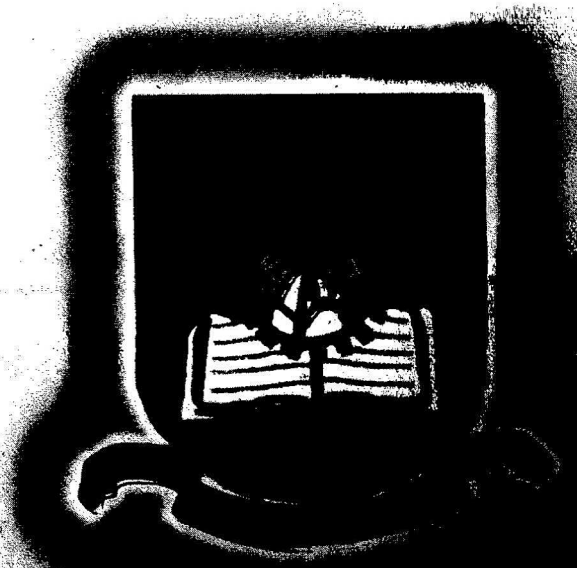

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SCIENCE AND DEVELOPMENT

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Theme:

Chapter 1

ICT Resources for Improving Teaching and Learning Science: Availability, Accessibility and Utilisation in Lagos State University

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Abstract

This study investigated the availability, accessibility and utilization of ICT in science instructions in tertiary institutions, using Lagos State University as a case study. Two hundred students from departments of science and technology education in the faculty of education and physics, chemistry, mathematics and computer science in the faculty of science were the sample for the study. Descriptive survey design was used and ICT for science instruction questionnaire was the instrument used (a = 0.968). The result was presented using percentage. It shows that ICT resources were not available in cores areas as departments, the classroom and that accessibility to ICT resources of the school library, Zennith-ICT and school ICT centers are inadequate. Respondents believed that they have substantial knowledge of ICT resources and as such cannot be responsible for lack of its use in instructional delivery. The major sources of personal access to internet were business centers and GSM services. Recommendations include that classroom be equipped with ICT resources, teachers should encourage the use of internet for the purposes of assignments and project works.

Key words: *availability, accessibility, utilization and ICT.*

Background

Information and Communication Technology (ICT) has evolved to become a natural part of people's lives in modern western information societies, where the internet for instance is used to read newspapers, pay bills keep in touch with friends and for information for private and professional purposes.(Songa, 2005)

The provision of ICT to schools and its use for educational purposes can increase students' achievement in at least two ways. First, the availability of ICT in the classroom shifts the level of educational inputs and could thus affect students' learning outcomes. Second, exposure to ICT may increase the cognition ability of students allowing then to learn fast. Computer-aided instruction may be more relevant in a context in which teacher quality is poor, which is the case in most developing countries.(Carrillo, Mercedes and Poule, 2010)

Studies have shown that the growth of ICT has drastically reshaped the teaching and learning processes in our universities (Oye, Shallsuku & Iahad, 2012; Pulkkien, 2007; Wood, 1995). It is believed that ICT for education is more critical today that before, so also there are evidences that higher education around the globe have increasingly adopted ICT tools for teaching, curriculum development, staff development and students learning (Kumpulainen, 2007; Usluel, Askar & Bas, 2008).

Several authors have defined and conceptualised ICT and its resources. In the opinion of Oye et al (2012) that ICT "refers to firm of technology that is used to transmit, store, create, share or exchange information. This broad definition according to them, include such technologies as radio, television, video, DVD, telephone, satellite systems, computers and network hardware, and software as well as the equipment and services associated with these technologies such as video conferencing and electronic mail.

Umoren (2006) conceptualized ICT resources as e-learning web-based learning, audio media teaching and learning that involves compact discs, graphic tests, and power point presentations, while Oye et al says e-learning is a unified terms used for on-line learning, web-based training and technology delivered instruction.

