

USE OF ICTS IN EDUCATION: A CASE STUDY OF SELECTED URBAN BASED HIGH SCHOOLS IN LUSAKA, ZAMBIA

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ABSTRACT

This paper is based on a research that was conducted in seven high schools in Lusaka, Zambia on the utilisation of ICTs in education. Areas of ICT usage that were investigated included the use of ICTs in learning activities by pupils, the integration of different ICTs by teachers into the various teaching activities, and the use of ICTs in the operations of schools to improve administrative efficiency. Purposive sampling was used to select 70 respondents who actually used ICTs. Self-administered structured questionnaires were employed to collect primary data. The study yielded 90% response rate comprising 42 students and 21 members of staff. Among the major findings of the research were factors inhibiting full integration of ICTs in the teaching, learning and administrative processes. The paper concludes by recommending measures to be taken to ensure full utilization of ICTs in day to day academic and administrative activities.

1.0. INTRODUCTION

In this information age, everyone requires information and communication technology (ICT) competence to survive. To borrow the words of Adomi and Kpangban (2010), the ability to access and use information is no longer a luxury, but a necessity for development. Mulauzi (2007) also asserts that “information and access to ICTs are no longer a luxury, but a human need and basic right”. ICT refers to technologies that provide access to information through telecommunications. This includes televisions, radios, satellite, the Internet, wireless networks, cell phones, and other communication mediums. These ICTs have a significant impact on all areas of human activity (Brakel and Chisenga, 2003) and the education sector is no exception.

ICT has affected teaching, learning and research (Yusuf, 2005), with the potential to improve the quality of education. What then, are the potential benefits of ICTs to education, particularly at high school level? In group research projects for instance, pupils can have an online collaborative platform where they can share information and ideas and work on the project simultaneously across space and time. This has the added advantage of creating teamwork skills in the pupils which will be useful in their post high school lives. Secondly ICTs have the potential to increase learner independence and ensure pupils’ active participation in school (Newhouse, 2002). This is possible where pupils can have access to learning material independent of the teacher and can have self-paced lessons not restricted by space or time. In addition, a student can have access to electronic learning resources like Encarta encyclopedia, and other scholarly articles available electronically that have the potential to increase knowledge and add value to the pupils learning process.

Teachers can also benefit from the use of ICTs in education through integrating different ICTs into the various teaching activities. They can easily prepare, modify and distribute course material to pupils through email or Content Management Systems (CMS) that allow one to place documents in a pre-defined area so that pupils can access such information. Non-teaching tasks such as calculating continuous assessments and assessing individual pupil's performance over time and other administrative tasks like compiling pupil's attendance hours in a particular school term can be easily managed by use of software applications designed to perform such tasks. Further, teachers can use multi-media such as projectors, audio-video and so on to present their lessons in different ways and have students make presentations using different multi-media.

ICTs can improve administrative efficiency. Such tasks as managing the school timetables, class lists, events, announcements, memoranda, and letters and personnel files can easily be accomplished through the use of ICTs like school information management systems, email, word-processors and spreadsheets. Financial activities like student payments, budgeting and reports can all be enhanced through the use of ICTs.

A number of studies have been done on ICTs and education and specifically investigating the benefits of ICTs in teaching, learning and administration in schools (GAID, 2009; Sampath, 2007; Grace, 2004; Hawkridge, 1990; Adomi and Kpangban, 2010). The results of the studies revealed that there was improvement in the attentiveness exhibited by the learner, students engaged more in reading and learning, the overall performance of students improved and teachers' competence when dealing with technology also improved.

The Zambian government recognizes the strategic role ICT can play in improving the quality of education. This is evident from the Ministry of Education's ICT policy on education whose vision is "to contribute towards reaching innovative and lifelong education and training through provision of ICT infrastructure to education institutions, content development, curriculum integration, teacher training, distance education, administration and support services as well as finance (Ministry of Education, 2007)." The government through, the Ministry, has embarked on several initiatives in collaboration with various partners, aimed at promoting the use of ICT in schools such as the Computers for Zambia Schools Trust, SchoolNet, UNESCO Distance Learning Telecentres, eBrain Forum and One World Africa. While much has been done to encourage the use of ICT in education in Zambia, it is still unclear what impact this has had on education and what benefits this has brought to teaching, learning and school administration.

