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Integration of ICT into Education: Lessons Learnt at the State University of Zanzibar and the Midlands State University in Zimbabwe

Shephard Pondiwa, Umayra El Nabahany and Margaret Phiri

Abstract

The provision of education using ICT has been adopted by many institutions in Africa. The use of ICT is critical in knowledge-based societies such as those in Zanzibar and Zimbabwe. This study looks at how the Midlands State University (MSU) and State University of Zanzibar (SUZA) have adopted the use of ICT in many ways. ICTs do not work for everyone in the same way. It has become inevitable, in the current digital era for educators to integrate ICT in their teaching and gradually replace traditional teaching methods with modern ones which are ICT led. The main objective of this study is to find out challenges and opportunities of using ICT in education.

Keywords: ICT, Integration, Midlands State University, State University of Zanzibar, Education

1. Introduction

There has been an increase in the use of educational technologies in higher education over the last decades [1]. The adoption and use of ICT has transformed education in a number of ways over the years. It has changed the way people think, work and live [2]. While teachers are sometimes seen as key players in the using ICT [3], students have also proved to be relevant and important stakeholders as their needs spur teachers and institutional administrators to be innovative. While it may be correct to say, “The adoption of educational technology in teaching depends on how well a teacher accepts it” [4] we argue that the success of the integration of ICT in education also depends on how much exposure and interest the learners have in ICT. This study focused on SUZA and MSU. While all other universities in the both Zanzibar and Zimbabwe have adopted the use of ICT in one way or the other, these two were chosen on the basis that they have the largest number of both lecturers and students and the study sought to investigate the impact of the adoption of ICT in education. The two institutions are state-funded and such the study examined the contribution of the state in ICT integration initiatives. The integration of ICT into education involves the use of computer-based communication into daily classroom

activities. It also means technology-based teaching and learning which contributes a lot in the pedagogical aspects where ICT application leads to effective learning.

Globalization has provided challenges that require educational institutions to embrace technology in learning and teaching. This is important because technology has become the knowledge transfer highway in most countries [3]. Conventional learning set-ups of the brick and mortar classroom have been overtaken by digital environments and the face-to-face mode of tuition delivery is fast being replaced by online articulated learning and knowledge delivery methods. Education experts argue that bringing ICTs into the learning environment will create opportunities for broader education initiatives that will bring pupils into the information era [5].

2. Adoption of the use of ICT at SUZA

The State University of Zanzibar started to integrate the use of ICT in its teaching and learning in the beginning of 2006. It started with the introduction of a simple E-learning platform (ZALONGWA) whereby the lecturers shared the lecture notes and assessments only. The platform was very limited in terms of students and teachers' interactions for example, students were not able to post, comment or delete anything. Things started to change when the Danish International Development Agency (DANIDA) supported project of Building Stronger Universities (BSU) was initiated in 2011.

The project funded the introduction, modification and implementation of the better e-learning platform. Moodle at SUZA from 2012 to 2019. This platform is more useful and allows online interaction among its users. A number of activities have been taking place at SUZA to ensure that ICT is used effectively in teaching and learning. These activities include (1) capacity development (including educational video production, OER integration and production), (2) mapping of students and lecturers' use of ICT and MOODLE and (3) development of guidelines and procedures [1].

Additionally, the university has been very supportive in making sure the infrastructures are there to support the integration of ICT in teaching and learning. Computer labs with access to internet, introduction of a Center for Digital Learning which records and airs teaching programmes to help the students across Zanzibar and production of a first ever Kiswahili Massive Open Online Course (MOOC) [6].

3. Adoption of the use of ICT at MSU

The use of ICT in learning institutions such as the Midlands State University in Zimbabwe must be understood in the context of the Millennium Development Goals that were set by the United Nations in the year 2000. These goals highlighted on the importance of computer technology in the global development agenda. The Zimbabwean government in its quest to achieve the millennium development goals developed a national Information and Communication Technologies (ICT) policy in the year 2005.

The ICT policy was also influenced by a host of other policies such as the Nziramasanga Education Commission Report of the year 1999, the national science and technology policy of 2002 and the vision 2020 policy. In particular, the Nziramasanga Commission recommended in support of the use and application of computers for teaching and learning in educational institutions. The National ICT policy that was adopted in 2005 makes significant references to the promotion of ICTs in education including their pedagogical use in educational institutions [7].

The integration of ICTs in the Zimbabwe teacher education curriculum was achieved through the CITEP (College information enhancement programme). This was a programme that targeted teacher training and polytechnic colleges. This programme did not initially involve universities. Universities and other educational institutions gradually embraced ICT in one way or another. It must be noted that the adoption of ICT at teachers' colleges in a way paved the way for universities to implement the use of ICT because some students came to university when they had had some basic knowledge of the use of ICT while in high school or at other colleges. Government also supported the Integration through providing funding and seeking donations for computer hardware and other related gadgets that are used in ICT. The Integration of ICT into teaching at MSU like at any other government educational institution is therefore, a development that was supported by both government and the university management.