E-learning according to Condie and Munro (2007) is an approach to facilitate and enhance learning both through computer and communication technology thus recognising that they are more able to focus on patterns, connections between multiple representations, interpretations of representations (Godwin & Sutherland, 2004; Ruthven, Hennessy & Brindley, 2004). Productive instructional delivery is also believed to enhanced learners creative and intellectual development through the use of ICT resources particular, in the use of multimedia images, graphics, audio, text and motion for high quality learning, as ICT as instructional delivery tools can be used to explore, investigate, solve problems, internet, reflect and reason and learn concepts in the classroom (Jude & Dakoro, 2012, Umoren 2006).

Statement of Problem

The use of ICT in education has the potential of enhancing the quality of teaching and learning, the research productivity of teachers and students and the management and effectiveness of institutions (Kashorda et al, 2007).

However, opportunities for realizing these huge potentials are often challenged with difficulties such as accessibility and utilization. This study is tend set to investigate the extent to which science students in Lagos State University have access to and utilize ICT facilities in the university.

Purpose of the Study

1. To find out the availability of ICT resources in Lagos State University.
2. To find out how accessible are these ICT resources to students in Lagos State University.
3. To find out the extent to which these ICT resources are used by lecturers for instruction delivery.

Research Questions

1. How available are the ICT resources in Lagos State University?
2. How accessible are the ICT resources to students in Lagos State University?
3. To what extend do students use ICT resources for learning science?
4. Do science lecturers use ICT resources available for delivering lectures?
5. What factors are perceived militating against the use of ICT resources for delivering instruction?

Methodology

This study adopted a descriptive survey research design with sample of 200 students randomly selected from students in the Department of Science and Technology Education and Departments of Physics, Chemistry, Biology, Mathematics, and Computer Science.

The instrument used is an ICT accessibility and utilization questionnaires. The instrument is divided into two major sections (Section A & B). Section A looks at students background information. Section B also subdivided into subsections looks at availability of ICT resources in various units of the university system such as Library, Zenith ICT Centre, LASU ICT Centre, Departments, and Classrooms. It adopted multiple response systems such as strongly Agree, Agree, Disagree, Strongly Disagree on some items, while very often, often, rarely and never are required at other times.

The instrument was subjected to content and construct validity using three science education specialists who are conversant with ICT and its

coinages. It was also subjected to reliability testing using SPSS, statistical software and a reliability coefficient of 0.968 was obtained.

The researchers visited these departments and personally distributed the questionnaires and collected after three days.

The information collect were analyzed and presented in mean, standard deviation and percentages.

Result

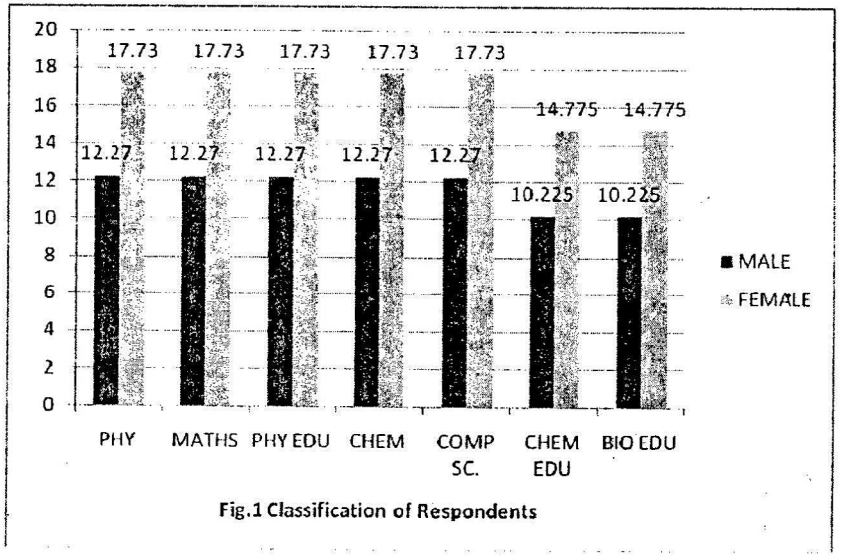
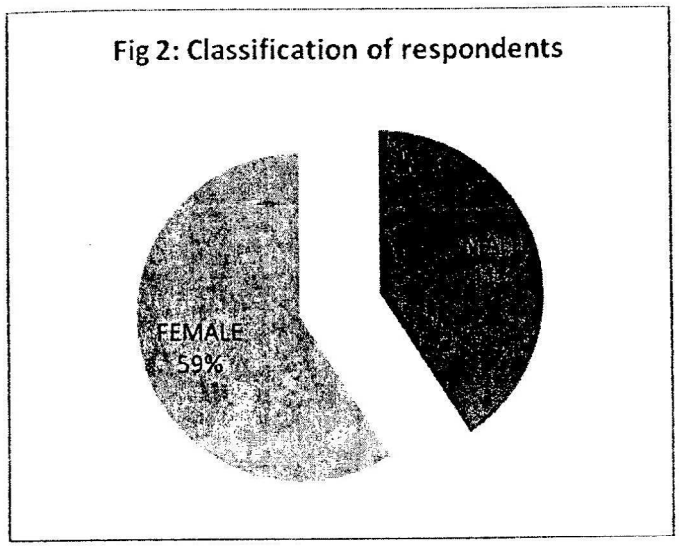


