

Facilitating Novel Teaching and Learning: ICT Challenges and Opportunities at the University of South Africa

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ABSTRACT The advent of the introduction of Information and Communication Technology (ICT) at higher education institutions in Africa has brought new meanings to globalisation of education and the building of new technological savvy campuses. New learning methods are advocating innovative levels of learning and teaching. This paper identifies challenges of introducing and utilising ICT at the University of South Africa (UNISA). A variety of methods were used to gather data in this study. Firstly, contemporary literature on ICT was reviewed. Secondly, the researchers used documentary analysis to explore the role-players’ response to ICT introduction at UNISA. The conclusions show that whilst there are challenges in ICT delivery of teaching and learning, there are quite a number of opportunities that can potentially expand learning in higher education institutions such as UNISA in the 21st century.

INTRODUCTION

Umunadi (2011) points out that the role of information technology in teaching and learning is rapidly becoming one of the most important aspects in the 21st century. Furthermore, this author states that, “in the information field, introduction of information and communication technologies (ICTs) to perform research, classify materials and help clientele seek information have opened many opportunities for further studies in our universities” (Umunadi 2011: 190). Hong and Songan (2011) support this when they contend that although universities in various continents might differ, some aspects will present common strands and these are issues of massification, internationalisation, diversification and marketisation of higher education. Cross-border academic activities have increased the need to utilise ICT in higher education institutions. Within the context of South Africa, one of the positive aspects of ICT is that it will enable students who are far away from cities to be able to be part of the universities that are situated in urban areas through the use of technology. This paper will look at both opportunities as well as challenges though.

Oliver (2013) avers that ICT is a force that has changed many aspects of the way we live. However, he also points out that there have been a number of hindrances impeding the full introduction of ICT and these include lack of funding to support the purchases of the technology implements, lack of training among the teaching staff, lack of motivation and need among teachers to adopt ICT strategies. Yet, despite

these challenges all institutions in private or in government seek to welcome technology as they respond to changing organisation structures of this century. The progressive universities also embrace technology because they want to better their delivery to clients. Campuses in the world are responding to change initiatives that organise our world.

This paper focuses on the developments at the University of South Africa (UNISA) as this institution is adopting a policy of going entirely online by the year 2015. UNISA is the oldest distance education institution in South Africa. Arguably, this move towards introducing and using ICT seems to be based on the assumption that all UNISA students will have access to and expertise on how to use ICT facilities. Furthermore, there might be implied assumption that ICT will improve learning and teaching at this open and distance education African university. There is a need to conduct a study to see the needs of many UNISA students. Preliminary studies are also necessary to conduct to see not only the perceptions of students but their fears as well. This study seeks to explore these. The researchers employed literature study as well as desk research to capture the crucial aspects before the introduction of a university that goes totally online. It is not only the students who will feel the pressure though; all those involved will.

Nwezeh (2010) points out that teachers in the developing world will have to change their teaching styles and acquire Internet skills as new technologies change the traditional classroom practices. Nwezeh also adds that teachers will

need to learn new skills to teach students how to search for and use information from the Internet. The Internet is fast becoming an effective teaching tool when used wisely. This paper will explore these and other implications for UNISA as it begins to adopt the use of technology policy. As we investigate this topic we will explore the challenges and opportunities of ICT at universities.

Objectives of the Study

The objectives of this paper are to utilise literature and empirical study to:

- Explore why the 21st century organisations seek to use technology;
- Understand the notion of ICT teaching and learning dynamics;
- Investigate the efficiency of ICT driven universities;
- Identify the challenges and opportunities of ICT introduction; and
- Understand the relevance of UNISA objectives.

The UNISA Context

The University of South Africa, like any other South African university is under pressure to provide quality education. Mouton et al. (2013) state that universities play a fundamental role regarding quality education. Moreover, these authors postulate that the purpose of higher education remains controversial as internationalisation is a given. UNISA is one of the biggest open distance learning (ODL) and comprehensive institutions in Africa. Teaching occurs through distance mode (UNISA 2009). There are no daily contact tuitions between lecturers and or tutors with students. Currently, this university has begun with the process of paying greater attention to the introduction and use of ICT in its teaching and learning operations (UNISA 2009). This notion is endorsed by the *Unisa 2015 Strategic Plan* document which points out:

Establishing a leading-edge information and communication technology architecture is vital for our competitive edge and sustainability. We must ensure that the necessary investments are made in this area. However, unless the potential of ICTs is liberated through proper in-service training of staff and development of sys-

tems, their promise in administrative and assessment systems and instructional processes will not be translated into organisational economies, strategic advantage, and quality gains.

