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Mobile Learning: A Panacea for Distance Education in Zimbabwe

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ABSTRACT: The technological and socio-economic environment in Zimbabwe has created a demand for Distance Education (DE). Most of the people are in informal employment and must hustle every day to earn a living. This research studied what the learners' livelihoods were and how they were accessing the student online portal. The research found that students preferred to use mobile gadgets to access learning materials and interact with educators and their counterparts. The laptop and desktop were only used for assignment preparation. The research concluded that mobile phones were a panacea for distance education in Zimbabwe since it allowed students to engage in learning activities anytime anywhere. This suited the prevailing situation where mobile subscriptions were almost 100% and most of the people were engaged in self-employment. Institutes offering DE were recommended to deploy mobile phones in teaching and learning to draw learners from those people who must earn as they learn.

KEY WORDS: Mobile Education, Mobile Learning, Distance Education, Panacea to Distance Education, Online Learning, m-learning, m-education

I. INTRODUCTION

The COVID-19 pandemic has forced universities and other learning institutions all over the world to seek new ways of conducting business. Because of the new normal brought about by the pandemic, most learners and educators have found themselves involved in some form of Distance Education (DE) in one way or the another. Distance education has suddenly become a preferred mode of learning. In other parts of the world there is now a very thin line between distance learning and online learn. Distance learning has become online learning in places where Internet access is universal. In Zimbabwe online learning is still in its infancy, but stakeholders in education are advocating that online classes be conducted to take advantage of the emerging technologies. Osang, Ngole, & Tsuma, [1] lament that while the availability of new technologies has opened developing economies to the world market, little has been done to help deprived groups gain access to educational opportunities that it offers. Online learning is one of the fastest growing areas of education worldwide [2]. Like many other countries in Sub Saharan Africa, Zimbabwe lack infrastructure in wired connectivity, yet she has near universal wireless connectivity. Keegan [3] equates mobile phones to powerful computers in people's pockets and purses, although many people often do not realize it. The research sought to establish how distance learners were earning their living, what ICT gadgets they were using to access the student portal, and how they were connecting these gadgets to the Internet. The research found that most learners were in some form of informal employment. They could not afford the time needed to learn in a conventional learning environment. Scheduling challenges were high because most students were in the informal sector, and some must make errands every day to earn a living. They could not afford to use learning technologies that would tie them to a fixed gadget such as a desktop.

II. SIGNIFICANCE OF THE STUDY

In a world where a mobile revolution is taking place, and there is social media obsession all over the place, researchers should study how they can redirect this fascination in mobile online interactions to online learning. Many people spend many hours per day chatting in their social groups. Researchers should study the possibilities of deploying this social media enthusiasm to mobile learning. When mobile devices are deployed mobile education can commence without the need for procurement of extra gadgets. Most prospective students already have mobile phones in their hands.

**III. LITERATURE REVIEW****A. Accessing the Learning Management System (LMS)**

Distance education (DE) is defined as an educational experience where instructors and learners are separated in time and space [2]. Open and Distance education caters for the needs of persons who cannot enrol in conventional colleges because of one reason or the other. In this Information Technology era, DE has become synonymous with online learning. Online learning is simply distance education offered through Information Communication Technologies (ICTs). It allows the various groups of people, who are in different circumstances, to have a chance to access college education. This means learning can happen away from an academic institution and can lead to a degree or credential [4]. This inevitable move towards online learning has left both learners and educators wondering which ICTs were the most suitable to deploy in the Zimbabwean educational terrain. Valk, Rashid & Elder [5] argues that out of the many different forms of ICTs available in developing countries, mobile phones are particularly suitable for advancing education. Mobile phones allow an authentic learning experience to be realized at any time anywhere. Mobile technology is an interesting development to educators because all our prospective students own one of the mobile gadgets. Bradford [6] postulates that mobile technology is a revolution that has just occurred while we were not looking. While most of the current literature present mobiles as just another mode of eLearning, this study is trying to assess where mobiles stand in comparison with other ICT gadgets. This was done by assessing the pattern of use of the gadgets by students.

