow the line of command.

4. Exhibit good moral, social and ethical values,

Job Task Competency

Observation of the students' ability to perform job task analyzed above revealed that the students when selected as leaders are feared by their subordinates because of their aggression towards them. Some of the students were not responsible; they had to be reminded of their duties. The student leaders themselves break many of the school rules they are supposed to enforce. In the schools observed there were very few cases of disrespect to school authorities. The students are familiar with the values like integrity, trustworthiness and what it takes to exhibit such traits but they don't cherish them.

Tasks Requiring Training

From the job tasks analyzed above the prefects need to be trained on the following tasks:

1. How to enforce discipline and obedience to school rules and regulations without aggression.
2. Winning students' cooperation and respect.
3. Leadership skills and attitude.
4. Developing respect for the school and the state. .

Analysis of the Learners Characteristics

Entering Competencies

The participants have had no formal training on the above skills except the values taught them by their parents. They have little or no leadership experience nor have they been exposed to an instruction on leadership prior to this, but have been led by their predecessors.

Description of the Participants

The participants are Senior Secondary School students who have just completed or are about to complete year two (SS2) in Post Basic Education, they are between the ages of 15 to 18 years and are of mixed sex. The intellectual ability of the students will be low, average or above average. Their socioeconomic background is mixed (urban, rural dwellers, rich/poor parental background). Their number will depend on their population in the school.

Instructional Analysis

Goal analysis is used to analyze the instruction to identify the behaviour that would lead to the acquisition of the attitudes to be learned, Hannum and Hansen (1989).

Course Goal

The course is aimed at equipping newly appointed secondary school prefects with skills and behavioural attributes that would enable them be effective in their new roles as leaders in the school.

Objectives

The participants should by the end of the course of instructions be able to:

- i. Influence students to obey the school rules and regulations.
- ii. Exhibit the ability to harness disciplined behaviour among students of the school.
- iii. Be able to harness and maintain a cordial student-prefect relationship in the school.
- iv. Exhibit good leadership qualities.
- v. Exhibit good ethical values

Skills To Be Acquired

Objective Sub Skill I: The students should exhibit a sense of loyalty and obedience to the school, the state and constituted authority.

Sub skill II: The students should show a sense of respect for the school rules.

Objective II

Sub skill III: The students should be able to have a positive disposition towards other students.

Objective III

Sub skill IV: The prefects should acquire an appreciation of individual and group differences.

Sub skill V: The students should also be able to acquire some positive behavioural attributes and ethical values that would enable them relate positively with their school mates and in the society.

Objective IV

Sub skill VI: The participants should acquire some leadership skills

Instructional Strategy

Course Mode

The course is a small group (20 to 25 students) learner centered, Instructor lead, using expository, discovery and differentiated instructional techniques. Varieties of learning activities are also employed with examples and repetitions to bring the lessons to the students' level and also enable them learn the skills.

- The instructional events include advanced organizers, practice and feedback, remediation and enrichment.

- The instructional materials to be used are students' guide. An instructor's manual and some visual aids such as charts to highlight salient points.
- The times allocated to each lesson does not exceed 1 hour 20 minutes, the normal double period time, so as to sustain their attention.

Implementation

The package includes:

- (i) An Instructors Manuel
- (ii) A student's work book
- iii. Instructional materials and some resources for the Training
- iv. Instruments for assessment

The course will involve selected resource persons mainly teachers of social sciences. The training takes 3 days and is conducted alongside the normal activities so as not disrupt the schools when in session. The success criteria of the training would be an observed drop in negative behaviours among the participants (less aggression, fewer conflicts and disobedience) and better leadership. This should be observed immediately after the students have completed the course and would also serve as a basis for formative evaluation of the prototype. There is a long term attitudinal change the course is expected to bring about in the participants which can not be assessed immediately. Anyhow, a second evaluation may be necessary one term later, to assess the sustainability of the training outcome.

This course has been acceptable to school authorities given its applicability to the needs of the school, its simplicity, the ease of implementation and the perceived outcome.

Evaluation

Formative evaluations of the prototype consisted of:

1. Exposing the course to two students from the target population, based on their comments the prototype was subjected to its first revision.
2. The prototype is then exposed to SS2 students in a selected school, a 'Students Attitude Questionnaire' which is used to assess the instructional strategy. The direct observation of the training outcome will also help in making further revisions.
3. The module is finally administered on another set of prefects for a final revision.
4. Specialists' have also examined the design and content of the module for recommendations.