The university will complete the above process by 2015 (UNISA 2009). As pointed out in the excerpt above, there are also drives to empower the teaching staff. As part of staff development, many calls are made for staff members to attend ICT programmes offered by UNISA in-house (UNISA 2009). Few ICT training programmes such as IPSS are outsourced. The university wants to ensure that hindrances towards the introduction of ICT are minimised. Arguably though, there has been less attention given to the empowerment of UNISA's students. Yet, one of the primary aims of introducing and using ICT at UNISA is to transform its distance delivery mode from the one based primarily on print-based study materials to a distributed learning mode in which almost all of the study material are obtained online. Teaching and learning interaction would take place online through processes such as the use of programmes such as Skype, emails, myUnisa (an efficient system used by both staff and students currently), short message service (SMS), video conferences, fax and telephone.

Literature Review

ICT and Open Distance Education in Brief

In this section we will briefly explore the two concepts, ODL and ICT. Jimoh (2013) looks at various definitions of ODL. Among these is the use of UNESCO's definitions which explain ODL as one of the growing fields of education which has potential to impact on all education delivery systems and has been accentuated by the development of Internet-based information technologies. This helps free learners from the constraints of time and space. Jimoh (2013: 3) explains distance education's aims as:

Increasing access to education for those who have difficulty in assessing it within the mainstream such as the poor, illiterate, women marginalised and those living in remote areas. Distance education is the means by which the teacher is taken literally to the student. It is a teaching and learning process in which students are separated from the teachers by a physical distance which is often bridged by communica-

tion technologies. Open learning...refers to policies and practices that permit entry to learning with no or minimum barriers with respect to age, gender or time constraints and with recognition of prior learning.

The University of South Africa has all these characteristics. The move to go online is a means of trying to reach as many students around the world. Within the context of South Africa the emphasis on ICT will address some of the requirements of post-apartheid education. Mouton et al. (2013: 289) point out that the post-apartheid system of education seeks to encourage the shift from social sciences and humanities towards science, engineering and technology. Therefore, UNISA's envisaged mode of delivery has a potential to address this. Mouton et al. also point out that higher education should be integrated with technology in order to accelerate student performance.

As highlighted in the introduction above, ICT integration in higher education has taken centre stage. Moreover, ICT is used to address several societal challenges including depleting natural resources as well as need to ensure sustainable development (Hong and Songan 2011). Umunadi (2011) concurs when he cites Edozie and Agu (2010) who explained that ICT empowerment enhance the abilities of people to use ICT to improve their life skills and strengthen their study abilities.

Ololube (2006) states that ICT has a potential to speed, enhance and deepen the teacher's skills, motivate and engage students in learning. Furthermore, ICT helps to relate school experiences to work practices, contributes to transforming a school and enhance teaching. Generally, much research as the ones cited above prove that ICT has potential to improve teaching. Below, we focus on positive aspects that UNISA students can benefit.

THE POTENTIAL OF ICT IN HIGHER EDUCATION: WILL UNISA BENEFIT?

When UNISA finally ensures that all the university programmes go online in 2015 it will certainly build on the current practice that among others utilises email, telephone, SMS as well as Internet use. The total introduction and use of ICT to facilitate teaching and learning in institutions of higher learning will be very advantageous. ICT has brought with it a number of positive aspects to university operations. Uni-

versities that utilise ICT optimally meet not only the needs of the workplace but also empower the students immensely. If UNISA can apply ICT in aspects such as conducting research, using ICT for teaching, using ICT in community development projects such as helping people gather information, it would be using ICT to serve the society. Empowering students to utilise ICT is to empower the present and future generations. Universities need to play this crucial role if they are to be deemed relevant. There is much need to address the ills of society and improving ICT is one way that will enable institutions such as UNISA to respond to some of these needs. Nwezeh (2010) argues that teachers in the developing world need to change their teaching styles and acquire ICT skills as new technologies transform classrooms over the next two decades. Furthermore, Nwezeh (2012: 2) postulates:

As at now, universities play a significant role in building up a country's capacity for mutually beneficial engagement in an increasingly knowledge based economic environment. Since universities are relevant in national development, information is very important for national development as well. So to help move the nation forward, the use of information and communication technologies should be encouraged and practiced...