UNESCOITE [7] noted that Mobile learning enables learners to integrate learning with life and work. With mobile learning, education is no longer seen as a separate activity that must take place in a school, university, or other establishment. Education becomes part of all other livelihood activities. Peters [8] stated that mobile technologies can revolutionize the way people work and learn because learning ceases to depend on fixed locations. While universities in Zimbabwe are characterized by poor electronic resources, the idea of deploying mobile phones is attractive because they are already available in people's hands. Suki and Suki [9] views mobile devices as ubiquitous educational devices. The reviewed literature depicts a picture where we cannot ignore mobile technology in education.

B. How students were earning their living

To have a better understanding of why students opt for one gadget instead of the other, it was important to know the students' occupations. In Zimbabwe, most people are engaged in self-employment to earn a living. They are either in the fields doing some form of agriculture or elsewhere in some informal employment. For most people in the country, it is suicidal to leave these jobs to join a conventional college because their earnings will cease right away resulting in nasty consequences for the individual and his dependents. In a study comparing online and face-to-face learning, Horspool and Lange [10] found that students chose to take online courses to avoid travel time to class and scheduling problems. The fact that mobile phones can be wherever one goes suit the Zimbabwean situation where most people are in informal employment. It could be in the marketplace while they are waiting for customers. It could be in the commuter bus while they are ferrying their sales items to the next marketplace. Learning can take place in the fields during some break. Mobile education allows learners to learn as they work and earn as they learn. Most learners in open and distance learning do degree programmes related to their daily chores. This gives them an excellent opportunity to learn while they are practically in the actual environment. For instance, a farmer can learn Agriculture while he is in the field. A student of Commerce can learn about the dynamics of the market while selling his wares in a flea market or street. The learner can learn about what he is practising in real-time and immediately practise what he has learnt. He can also learn new ways of doing business in real time. This way of learning is very effective because the learner views it as worthwhile.

C. How students were participating in online tutorials

In a situation where students were not provided with any form of digital devices by their university, the researcher was interested to know what tools students deployed in online learning. Literature acknowledges the persistent challenge of lack of infrastructural development in sub-Saharan Africa [11, 12, 13, 14]. The lack of infrastructure such as fibre optic cables and fixed telephone lines impede the use of other technologies in Distance Education in Zimbabwe. Infrastructure for wired connectivity is expensive to install and cannot be afforded by the ordinary person.



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This calls for an alternative mode of connection. West and Vosloo [15] discovered that learners and teachers from Mozambique to Mongolia were using mobile devices to access educational content. They could converse and share information with other learners as well as elicit support from peers and instructors. In Zimbabwe mobile phones are readily available, and they enable learners to participate in an online lecture or tutorial from literally anywhere. Smartphones, like their larger cousins, the desktop and laptop can support multimedia processing. The voice communication is useful when the learner and the educator want to have a one-on-one conversation. If there is need for video group discussions, videoconferencing can be set up to achieve group discussions among learners or between learners and a lecturer. Where fast exchanges are required, mobile teleconferencing can be deployed. Mobile teleconferences can be conducted even during the night. Mobile phones can perform this function very well thus becoming very useful tools in education.

Video lectures are generally popular with students and lecturers [16]. Media such as illustrations, images, graphs, maps, animations, videos, slides, and text can enhance learning [17, 18]. A smart phone is a resourceful gadget that educationists and learners can deploy to make learning become less hectic.

IV. METHODOLOGY

The research adopted a quantitative methodology. The methodology was suitable for a sample of hundred respondents used in the research. The data collection tool used was a questionnaire. A frequency count of responses was tabulated generating numerical data which is best analysed using statistical analysis. Since the researcher was part of the institution being studied, it was better to use a quantitative methodology since it was objective, and it managed to minimise biases.