Summative Evaluation

Summative evaluation of the module will consist of:

1. Direct observation of participants' behaviour as prefects of the school before and after they have completed the course.
2. A Pretest and a Posttest using a 'Students Performance Questionnaire' (see appendix II). The questionnaire which is used to solicit the responses of the prefects concerning their attitudes in their jobs is administered to the students before and after the course. The same Questionnaire is administered on another relatively equivalent group of prefects who have not been exposed to the course. Data from the two quasi-experimental groups is computed to assess the impact of the course.

Conclusion

It is envisaged that the prototype may have some initial difficulty in bringing about attitudinal changes based on the lesson contents presented, but this should be overcome by additions and alterations that are made as piloting and formative evaluation progress. The willingness of students to participate in the course and the seriousness in which they comply with the implementation will depend on the ability of the designer to convince them of the benefits of the course to their well being.

The course is generally accepted and has been assessed to do what it is intended to do, that is to bring about a high degree of desired behavioural and attitudinal changes in the participants, it will initiate opportunity for the school to not only bring about cognitive and psychomotor development in school children, but also

attempt to bring about 'organized' attitudinal changes. This is of great importance in view of the negative tendencies of youths in the present age and time.

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MEDIATED INSTRUCTION AND REDUNDANCY MEDIATION

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Abstract

The study was on Mediated Instruction and Redundancy Remediation in sciences in secondary schools in Uyo urban. Two hypotheses were postulated. A survey and quasi-experimental designs were adopted in the study. A total of 200 students were selected from two secondary schools purposively sampled for the study. 50 students each were used as experimental and control groups in the two schools selected. A computer designed instruction on circulatory system developed on power point projection was used in treating the experimental group, while the expository pedagogical strategy was used to teach the control groups on the same lesson. A fifteen item structures questionnaire developed on a four point rating scale was used to elicit information on availability of ICT facilities in schools and their influence on redundancy remediated during science lessons. Equally redundancy remediation achievement test (RRAT) was developed to test the ability levels of students in both the experimental and control groups. The questionnaire had a reliability coefficient of .72 while the 'RRAT' had .85 respectively. The data were analyzed using t-test statistics. The result of the analysis revealed that use of mediated instruction significantly removed redundancy for science students also the use of mediated instruction influenced academic achievement of science students in secondary schools. Some recommendations were made to encourage the teaching and learning of science subjects in secondary schools. Some of the recommendations include that science teachers should be trained to use ICT facilities in order to integrate it into the teaching learning situation and also that Internet facilities should be provided in all schools to ensure its utilization by both science teachers and students.

Introduction

Our vast numbers of secondary schools are established for the purpose of preparing the children to assume responsibilities in diversified aspects of human endeavour. In Uyo Urban only there are 14 public secondary schools and 16 private secondary schools giving a total of 30 secondary schools. Uyo is the capital city of Akwa Ibom State in Nigeria. To achieve this goal underscores the significant and imperative role of the science teachers as the implementers of the science curriculum in the various science subjects. The pedagogical strategies as used by the science teachers leave a lot to be desired. The instructional process observed over the years is expository and conventional verbal strategy in all levels of science teaching. Despite the training attained by the teachers, no difference is made on the performances of the learners in national examinations neither majority of the science students have positive attitude for learning science subjects. Researches have shown that the failure rate in science subjects is claiming an exponential rate (Nwosu, 1994, Ifeakor, 2005 and Etim, 2006) These phenomena has climbed to the level that there is an outcry by government, parents and teachers on the poor quality of products produced from our secondary schools with each stake holder apportioning blame on the other.

Redundancy among students is not a disputed fact. Students show unwillingness to put in expected energy in their own studies For instance students simply ignore, hate or spite on the science subjects showing clear manifestation of lack of will, or interest to study those subjects. This attitude predisposes the students to dissatisfaction shown by universities and parents today that the students cannot meet Jamb requirements for university admissions or are not productive when emptied to the society. This set of students turn to becoming nuisance to the society and promote societal ills as witnessed today e.g. drug abuse thuggery, cultism, academic incompetence among other ills. The delivery strategies adopted by science teachers cause the students to become truants, late comers and manifestation of juvenile delinquencies as well as gross indiscipline in our secondary schools. This manifests to poor rate of study, poor production and absolute waste of resources by parents, guardians and government.