2.0. RESEARCH OBJECTIVES

The main objective of the study was to investigate how urban based high schools were utilising ICTs in teaching, learning and administration. The specific objectives of the study included an examination of school administrators' attitudes and perceptions of ICTs as a teaching, learning and administrative aid as well as how ICTs are utilised in their day-to-day activities; teachers' attitudes, competence levels and actual usage of ICT as a teaching tool; and pupils' attitudes and perceptions of ICTs as a learning aid as well as how they actually use ICT in their learning process as well as how ICTs are utilised in their day-to-day activities

3.0. METHODOLOGY

A field survey was employed in conducting the study, which targeted two private and five government high schools. Ten (10) respondents were drawn from each of the seven (7) high schools, divided into three (3) teachers, six (6) pupils in grades 10, 11 or 12 and one (1) administrator, which brought the total number of respondents to one hundred (70). Purposive sampling was used to select only those respondents who actually used ICTs. Self-administered structured questionnaires were employed to collect primary data. The data was analyzed using the Statistical Package for Social Sciences (SPSS).

4.0. RESEARCH FINDINGS

4.1. Composition of Respondents

The study yielded 90% response rate comprising 42 students and 21 members of staff bringing the total number of respondents to 63. Pupil distribution by gender comprised 65% male and 35% female. In terms of grade 30% were in grade 11 while grades 12 and 10 pupils made up 35% a piece. The teaching staff taught subjects ranging from English, art subjects, science, mathematics and Information Technology. Composition of members of staff was 63% male and 37% female. This gender imbalance is not surprising as it is a reflection of the male dominated society in which the female are disadvantaged in all spheres of human development, the education sector being no exception.

4.2. Available ICT facilities in the schools

The study results revealed that all participating schools had computers with various application software ranging from word processing, database, spreadsheet and presentation software; and all schools had Internet access. Other ICTs that were available in the schools were telephones and faxes. None of the schools had radio or television. Teachers mostly accessed computers from the staff room while pupils used the computer laboratories.

4.3. Usage of ICTs

The computer was the ICT facility used the most in all schools as represented by 93% of the pupils while only 7% indicated that they used telephones and faxes. A similar pattern was noted among members of staff where 88% indicated that the computer was the facility they used most with only 12% stating that they mostly used telephones and faxes. These findings are graphically depicted in table 1 below.

Table 1: ICT facilities used by staff and students

ICT Facility	% of students	% of staff
Computers and accessories	93	88
Telephones and Faxes	7	12

4.3.1. Activities for which ICTs are mostly utilized

The findings as indicated in table 2 below show that pupils and teachers used ICT for similar activities, with minor variations. A good number of pupils (26.2%) mostly used computers and the Internet for school projects, while only 4.8% of teachers and administrators used them for compiling reports. However, a greater proportion of staff members used computers for storage purposes (28.6%) than did pupils (16.6%). A further 16.6% of pupils used ICT for accessing online resources for learning, as compared to 14.3% of the teachers who

accessed online resources for teaching. It is interesting to note that 11.9% of the pupils indicated that they used computers and the Internet mostly for personal work/projects, while another 11.9% indicated that they used the facilities mainly for communication (e.g. email, facebook, chat). In the case of teachers 19% used ICT for communication, 4.8% used them for correspondence such as letter and memorandum writing, and 14.3% indicated using ICT mostly for personal work or projects. It is also good to note that pupils using ICTs for entertainment (i.e. games, music and movies) constituted only 10% of the respondents as this demonstrates that majority of the pupils value the use of ICTs for academic purposes. The same could be said of teachers where 4.8% reportedly used ICT for entertainment. The study also revealed that 5% of the pupils used ICTs to participate in discussion forums, while 4.8% of teachers engaged in the same activity. This low participation in discussion forums by both pupils and teachers could be attributed to lack of awareness on majority of the respondents. Application of ICTs for lesson presentation was indicated by 4.8% of the teachers, which indeed is very low and this could be due to inadequate ICT skills on the part of the teachers.