The population of the study was all students doing some form of distance learning in Zimbabwe. The target was all students in the Faculty of Technology, level 1 semester 1 at the Zimbabwe Open university. These students were learning through Open and Distance Learning (ODL). The Faculty of Technology was selected purposively for the study because their delivery mode was hundred percent online. A sample of 100 students was extracted from a group of 150 students who had enrolled in at least one of the courses in level 1.1. An invitation letter stating the nature of the study and asking students to participate was sent to the Whatsapp group that was created by the researcher for the purpose of making announcements and conduct group discussions. The researcher was the Programme Coordinator in the faculty. Those willing to participate in the study were asked to inbox the researcher. The 100 respondents were recruited on a first-come-first-served basis. Those who responded after the required sample had been reached, were politely told that the sample size was achieved, and they were not going to participate. A questionnaire was attached to an email sent to each of the 100 respondents. They were asked to download it, fill it, and send it back within 7 days. The researcher's Whatsapp number and email address were given as the two modes of sending back the filled questionnaire. The quantitative research method was used because it allowed the researcher to be objectively separated from the subject matter [19, 20]. Since the researcher was interested in a statistical analysis of the number of students using the available ICT gadgets in their studies, a quantitative research method was the most suitable. Besides, the sample size was relatively large, thus rendering any other method cumbersome.

V. DATA PRESENTATION AND ANALYSIS

Respondents were asked to provide demographic data by indicating their age group, gender, and occupation. They were also asked to indicate how they connected to the Internet. They were also asked to indicate the gadgets they used to access the student portal, engage on online tutorials, and prepare assignments.

A. Age of Respondents

The age of the respondents ranged from 17 to above 35 years. The lowest age was between 17 and 18 because university's minimum entry qualification is Ordinary Level. Most students in Zimbabwe complete Ordinary Level at the age of 16 or 17 years depending on whether they started grade 1 at the age of 6 or 7 respectively. This means that they can, at the earliest, enrol for a degree at the open university at the age of 17 years. Table 1 and figure 1 below shows the distribution of respondents by age group.

Age Group	Frequency
17-18	5
19-22	20
23-26	25
27-30	20
31-34	20
35 and Above	10

Table 1: Age of Students

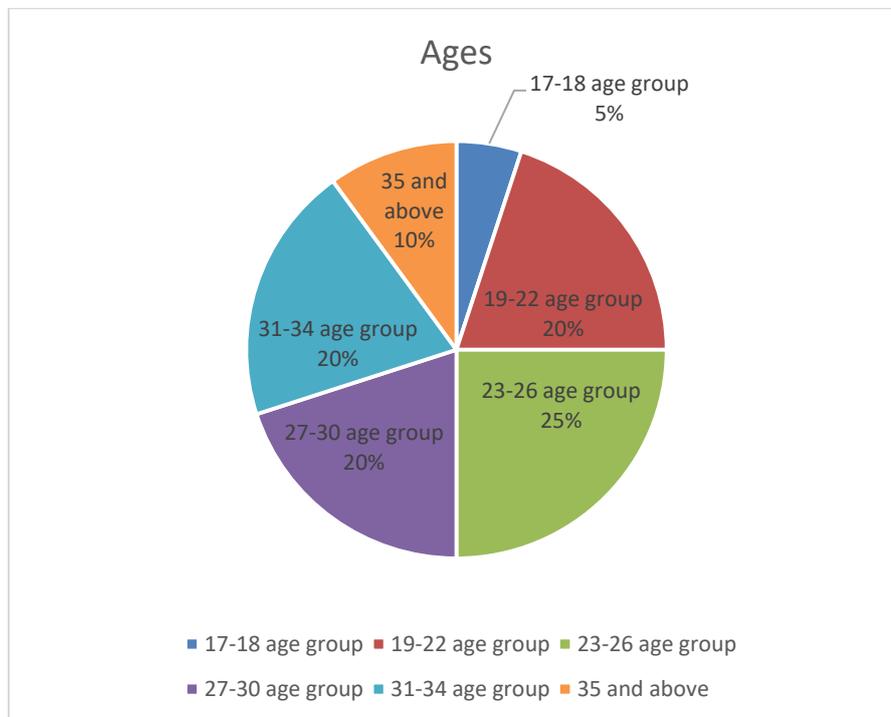


Fig1: Pie Chart of Age group

B. Gender

56% of the participants were men and 46% were women. Less women might be an indication that they face challenges entering colleges and universities after secondary education.