Fig.1 Classification of Respondents

Figs. 1& 2, show the classification of respondents by department and gender. In figure 2, 59% of the respondents were female and 41% were male. 15% each were from physics, mathematics, physics education, and chemistry and computer science while 12.5% each were from chemistry education and biology education (fig.1)



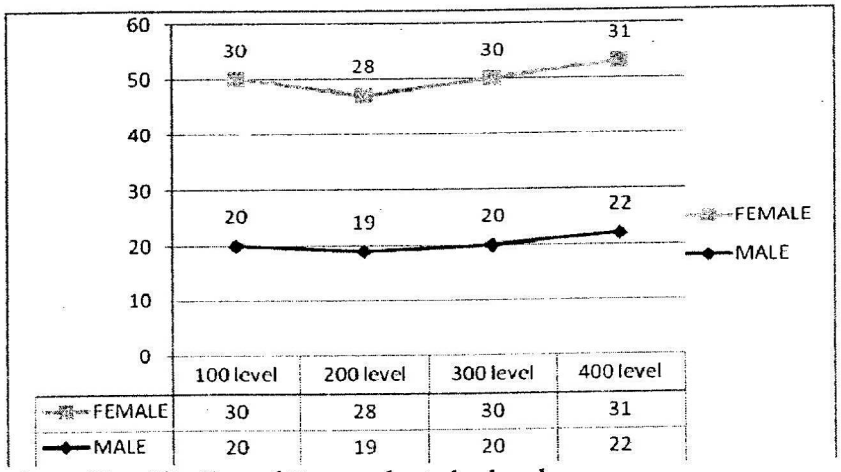


Fig. 3: Classification of Respondents by level.

From fig. 3, it can be seen that 25% of the respondents are in 100 level, 300 level each, while 26.5% are in 400 level and 23.5% in 200 level.

Fig.4 also shows the availability of ICT resources for educational use in the library. Majority of the respondents believed that these educational resources were not available in the library except e-mail and internet browsing (56.5%, 57.8%).