Table 2: Activities for which pupils and staff used ICT

Activity	Pupils	Percentage		Staff
School projects/Reports	11	26.2	4.8	1
Information Storage	7	16.6	28.6	6
Access online resources for learning/teaching	7	16.6	14.3	3
Personal work/projects	5	11.9	14.3	3
Communication	5	11.9	19	4
Correspondence	0	0	4.8	1
Entertainment	4	9.5	4.8	1
Discussion Forum	3	7.1	4.8	1
Presentation of lessons	0	0	4.8	1

4.3.2. Frequency of use and levels of ICT use competence in the schools

With regard to how often respondents used the various ICT facilities in the schools, 35.7% of pupils said they used them more than twice in a week, 16.7% twice a week, 14.3% once a week while 33.3% of the respondents rarely used the facilities. Majority of the teachers (66.7%) used the facilities more than twice a week, 23.8% twice a week, 4.8% once a week while 4.8% indicated that they rarely used the facilities. This is well illustrated in table 3 below. The trend of ICT usage appears to be more among the teachers than among the pupils. There could be various contributing factors to this disparity, especially that a third of the pupils stated that they rarely utilized ICT facilities in their school. One reason could be

due to inadequate facilities and terms of accessibility of these ICTs. Low ICT competence could be another factor

Table 3: Frequency of use of ICT facilities

Frequency	Pupils	Percentage		Staff
More than twice a week	15	35.7	66.7%	14
Twice a week	7	16.7	23.8	5
Once a week	6	14.3	4.8	1
Rarely	14	33.3	4.8	1

The study revealed that among the pupils only 2% claimed to be highly competent in the use of ICTs as they indicated that they required no assistance in handling the technology. In contrast, at least 14.3% of the teachers asserted that they could use ICTs completely unaided. Pupils who rarely needed help in employing ICTs comprised 31% of respondents while 28.6% of teachers comprised this category. The bulk of pupils (57%) and teachers (57%) had a moderate level of competence as they required someone to assist them from time to time. There was a small number of pupils (7.1%) whose ICT competence was so low that they required assistance all the time. Evidently the schools need to conduct ICT training in order to enhance the skills of both pupils and teachers for them to competently utilize the technology.

Table 4: ICT competence levels of pupils and staff

ICT competence levels	Pupils	Percentage		Staff
Very High (unaided)	2	4.8	14.3	3
High (very little help)	13	31	28.6	6
Moderate (more help)	24	57	57.1	12
Low (help all the time)	3	7.1		

4.3.2. ICT enhancement programs in the schools

There are facts to indicate that high schools in Zambia do have formal programs for ICT skills enhancement. For instance 55% of the pupils and 53% of staff members indicated that they had acquired their ICT use competence through instructor based training offered by their schools. This information was provided by various respondents from all the schools, although some pupils from the same school thought their school did not have such a training program while others were not sure whether such a program existed in their school. One contributing factor could be that the training programs are not conducted regularly and poorly advertised. In some schools the program was conducted once each school term, while in others it was done twice or once a year. Despite the irregularity with which these ICT enhancement programs are held, some respondents did derive some benefits from them. For instance, 29% of teachers felt that they had been equipped to assist pupils struggling to use computers, 12% indicated that they had learned how to integrate ICTs in teaching and 6% stated that the acquired skills enabled them to work comfortably with ICTs.

4.4. Attitudes and perceptions on integration of ICT in the teaching- learning process

From the pupils perspectives, integrating ICTs in the teaching-learning process improved the learning process. This was the view expressed by 98% of pupils surveyed. Table 5 below depicts pupils' perceptions of ICTs and the benefits of using them for academic purposes. As can be seen from the table, only 14.3% of the pupils believed that ICT simplified lessons so as to make it easier to understand or that ICTs made lessons more interesting. This is no wonder seeing that teachers are not using ICT much in presentation of lessons as has already been observed when considering findings on the activities for which staff use ICTs. Pupils also appreciate that they are able to find a lot of useful information on the Internet and that these online resources supplement the textbooks. This is very significant seeing that many schools in the country do not have adequate textbooks to cater for all the pupils. Although only a third of the pupils (33.3%) believe that use of ICTs, and in particular Internet resources, improves learning outcomes, this could be the case for many more pupils if they prudently utilized such resources. As a result of their appreciation of the contribution that ICTs can make to their education, pupils expressed dissatisfaction with the time allocated for the use of computers and the Internet in particular (i.e. 53%). They recommended that the schools should acquire more computers and allocate more time for the use of ICT facilities. Other recommendations were that there should be strict supervision in order to prevent abuse of the facilities, and that more teachers should be trained to assist pupils in using ICTs.