Teachers' failure to use Information and Communication Technology (ICT) causes the scenario to perpetuate in our school system. Students display dislike and negative attitude in learning of science and technology related subjects and also show outright redundancy during science lesson periods. Teachers on their parts remain confused on what to do to bring back such students to the classroom. Evidence is shown

by the fact that only very few students offer science subjects in secondary schools They claim that learning of science subjects is difficult, task full and cumbersome. This suggests the reason why students engage themselves in feeble and unproductive ventures during science periods. Each of the students has inherent potentials and talents that could be harnessed and directed towards effective learning of science subjects but has no orientation towards this direction. Teachers require diversification of the teaching strategies instead of lending fast on poor planning, static teaching and non use of mediated instructional programme. It becomes the function of the science teachers to capture, reinvigorate and propagate talents among a great number of learners to show affinity to science subjects.

This paper considers the adoption of mediated instructional strategy to remove redundancy from secondary school students and promote science learning. This is considered vital with the fact that teaching implies tendering, ordering, altering, control, propagation of behavior and informing which tend to flow from the experienced to the inexperienced or subordinate persons (Etim, 2008). Teaching portrays not only the powering concept but also the master/servant relationship. However the present ICT era requires a balanced communication between teachers and students.

With the modern pedagogical strategy in human engineering and human learning, instructional process has acquired a more democratic perspective. The teaching learning situation implies the intentionally, judiciously structured and sequenced tasks capable of facilitating learning outcome desirable to the stake holders in education through *objective* evaluation of learning outcome. Mediated instruction is the key because interactivity and rehearsals remains the key to instruction. Any behavior that is rehearsed will repeat itself (Etim, 2006.) Adoption of mediated instruction through the use of ICT when designed in specifications, interactive models and made related to the needs of learners can broaden the field of experience of science students. Mediated Instruction involves the use of ICT devices to effect and instill effective classroom communication during science lessons. ICT encompasses computer, internet and all other broadcasting technologies such as radio, television, telephone, etc. ICT is an electronic system of information that deals with transmitting, processing, retrieving of information to include computer software, networking equipment system among others. It means how to use computer across the globe and across all areas of specialization or discipline (Fagbemi, 2008 and Okojie, 2008).

Okojio (2008) explains that ICT is an umbrella in which all technologies for the manipulation and communication of information come under its shade. It encompasses all mechanisms used to record information eg magnetic disc, tape, optical disc CD, DVD, flash memory drive and paper record. It also includes broadcasting set up such as radio, television, and technology for communication through voice and sound or image, microphone camera. Loudspeaker, telephone or cellular phone etc. It involves wide variety of computing hardware, PCS, server mainframe and network storage.

Problem Statement

Learning habits and culture among our student in secondary schools is very poor. This is precipitated by the transfer of rote learning mostly adopted in our pre-primary and primary schools to secondary schools. The much talked about poor quality in Education and high failure rate is partly caused by teaching strategies of teachers and poor habit exhibited by student for learning. Unfortunately too, in Nigeria, the traditional pattern of teaching has remained unchanged. The typical teaching strategy is built on authoritarianism and didactic approach. These strategies do not prepare our student for this information age and globalization. There is total lack of awareness and literacy in the use of ICT as veritable tool in instruction as well as absence of or poor skills to develop and use ICT devices in the classroom. This present serious set back in our science teaching. Teachers require tools and techniques to develop computer based class lesson activities specifically designed to improved teachers teaching and students learning. This is lacking in our classrooms. The dearth of these indispensable materials in secondary schools and their application in the teaching leaning process is the concern of this study. One may ask if the use of ICT devices in the teaching of science subjects can encourage students to learn science concept instate of playing redundancy during science lessons.

Methodology

Two hypotheses were formulated to guide the study. The hypotheses were as follows:

- 1) There is no significant influence of mediated instructions on redundancy remediation among science student in secondary schools.

- 2) There is no significant effect of the use of mediated instructions on academic achievement of science student in secondary schools.