UNISA's adoption of total ICT use will enable the institution expand its numbers. Cairncross and Poyti (2013) point out that universities that offer degrees only at a distance as well as the contact universities are able to expand their reach by offering courses at a distance to individuals or on satellite campuses. "In addition, many traditional universities offer a mix of delivery methods. Generally, the goal is to widen access and tap into markets that cannot be reached with more traditional approaches. Some offer the same course online and in a classroom; others use a hybrid mix of electronic and traditional method of delivery." (Cairncross and Poyti 2013: 15). UNISA is a traditional distance education institution. It has built on a tradition of correspondence mode to be where it is now as a distance education institution. When it goes entirely online in 2015, it will be building on the changing tradition over the years.

ICT at UNISA should be able to lure the technophobes, usually the older students who abhor the sight of computers and other related

gadgets. These are the students who prefer the paper use when it comes to assignments and study materials. Yet, as highlighted above, with ICT awareness and motivation, students of general studies gain abilities to participate in a networked information technology driven society (Umunadi 2011). Moreover, if a university such as UNISA trains more teachers in ICT, it implies that the country will have learners who are more aware of ICT thus enabling a more technologically hopeful future. Currently, there is a common belief that ICT in schools is of poor quality because of shortage of suitably qualified teachers (Koppi et al. 2008). Koppi et al. further stipulate that there is a decline in the quality of Maths, Science and technology (all enabling subjects for ICT) in secondary schools. The challenge then is on universities such as UNISA to improve their curricula. The "ICT vision" for UNISA is relevant considering the ongoing professional development still needed among teachers for example. ICT would help sustain lifelong learners and ongoing professional development and these are the ideals of post-apartheid education.

When UNISA achieves its focus on ICT strategy it will also be able to realise an emphasis on student abilities rather than on content and textbooks. Hong and Songan (2011) point out that ICT focused instruction encourages curricula that stresses competency and performance. "these curricula emphasise capabilities and place importance on how information is used and, thus require access to a multitude of information sources and information types. Learning is student-centred and learners require confidence in their core intellectual abilities, such as communication, interpretation, reflection and resolution" (Hong and Songan 2011: 1283).

The use of ICT in institutions of learning can also be attributed to the progressive changes the world is experiencing due to decades of research in human learning (Taylor 2004; Ashton and Newman 2006) which also includes teacher and lecturer education. This notion is further endorsed on by the findings of a research conducted on teachers' and lecturers' existing understanding of ICT and the way it changes as they learn to teach. In endorsing on the preceding notion, it could also be added that ICT thus serves as one of the critical learner support mechanism aspects of open and distance learning (ODL) institutions which have gained prominence with the use of web-based technologies for teaching

and learning at a distance (Kuboni 2009). To that end, Kuboni (2009) identified e-tutors and distance module coordinators as some of the supporters thereof. This author highlights that e-tutors could engage students during their studies, moderate discussions, respond to their queries, grade and review their work but also provide feedback to their assignments. They could also provide additional resource material and clarify concepts of course material. E-tutors ensure that learners actively participate in the process of learning to use ICT by showing, explaining and responding to their respective inquiries and queries on the subject.

Distance module coordinators could, on the other hand, provide overarching function of monitoring and guiding e-tutors through interacting with them (UNISA 2009). ICT can also enable students to research, gather, organise and present their knowledge in various forms such as graphics, images, text, graphics and videos. Module coordinators guide and monitor e-tutors so that the latter can help students to learn to use ICT facilities.

How UNISA Supports ICT

Students have access to myUnisa, send and receive emails from the university (staff and administrative staff members). myUnisa is a programme that is comprehensive and useful for all UNISA staff and students. The staff for example can use myUnisa to see the student progress and record student assessment. On the other hand students are able to communicate with lecturers and other students using the myUnisa programme. The teaching staff at UNISA is also continuously involved in staff development and training programmes. Most of them have a computer, a telephone in their offices and can communicate to students and other colleagues.

This section has shown how UNISA would benefit from ICT. Below, we present the challenges highlighted by a sample of UNISA students in a preliminary study utilising desk research to explore their attitudes towards absolute ICT use by the institution.