Table 5: Pupils' perceptions on how ICTs enhances the learning process

Benefits from ICTs	Respondents	Percentage
ICTs simplifies lessons and make them more interesting	6	14.3
Find useful information on the Internet	21	50
Online resources supplement textbooks	3	7.1
Pupils develop search skills useful for the future	2	4.8
Pupils gain ICT skills useful for the job market	1	2.4
Improves learning outcomes	14	33.3

Teachers' perceptions of integrating ICTs in the teaching-learning process were a little disappointing in that only 48% of teachers felt the technology could bring benefits. Apparently 52% of staff are not aware of the ways in which ICTs can be applied in teaching and learning since they failed to indicate any benefits when asked. Again, this can be attributed to the low ICT competence levels among the teachers as already seen earlier in the

discussion that 57% of the teachers needed substantial help when using ICTs. Evidently they have not integrated the technology in their work and thus find it difficult to discuss the matter or express any view on something they have not done. Those teachers who valued the contribution of ICTs to education expressed views that everyone needs to access and should be able to use ICTs in their work for tasks such as preparation of tests and reports. Another reason they advocated for use of ICTs is that they can facilitate easy research and preparation of teaching materials.

5. OBSERVATIONS

- (i) The study has revealed that high schools in Zambia are using ICTs in the teaching and learning activities and that the computer is the ICT facility mostly used in all the schools.
- (ii) The usage of ICTs for such activities is very low as very few teachers and pupils are utilizing such facilities.
- (iii) Use of ICTs for administrative purposes is limited to report writing and correspondence as there is no evidence of any other usage such as financial and human resource management.
- (iv) All schools have some formal ICT training program, though in some cases these are not regularly conducted and evidently, they are poorly advertised.
- (v) ICT skills are low among both teachers and pupils
- (vi) Computers available are inadequate and time allocated for their use is insufficient
- (vii) Pupils appear to be more appreciative of the benefits of integrating ICTs in academic activities than the teachers.

6. RECOMMENDATIONS

- (i) Other types of ICTs such as television, radio, and video should be used in teaching and learning instead of concentrating on the computer and Internet resources.
- (ii) In order to increase the integration of ICTs in teaching and learning regular training programs should be conducted in all schools.
- (iii) Schools should come up with training schedules for ICTs and widely distribute them to teachers and pupils.
- (iv) School administrators should expand their application of ICTs beyond report writing and correspondence to include planning, financial and human resource management in order to fully benefit from the opportunities offered by the technologies.
- (v) School authorities should take advantage of available government ICT initiatives to acquire more computers for use by both staff and pupils.
- (vi) More time should be allocated for pupils to use computers and the Internet for research. This should be accompanied by close supervision to ensure that the facilities are utilized for academic purposes only in order not to deprive anyone of the opportunity to use ICTs to enhance learning.
- (vii) Teachers should take the lead in integrating ICTs in their teaching such as use of power point presentations, television and video.

7. CONCLUSION

The paper has shown that high schools in urban Zambia both in the private and public sector are making some use of ICTs in teaching, learning and administrative activities. Pupils have

demonstrated the desire to improve their learning outcomes by exploring various Internet resources and facilities such as discussion forums. However, such zeal is being inhibited by limited ICT skills, facilities and time allocated by the school authorities for use of ICT facilities. Teachers and administrators have not fully explored the various possibilities that ICTs offer in the administration of their duties. The recommendations that have been offered, if carried out will result in schools deriving maximum benefit from the integration of ICTs in teaching, learning and administrative activities.

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