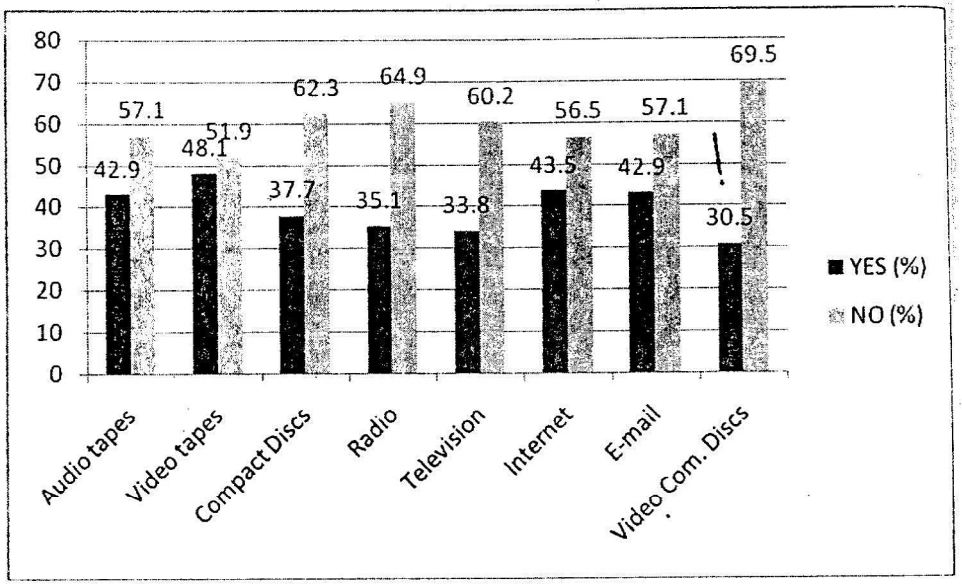


Fig. 4: Availability of ICT resources in the Library

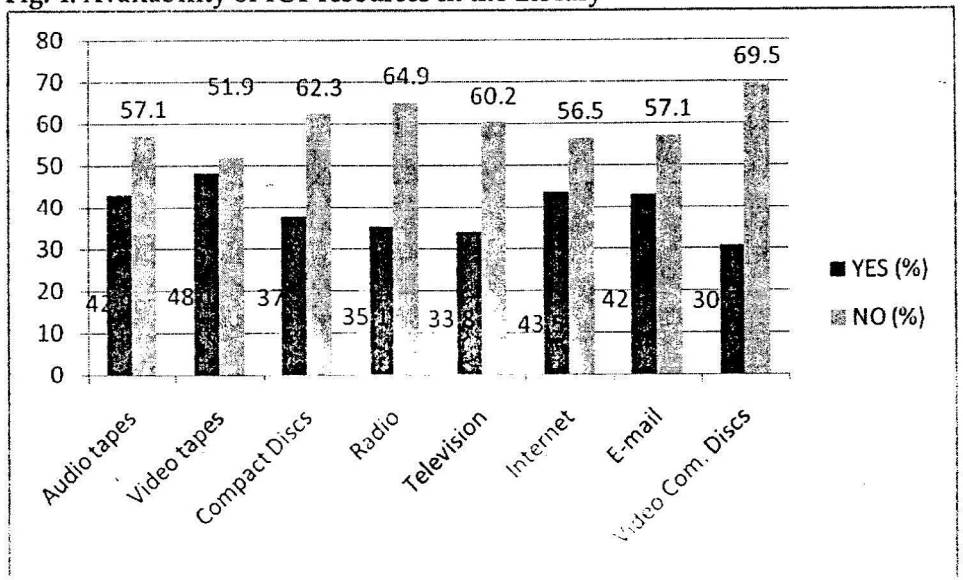


Fig. 5: Availability of ICT resources in the Classroom

In fig 5, it can be shown that more than half of the respondents reported that ICT resources are not available for educational use in the classrooms.