UNISA Adopting an Absolute E-campus: The Challenges

Some poor countries' students may not be in a position to afford formal education, let alone

a computer and downloading data from it. That is, not many students have computers and Internet resources (Dhanarajan 2001). The vastly spread students across rural and urban areas of Bhutan was identified as one of the challenges of introducing and using ICT (Jamtsho and Bullen 2007). Another challenge was the lack of support system learners needed to be in a position to use the introduced ICT resources. In a country like Turkey as well, one of the challenges of introducing and using ICT in some institutions included the lack of in-service training centres for students (Goktas et al. 2009). Dhanarajan (2001) also points out that the poor level of staff development and training in the use of ICT is one of the primary challenges on the introduction and use thereof. This is contrary to the investment of institutions in buying ICT software. The impact thereof is the poor quality of curriculum which is not keeping pace with global classroom trends.

It is not only developing countries similar to South Africa that experience the challenges of technology. Sorensen et al. (2007) examined changes in attitude and perceived challenges as well as barriers to practice the use of Internet in schools in England. They identified limited pedagogical guidance provided to students by well-qualified teachers and limited availability of good role models as some of the visible challenges of introducing and using ICT in institutions of learning. Lack of human resources such as lecturers and knowledgeable people who could train others on the use of ICT added to the challenge of introducing and using ICT in some Turkey institutions of learning (Goktas et al. 2009). These were also attributed to lack of in-service training, lack of human and physical resources as well as other support mechanisms.

Cairncross and Poysti (2013: 20) though list a number of positive aspects about ICT use in companies and liken this to institutions of learning. These authors point out that ICT delivered training in companies has served several benefits and many of these confirm the arguments made for distance learning offered by universities:

- It allows employees to study material where they want and at their own pace;
- It allows easy access to experts one good instructor can teach everyone;
- It speedily and inexpensively updated;

- It allows the progress employees make and the courses they take to be readily monitored;
- It allows courses to be tailored to an employee's individual skills and requirements; and
- It delivers the information when it is needed.

Like many modern universities some companies use various other means to communicate with employees including video conferencing. It is so easy today for students who have never met before to discuss online or form groups to share the study material. The above points are important and useful for higher education as well.

The discussion in the following section focuses on the challenges that students highlighted when it comes to technological use at the University of South Africa.

THE STUDENT'S PERSPECTIVE AT UNISA

Documentary evidence was collected from the UNISA student system as well as from the Department of Information and Strategic Analysis (UNISA 2009).

Student Profile

There are 249960 registered students. The number may increase with some students being registered on exceptional reasons. The characteristics below show some of the qualities of the students:

- 235373 have cellular phones;
- 137980 have personal email facility; and
- 147123 have a landline telephone.

If one looks at only one aspect above, the availability of email, one can see it is a challenge when so many thousands do not have an access to this facility. UNISA students are spread throughout the world. However, the majority of them are in sub-Saharan Africa. Of those students, the majority are in South Africa. They are spread throughout the country in both urban areas and villages. It is thus not easy to say what number is located in any of the two areas. Public transport cannot access some of the areas. That makes it difficult for those residents to reach towns and cities where there are Internet cafes. Some areas do not have cellular phone

network. Students who have cellular phones have to travel some distance to reach other areas where they could use them.

Cairncross and Poysti (2013) state that in setting up distance courses, universities, like schools often encounter unexpected problems. For students these challenges include being able to get a computer. Those in remote rural areas for example state that it is sometimes not possible to get an Internet café in the villages. One has to travel to a town close by and often these are kilometers away from home. There are also many students residing in rural areas who are not able to access recommended books because they do not have libraries in their locality. For these students the traditional study guides would have done a lot of good.

Although the *UNISA 2015 Strategic Plan* document propagates for the use of ICT, a number of factors were identified as possible challenges in introducing and using ICT at UNISA. These include student profile, programmes which are offered, student location and access to resources, staff training and student support system. Student enrolment at UNISA has grown drastically in the past five years (UNISA 2009). For example, over two hundred and fifty thousand students were enrolled at UNISA in 2009 (UNISA 2009). More than 50% of them came from poor socio-economic background and could not afford to buy and or own a computer. Besides, the majority was not computer literate and did not necessarily have access to computers.

The high numbers of student enrolments are a challenge which makes it difficult for UNISA to introduce ICT for the students. The poor socio-economic background of many students makes it difficult for them to afford computers and obviously this exacerbates the hindrances. A rule may need to be put in place, for example it might be proclaimed that all first year students enrolling should have access to computers and have basic computer skills. This arrangement appears to be effective in one of the Advanced Certificate in Education (ACE) programmes, namely, ACE in Computer integrated Education and all Computer programmes in the College of Science and Engineering (UNISA 2009) where accessibility and use of a computer and Internet for learning is mandatory. However, the socio-economic background of students has to be considered.