4. Theoretical background

The study is informed by the Technology Acceptance Model (TAM). This is a model based on the understanding that technologies need to be accepted by teachers or students in the first place before considering training them to use technologies for various purposes. In this paper we emphasize that there is a relationship between acceptance and adoption. TAM postulates that the behavioral intention (BI) to use a technology depends on the potential user's attitude towards the technology, which in turns depends on the perceived usefulness and perceived ease of use [8, 9].

This model is relevant in this study in that the use of ICT at both MSU and SUZA was motivated by global developments which necessitated its adoption in the two institutions. Technological advancements on the job market as well as the adoption of ICT by other stakeholders that the two institutions deal with also helped to change the attitude towards ICT usage by the two institutions.

5. Methodology

The study employed a case study approach to study the integration of ICT in education at Midlands State University and the State University of Zanzibar. A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and with-in its real-life context, especially when the boundaries between phenomenon and con-text are not clearly evident [9:18]. The study used a total of 100 University workers and 150 students from the two institutions. 60 of the workers were from MSU and 40 from SUZA. Of the 150 students, 100 were from MSU whilst 50 were from SUZA. The study purposively selected the Directors of ICT of the two institutions and the rest of the respondents were randomly selected. This comparative analysis of the two institutions helped to make a closer look at the differences and similarities in the adoption and use of ICT in the two institutions.

6. Data collection instruments

Two questionnaires were developed and used. One was used to collect data from lecturers from the two institutions while another was used to collect data from students. Interviews were also conducted with randomly selected lecturers and students, as well as the Directors of ICT.

7. Results

Results from the study indicated that there has been the integration of ICT in education at both the SUZA and MSU and this has greatly changed the way teaching and learning take place at the two institutions. The integration of ICT in education has been influenced by the fact that the major stakeholders of the two institutions which are government, lecturers and students have embraced the use of ICT this is in line with the technology acceptance model where adoption of technology largely depends on it been accepted by the users. This section presents results from the study and these will be presented separately starting with the findings from the Midlands State University.

7.1 MSU

7.1.1 ICT in lectures and learning centers

Since inception in 1999, MSU has made strides in promoting the use of ICT in education. There is a compulsory module (course) that is done by all first-year students who enroll at the institution. The module is called Introduction to computer applications. This is meant to equip all the learners with basic skills of using ICT. Most of the students who enroll at the MSU come from high schools which do not have ICT infra-structure and as such they need such a module. As a way of encouraging the use of ICT in education, most lecturers have encouraged students to submit their assignments online. This has gone a long way in promoting the appreciation and use of ICT. By integrating ICT as a learning resource during regular classes, lecturers expose students to innovative ways of learning [10]. This was a departure from the traditional way of hand written assignments which would be collected physically by a class representative and dropped in pigeon holes of lecturers.

The Midlands State University had an ODL programme in which teachers were enrolled for Bachelor of Science degree in computer science. The programme was sponsored by UNICEF and it aimed to equip teachers with ICT skills.

MSU has 9 faculties and each of these faculties has a dedicated computer lab and this enables students to access information on the internet. This means that every student at MSU can access information communication technology while they are on campus. Apart from the faculty labs, the university has a computer center in the city center where every student and members of staff can access without having to travel to the main campus.

7.1.2 E-learning services

According to [11] the internet has become one of the vital ways to make available resources for research and learning for both teachers and students to share and acquire information. Since 2005 every student at MSU has had an e-learning account. It enables students and lecturers to interact using ICT. Lecturers and administrators post teaching materials to their students via the e-learning platform. Examination results are also posted on the e-learning platform. This is a change from the traditional approach where results were displayed on notice boards.

7.1.3 Social media

One way through which MSU has integrated ICT in education is through the use of social media. [12] state that web 2.0 such as social media, collaborative tools Wikis and others are among the emerging technologies that are used in higher

learning institutions in developed and developing countries. The study found out that some lecturers have opened up social media platforms that they use to post learning material. Even though there was no official social media policy at MSU until January 2021, students, lecturers and University administrators have gone on to use social media platforms such as WhatsApp, Twitter and Face book to share information and knowledge. Learning and teaching has taken place on social media platforms [13].

7.1.4 Infrastructure

To encourage the use of ICT, MSU has introduced a programme called Bring Your Own Device (BYOD). This has led to a rapid increase in the use of ICT in education. Under this programme students bring their own gadgets such as mobile phones, tablets and laptops and they connect to the internet. 46% of the interviewed lecturers indicated that when they gave out learning material, they assumed that students had gadgets that connected to the internet. However, is not always the case. Pondiwa and Phiri [13] argued that not all students have gadgets that are compatible with social media platforms and as such when learning materials are posted on social media such students may fail to access such material. The university has also invested so much in internet connectivity in all its campuses. There is Wi-Fi connectivity in all the campuses and learning centers. The university has promoted the use of interactive white boards instead of the traditional black boards. This has gone a long way in enabling a smart and conducive teaching and learning environment.