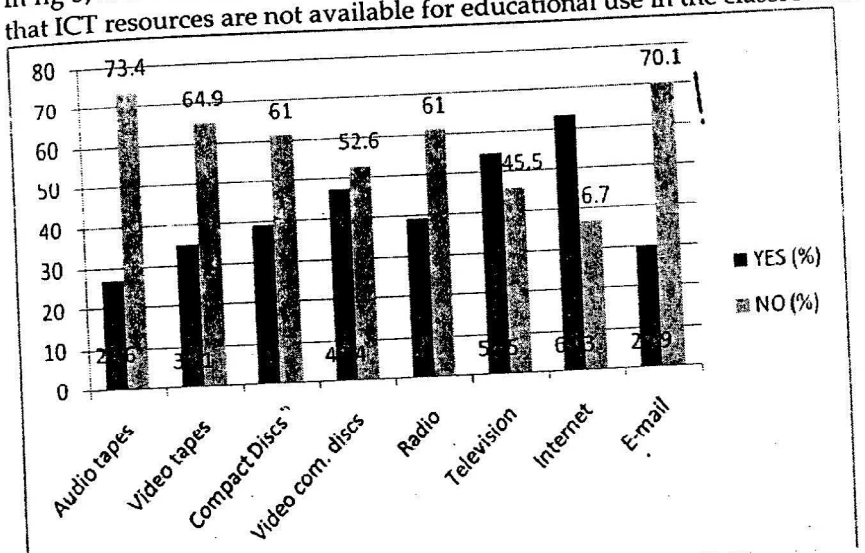


Fig. 6: Accessibility of ICT resources in the school ICT center.

From fig.6, it is clear that the respondents reported that there is access to internet (54.5%), e-mail facility (63.3%) but others are not readily accessible.

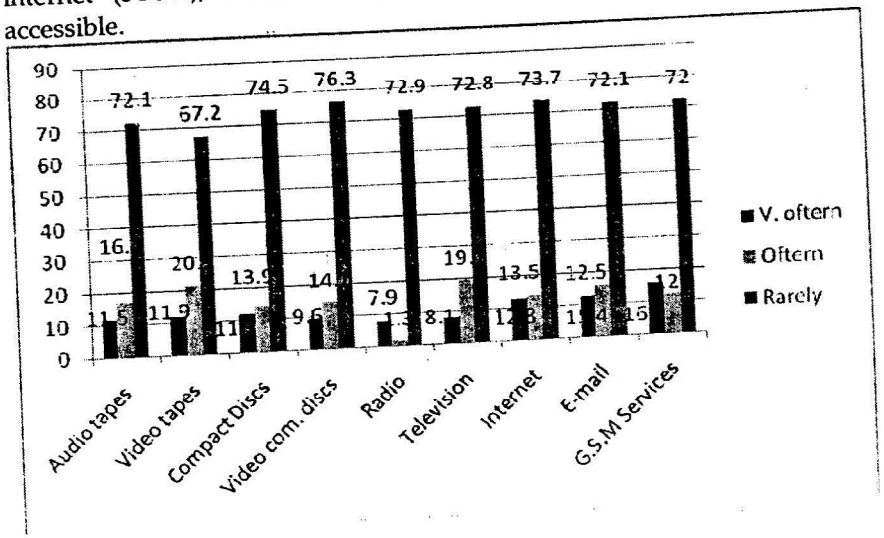


Fig. 7: Utilization of ICT resources in instructional delivery.

From fig.7, it is clearly shown that ICT resources are rarely used for instructional delivery (72%).

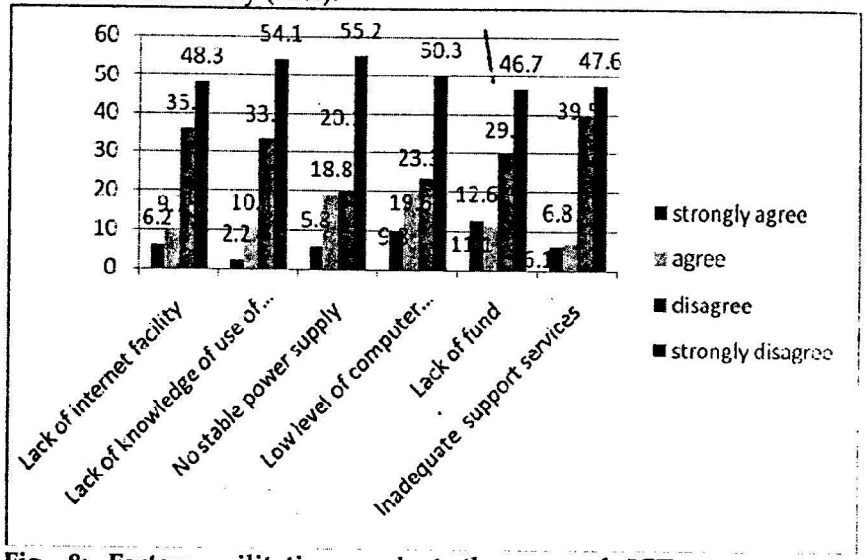


Fig. 8: Factors militating against the use of ICT resources for instructional delivery