C. Occupation

Only 19% of the participants were in formal jobs. 50% were in informal jobs. 21% indicated that they were not in any form of employment. 10% did not reveal their occupation. In total, 69% were in some employment. This shows that most students who opt for open and distance learning have some occupation which might have prevented them from attending conventional colleges. It might also mean that they are engaged in employment to earn money for payment of fees. The distribution of respondents by occupation is shown on figure 2 below.

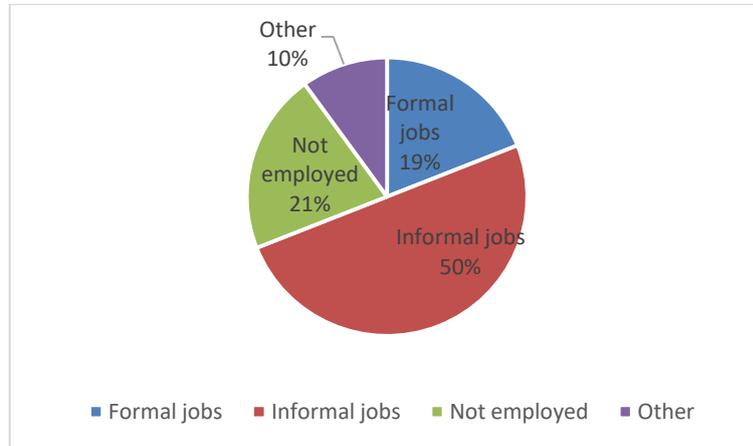


Fig2: Occupation

D. Network infrastructure used for e-learning

Three types of network infrastructure were used by students to connect to the Internet. In this study wired-connectivity refers to Internet access through use of ethernet cables and wireless-connectivity refers to Internet access through any form of wireless connectivity. Almost three quarters of the students used wireless connection. This reflects on the level of mobile access that prevail in Zimbabwe. All the three mobile service providers in the country offer internet services and the students could have been accessing Internet through mobiles. Table 2 shows subscribers by mobile service provider at national level.

Operator	3rd Quarter 2020	4 th Quarter 2020	Variance (%)
Econet	8,603,084	8,773,300	2.0%
NetOne	3,455,277	3,691,314	6.8%
Telecel	725,424	727,094	0.2%
Total	12,783,785	13,191,708	3.2%

Adapted from Table 3 of the Abridged Postal & Telecommunications Sector Performance Report: Fourth Quarter 2020 [21]

Table 2: Active Mobile Subscriptions

According to the table above, the total number of subscriptions in the country was more than the population of the country which stood at 13 061 239 [22]. This means that the country has achieved universal mobile access, if multiple subscriptions by single persons are not factored in. A comparison with fixed telephone subscriptions can illustrate the difference more clearly. Fixed telephone lines are used as media for wired connections in Zimbabwe. They have been in use since the dial-up connectivity using modems. While there is a decline in fixed line subscriptions, there is an increase in mobile subscriptions. This shows that the country was going the mobile direction.

Subscriber category	3rd Quarter 2020	4 th Quarter 2020	% Growth
Residential	147,398	145,502	-1.3%
Corporate	108,958	106,565	-2.2%
Total Active	256,356	252,067	-1.7%

Adapted from the Abridged Postal & Telecommunications Sector Performance Report: Fourth Quarter 2020
Table 3: Fixed Telephone Subscriptions

E. Network infrastructure used for e-learning

76% of students used wireless connectivity and only 24% used wired connection. This is supported by reports on subscriptions captured on table 2 and 3 above. A close look at Both corporate and residential telephone subscriptions against the population shows that, by 2020, just less than 2% of the population in Zimbabwe used fixed telephone lines. This shows that wireless connectivity was dominant. According to the World Bank Data [23], by 2019 Zimbabwe had 204,424 fixed Internet subscriptions. This agrees with the data obtained from this research. Students who access the Internet using wireless connectivity are more than those using wired connectivity.