7.1.5 Library E resources

The university library has e resources and this has assisted students in a number of ways. They can access the library from anywhere for as long as they are connected to the internet. The Midlands State University has various electronic resources in the institutional repository. The MSU institutional repository is a platform where students and lecturers post their research material for others to access. This has gone a long way to promote knowledge sharing. This is a departure from the traditional approach where books and papers could only be physically accessed.

7.1.6 Policy

The use of ICT in education should be regulated by an official policy in order to yield good results. The study indicated that there was no explicit policy on the integration of ICT in education at both SUZA and MSU until the outbreak of Covid19. Before that, the choice of what to share on social media is left to the lecturer. On the issue of the use of social media as a learning and teaching platform, [13] posit that as at 2019 MSU did not have a policy that stipulated how social media could be used in education.

7.2 SUZA

7.2.1 Lectures and courses

At SUZA, depending on a degree and a semester the students are in, there are a number of compulsory courses that students have to take. Unfortunately, not all of these compulsory courses integrate the use of ICTs fully such as the usage of the Moodle platform. At SUZA the School of Education has the highest number of students. This is because majority of the students specializing in other fields such as

Sciences, IT and Arts have to take compulsory educational courses if they want to pursue the teaching profession after graduating. Other courses that are compulsory and have to be taken by all students regardless of the degrees they are doing are Communication Skills and Development Studies. These two courses have integrated ICT in teaching and learning.

7.2.2 Infrastructure and the use of e-learning

The State University of Zanzibar has taken major efforts in terms of infrastructure to ensure that ICT is integrated in education. There is a computer lab with internet connection at each campus to ensure that those students who do not have personal ICT devices are connected and can use the computers and internet for their learning. There is also free Wi-Fi across the university's 9 campuses to allow both the instructors and students to be connected to the internet through their mobile devices. The university has also introduced a Center for Digital Learning which works directly with the instructors and students in terms of producing educational videos for the SUZA TV. The Center for Digital Learning also conducts trainings on how to use e-learning and it also modifies and produces OERs and Kiswahili MOOCs. Despite all of these infrastructural efforts that have been taken by SUZA, there are still challenges that are faced by both instructors and students. The main shortcomings include poor internet connectivity. The other shortcomings are that sometimes there is no internet connection at all, power cuts, and the number of computer labs are enough to cater for all the users. Only 41% of the students can access these computer labs.

7.2.3 Policy

While there is an ICT policy, not everyone is aware of it. Until the outbreak of Covid19 which made it almost impossible to attend physical lectures during the lockdown, SUZA did not have an explicit policy that regulated the use of social media in teaching and learning. Only 20% of the instructors indicated to be aware of the ICT policy at SUZA. The rest of the respondents have no idea of its existence. This simply shows that even if the course instructors or the students do not integrate ICT in their teaching and learning they will not be asked to explain why. On the other hand, the university does not motivate those who integrate ICT into education thus integration is at the discretion of the lecturer. Despite the fact that majority are unaware of the ICT policy, the results indicate that both instructors and students are aware of the benefits that come with the integration of ICT in teaching and learning. Instructors (65%) indicated that they integrate ICT into their teaching due to the fact that ICT allows them to engage with students directly. 88% indicated that they were getting reliable content online through Open Educational Resources. Students also understand the benefits that come with the integration of ICT in their learning. The main reasons given by students include having an "easy access to course materials like lecture notes", "understanding the concepts easily through watching videos on YouTube" and "staying updated with notification with other students through social media platform like WhatsApp class groups".

8. Challenges and opportunities

There are numerous opportunities that both MSU and SUZA can utilize to successfully implement ICT integration in education at a higher rate. These opportunities include the presence of the Learning Management System, which is an essential

platform in e-learning. Availability of ICT experts in all the campuses at the two institutions is another opportunity that could change the rate of ICT integration in education. The majority of students at SUZA (71%) and 87% at MSU indicated that they were keen in using technologies for learning. The research indicated that there are some barriers that hinder the integration of ICT in education at both MSU and SUZA include lack of confidence, lack of competence in the use of computers, lack of electricity, lack of funding and lack of access to resources. It should be recommended that ICT resources including software and hardware, effective professional development, sufficient time, and technical support need to be addressed if integration is to be effective [3].

9. Discussion

This research revealed that at both MSU and SUZA, the use of ICT in Education has been adopted and has yielded a number of results. This has had an impact on teaching and learning. Similarly, while studying integration of ICT in education in Asia, [4] observed that Asian institutions that have utilized ICT effectively, have changed the way lecturers/teachers and administrators approach curriculum delivery.