When respondents were asked to indicate the factors that impede the utilization of ICT resources for instructional delivery, majority of the respondents agreed that the factors such as not lack of internet facility, lack of knowledge of ICT on the part of students, no stable power supply, low level of computer literacy among others were responsible for none utilization of ICT resources for instructional delivery.

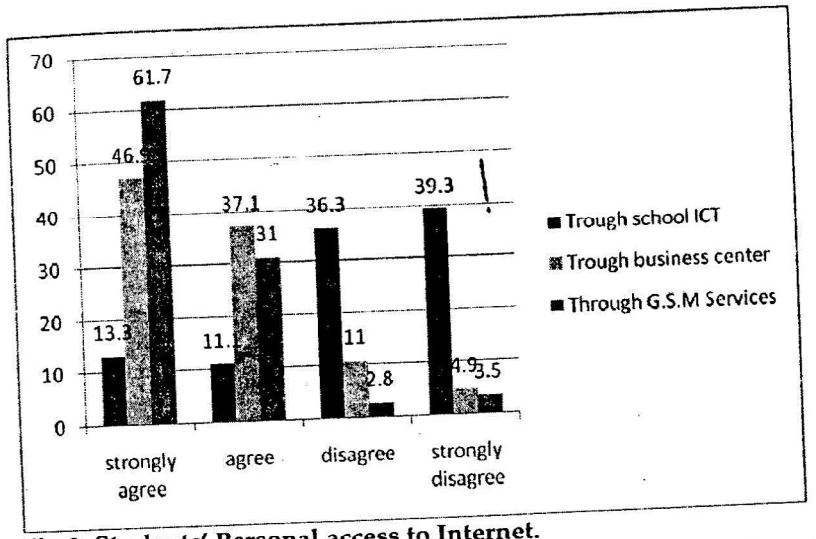


Fig.9: Students' Personal access to Internet.

Fig.9, shows that students' personal access to internet is through the G.S.M services (93.6%) and business center (89%).

Summary and Discussion of findings

The study found out that some ICT resources were not available for educational use in the library except internet browsing and G.S.M services, in the classroom, and the departments.

The study also revealed that the respondents do not have access to ICT resources in the library and in the school ICT center. Majority of the respondents reported that none of the ICT resources are being used for instructional delivery and that lack of internet facilities, lack of knowledge of the use of ICT by students and low level of computer literacy among student are not responsible for none use of ICT resources for instructional delivery (fig.8 & 9). The major sources of respondents' personal access to internet are through the business centers (89%) and the G.S.M services (93%). This has a wider implication for the use of ICT for instructional delivery in the higher institution. It shows that much of the curricular and educational system is still run from a mechanistic perspective in which knowledge is delivered in a linear format to the audience (Oye et al, 2012) neglecting the need to evoke the relevance of ICT in every sector of the educational system.

Conclusion

ICT in education is believed to be capable of enhancing productive thinking and creativity in students. In view of this science students must be engaged in the use of ICT resources so that their capabilities and capacities can be enhanced and expanded. This paper shows that ICT resources are not

available in the departments and the classrooms and in other place where these are available such as school library, school ICT center, students do not have access to them. This may mean that it is either the students are ignorant of how to access them or there are restrictions placed on the use of these resources.

Recommendations

There is no doubt that accessibility and utilization of ICT resources for educational use will enhance effective and efficient delivery of curricular in the university. Thus the school systems starting from the library, the department and the lecture halls must be equipped with functional ICT resources. The lecturer must explore the fact that students have internet enabled telephones to their advantages for assignment, and project works.

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