F. Gadgets mostly used for accessing student portal

It was important to know what students really used to access the e-learning portal. The students would access the student portal to get learning materials, do learning tasks and join scheduled asynchronous online tutorials. They also access the student portal to download and upload assignments. Various digital gadgets were provided on the questionnaire, and the students were asked to indicate the ICT gadget they used most. The mobile phone was the most used followed by the laptop, and the tablet or iPad was on third position and the desktop was the least used. The Smartphone and the Tablet/iPad, both mobiles, were used by 50% of users. The laptop a relatively portable gadget was used by 36% of the students. This suggests that both connectivity and mobility influenced most students to adopt mobiles as the tools for learning. Table 4 and figure 3 below illustrates how the given ICT gadgets were being used by students to access the student portal.

Type of Gadget	Frequency
Laptop	36
Smart Phone	38
Tablet/iPad	12
Desktop	14

Table 4: Gadgets mostly used for accessing student portal

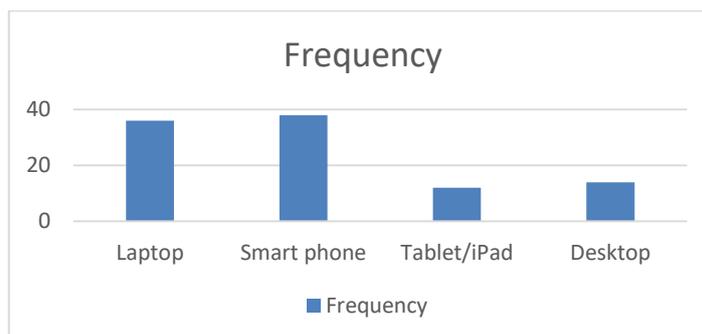


Fig 3: Gadgets mostly used for accessing student portal

**G. Gadgets mostly used for preparing assignments**

Assignments were mostly prepared by laptops. Desktops came second in use. Tablets came third and the Smartphone was least with two students only. This means laptops were gadgets of choice for preparation of assignments. Students prepare assignments using word processors and other application packages. Word processing requires typing. Students could have been held back from using Smartphones to prepare assignments because of lack of accessories such as rollable and portable keyboards. These accessories can be folded to the size of a Smartphone and are available on the market. This means that these accessories are just a phone-shop and a few dollars away from use. It is important to note that smartphone developers are designing phones that can also be used as projectors, and this addresses the issue of small screen size. These developments point to a future where mobile phones would have full capabilities of computers. Table 5 below shows that learners abandon mobile phones when it comes to word processing. This is because they present challenges when providing typing services without additional accessories attached to them.

Type of Gadget	Frequency
Laptop	56
Smart Phone	2
Tablet/iPad	20
Desktop	22

Table 5: Gadgets mostly used for preparing assignments

VI. CONCLUSION AND RECOMMENDATIONS

The information generated from this research convinced the researcher that the time for mobile education has arrived. The study found that most students were doing informal jobs. There were almost 100% mobile subscriptions. Most students had mobile phones and they accessed the Internet through wireless connectivity. They did most of their learning activities through their mobile phones. The enabling mobile environment in Zimbabwe, the social distancing and lockdowns induced by the COVID-19 pandemic and the preference by students to use mobiles over other ICT gadgets leads to a logical conclusion that mobile phones are a panacea for distance learning in Zimbabwe. This research amplifies the need for educators and other stakeholders to study how mobile phones can be integrated into teaching and learning in DE. The following recommendations should therefore be considered:

- i. Carry out more research to see how learning can be brought to social groups within the social networking environment since most students use their mobiles to participate
- ii. Courses and learning programmes, which are mobile friendly, to be developed to promote ODL
- iii. Government and Development partners to use mobile technology to reach out to those who need assistance during emergencies, since mobile phones would be accessible to those in need.
- iv. Massive programmes to train educators on how to integrate mobiles into teaching and learning be undertaken by educational institutions to enable them to tap into the unfolding mobile revolution

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