9.1 Infrastructure

Integration of ICT requires a lot of Government and institutional support. 40% of Lecturers interviewed at MSU indicated that when they tried to integrate ICT on their own, they had faced many challenges. Some of these challenges stemmed from the fact that the institution does not have an explicit policy on when and how the ICT can be integrated. Most efforts during the first years of integration came from lecturers who were keen on the use of ICT. The research indicated that there is need for university management to commit themselves through policies and the provision of funds to ensure that there is adequate infrastructure and the human resources that enable effective integration of ICT into education. The problem of electricity was also found to be common at SUZA. This was also confirmed by an earlier study by [6]. A very important requirement of ICT is the availability of a stable supply of electricity and internet connectivity. The MSU has standby generators at all its campuses but these are very expensive to run such that at times when there is no electricity from the national supplier, the university has not been able to switch on all the generators. This has affected lesson delivery especially in cases where a lecturer would have planned to use ICT to deliver the lecture. The ICT Director at MSU when asked what Challenges the institution was facing in its efforts to integrate ICT in education he commented, "The greatest challenge is that of electricity supply. When there is a blackout this also affects internet connectivity. All our efforts to fully integrate are being hampered by the constant power outages. This has forced lecturers to go back to the black board, something we have been trying to move away from".

9.2 Training in ICT

At both MSU and SUZA not all lecturers are formally trained in the use of ICT, resulting in students losing out because of the limitation on the part of the lecturer. 30% of the lecturers interviewed at MSU and 41% at SUZA indicated that they had not received any training on the use of the ICT gadgets such as the interactive boards which the university acquired. This, according to the University

administration at MSU, had a serious impact on the university's efforts to have fully integrated ICT in all teaching and learning activities by the end of 2023. (MSU Strategic Plan 2018–2023) During a Risk Management committee meeting on 17 October 2019, the chairperson lamented the abuse of the interactive white boards by both students and lecturers. He indicated that there had been the use of sharp objects on the interactive board and this had affected the sensitivity of the boards as they could not properly function due to this abuse. This is indication that while there can be infrastructure; lack of training on how to utilize it can also hamper its effectiveness.

Despite the availability of ICT labs, not every student has had access to ICT based teaching material as most of them do not have gadgets that are compatible with the provided ICT infrastructure. Some do not have smart phones. Interviews indicated that when a lecturer posts material on social media platforms not everyone has access. Pondiwa and Phiri [13] argued that when lecturers use social media as a teaching and learning platform, there is an assumption is that everyone has access to gadgets that are compatible with social media platforms.

10. Benefits of ICT integration into education

This study indicated that new technologies spur spontaneous interest more than tradition approaches of learning. Both Lecturers and students from the two institutions indicated that they would prefer the use of ICT in education. 78% of students who answered questionnaire questions indicated that they would prefer to have lectures and other teaching material delivered using ICT. One learner from the MSU Harare campus indicated that instead of lecturers having to travel to campus they could just use ICT facilities such as Google class, Skype or the E- learning accounts of students to deliver teaching and learning material.

ICT promotes collaborative and cooperative learning. This happens when there is interaction and cooperation among teachers and students regardless of distance. ICT increases contact among learners and facilitates the level of communication between these students and their lecturers. The results from this research indicated that as numbers of students increase, lecturers find it convenient to adopt ICT as it becomes difficult to have personal contacts with the students. This is confirmed by Lau-rillard1994 who posits that ICT provides opportunities for departments, faculties and college and universities to communicate relatively easily.

ICT promotes creative learning in that it gives students greater chances of being independent and this gives them room to be innovative. Students at both MSU and SUZA confirmed that the adoption of ICT in learning has given them the independence in that if one misses a lecture they can still catch up if the learning material is posted on their e-learning accounts or other platforms such as Google class, WhatsApp and Facebook. The adoption of e learning provides institutions of learning such as SUZA and MSU with flexibility of time and place of delivery or receipt of learning information. Traditional teaching methods are relatively more expensive than the modern ones. One reason traditional teaching cost more than e-learning is because it involves more staff expenses. Faculties that used ICT had fewer teaching assistants as compared to those departments who used traditional ways of teaching. A departmental chairperson when interviewed commented that with the introduction of e-learning, the need for someone to always physically attend lecturers was now a thing of the past as it was now possible to post learning material on e-learning portals and students would access even without getting to the lecture room.

11. Conclusion

The study indicated that there has been massive integration of ICT in education at both MSU and SUZA. The integration of ICT into education, though faced with many challenges, has improved teaching and learning in a number of ways. The integration of ICT into education is an area that still needs a lot of commitment and investment if it is to yield better results. There is also need to continuously improve ICT infrastructure as it is ever changing.

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