The study adopted inferential survey and quasi-experimental designs to purposefully select two secondary schools for the study. From each schools, two intact classes of 50 students each were used as experimental and control groups. A total of 200 students were used for the study. A computer designed instruction on circulatory system developed on power point projection was used to treat the experimental group while the control group was taught using expository strategy. A fifteen item structured questionnaire was developed on a 4-point rating scale responses of strongly agree, agree, disagree and strongly disagree to elicit information on availability of Information and Communication Technology (ICT) facilities in schools and their influence on redundancy remediation. Redundancy Remediation Achievement Test (RRAT) developed on a-4-point option lettered a-d was used to test ability levels of both experimental and control groups as well as their affinity to sciences. The questionnaire had reliability co-efficient of .72 while that of RRAT stood at .85 using Spearman Browns' prophetic formula and Kadar Richardson formula 21 respectively. The instruments were administered by the researcher and research assistants. The data were analyzed using t-test statistics at 0.05 significant level.

Results

The result of the analysis showed a significant influence of mediated instruction on redundancy remediation (t=13.6, df= 49, p=<0.05). This is as shown in the table 1 below:

Table 1: t-test analysis of mediated instruction and redundancy remediation in sciences.

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair1 RR - AV	28.7600	11.99585	1.69647	25.3508	32.1692	16.953	49	.000

The analysis as shown in the table I reveals that the use of mediated instruction significantly removed redundancy from science student. The null hypothesis of no significant influence of mediated instruction on redundancy remediation is hereby rejected.

The study also showed a significant effect of mediated instruction on academic achievement of science students. (t=16.95, df=49, p=<0.05). The analysis is as shown in table two.

Table 2: t-test analysis of the effect of mediated instruction on academic achievement of science students

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair1 AV - RR	21.4000	10,90591	1.54233	18.3006	24.4994	13.875	49	.000

The result as shown in table 2 reveals that the use of mediated instruction enhanced academic achievement of science students. The null hypothesis is thus rejected. This implies that the use of mediated instruction significantly improve academic achievement of science students.

Discussion

The result of the study reveals a significant influence of mediated instruction on redundancy remediation. The reason for this result is obvious. The attributes and advantages gained in the adoption of ICT directed instruction are enormous. For example the instructional program will simplify concepts for the learners. Reasonable access to the ICT has been shown to be very important for the acquisition of competencies in practical learning. With availability and application of ICT during science lessons, learners can have access to information, create information and communicate with one another. The use of ICTs during lessons can promote interest and motivation, and develop positive attitude among science students

This art of thoughts and practice has generated a renewed sense of craftsmanship in teaching and also enlarged the possibilities of knowledge, action and moral obligations on the parts of both teachers and students. This strategy therefore becomes a systematic approach to quality assurance. This technology can also correct wrong impression about events, things, mechanisms and places. Adoption of ICT in the teaching of science subjects has the capability of encouraging students gravitate to science concepts. This findings support the study of Chugani (1997) who postulated that the use of ICT is a realistic strategy because it is teacher and learner controlled instructional strategy. Educational VCD and DVD can be projected from the computer lab top to the screen or the use of interactive board or other multimedia alternatives can mediate instructional process. The nature of mediated instruction ie its dynamism, interactivity, flexibility and engaging content becomes very useful especially when simulations and animations are involved. The study supports

The findings of Dowin (2006) who opined that mediated instruction encourages interaction and cooperation among students. Mediated instruction also has the potential of enriching instruction, accelerating learning, motivating students, and engaging them in skill promotion. This study is also in line with the submission of Goldenberg (2006) who postulated that mediated instruction has enhanced potentials that facilitate the rate of learning as well as academic achievements and excellence among science students. Learning therefore becomes more efficient and more productive. With this result mediated instruction is seen to explore high level cognitive activities such as autonomy to learning, creativity, problem solving and team work among students and teachers. With mediated instruction, materials can be generated from various search engines such as goggle.com, www msn.com, www about.com etc .These are used as rich sources of information for reading, activity based instruction and research. Teachers and students cannot stop using this indispensable source of knowledge skills and information that can enhance learning achievement and competencies among students and teachers.

Recommendations

- 1 Teachers should be trained to use ICT facilities so as integrate it into the teaching learning situation.
- 2 ICT facilities should be provided in schools to enable both teachers and students gain access to such facilities.
- 3 Curriculum contents should be expanded to accommodate the use of ICT facilities.
- 4 Seminars and workshops should be frequently organized for both teachers and students to emphasize the use of ICT facilities in the teaching learning process.
- 5 Government and non governmental organizations should be involved in the provision of ICT facilities.
- 6 Computer literacy should be pursued vigorously for teachers in secondary schools.
- 7 Internet facilities should be provided in all schools to ensure connectivity to internet network.

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