UNISA has more than 100 programmes which are shared by five colleges, namely, College of Agriculture and Environmental Sciences, College of Economic and Management Sciences, College of Human Sciences, College of Law and College of Engineering Science and Technology (UNISA 2009). These programmes are formal, non-formal and informal. Lifelong learning entails learning throughout life of a person. Formal tuition are programmes recognized for attaining formal qualifications such as degrees and diplomas. Non-formal tuition includes teaching of short learning programmes. These address specific needs in society and the workplace. Finally, informal tuition refers to unstructured learning which can take place anywhere including the home, community or workplace (UNISA 2005). These programmes range from certificate to doctoral programmes. The student numbers are not equitably distributed in each programme. Some programmes such as bachelor degrees in Economic and Management Science College have high student enrolments. There are more than 20 000 students registered in some modules such as first year and first semester Economics (UNISA 2009). Other Bachelor programmes such as those in the College of Science and Engineering have low student enrolments. Programmes with huge student enrolments could be a challenge for UNISA if it has to introduce and use ICT in all programmes offered. One of the primary challenges could include a mechanism of monitoring the introduced ICT which ensures that no students are excluded. Assessment such as marking essay type questions' assignments as well as essay type examination scripts could be pose a challenge for such sizeable modules.

A similar scenario is noticeable among many UNISA students in urban areas. Although in comparison to rural areas, those in urban areas have access to electricity and better accessible roads, not many of them have computers. Among those who could be having access to it, they may not be in a position to use it. However, many of them have cellular phones and can receive (SMS) messages from the university. The majority of UNISA teaching staff members have basic computer skills. They are trained as part of staff development, for example, to use a computer for typing and communicating to other people, students included, who use similar communication devices. Invitations are often ex-

tended to staff members for various computer training skills such as using a computer to conduct research (UNISA 2009). Many teaching staff members are, however, not specifically trained as e-tutors and distance module coordinators. One of the reasons for that situation is that training in the use of ICT facilities is not mandatory to all teaching staff members unlike the Assessor course (UNISA 2009).

There are tutors in place to help students in some modules at UNISA. They are located in various parts of the country. Their appointment however depends on the request made by students in a particular area. The number of students requesting for the appointment of a tutor is important. For example, a tutor is provided to students if they are more than 15 in a particular area. They are however not trained as e-tutors. That in itself does not alter the challenge of introducing and using ICT at UNISA. Module coordinators are resident lecturers who constantly communicate with students through cellular phones, emails, letters and landline telephones for those who have access to these.

CONCLUSION

This article looked at the reasons why the current universities need to use technology. It has illustrated that universities such as UNISA can in no way avoid ICT use if they are to be successful this century. Our global world is becoming smaller because it is wired and whether people like it or not ICT use is unavoidable. It is therefore crucial for universities to ensure that they offer effective teaching and learning in ICT because this will help enhance the knowledge of ICT in society. Whilst we did not investigate the efficiency of ICT run institutions, in future ICT might be linked with efficiency. There are challenges that need to be overcome, this is normal all programmes especially novel ones will always have these. It is up to the role-players to see how these are addressed.

UNISA's objectives are in line with what is happening around the world. However, this university needs to have well planned strategies to address the challenges. UNISA can make optimal use of its satellite branches around the country. Each centre can be utilised in training both tutors and students who need extra help in the use of technology. Below, the focus is on recommendations for this study.

RECOMMENDATIONS

At the completion of this study we drew a few recommendations that could help in ensuring that ICT use at universities such as UNISA becomes beneficial for all:

Firstly, it needs to be mandatory at all universities for students to be supplied with computers when they register. This can be costly but all programmes should include the computer in the costing for tuition. This has a potential of curbing student ignorance about computer use. Owning a computer might also ensure that all students especially those who had never used the computer, are able learn using these implements.

Secondly, universities need to work with communities around them to teach computer skills in selected schools. There are many people including professionals such as teachers who continue to fear technology in their lives. Volunteers from universities should formalise the teaching of basic computer skills to both adults and youth in disadvantaged areas.

Thirdly, universities need to gradually prepare their students as they move towards absolute technological use. This would help students not to be shocked by change as that would make them to be resistant to change. Many students in ODL are used to working on paper. The complete use of online learning will shock them. The academic staff should also be prepared to work with students as they try to improve their competencies.

Finally, More research needs to be done on the use of computers at universities and the envisaged challenges and opportunities. At UNISA for example more research needs to be conducted right from the beginning to understand the perceptions and actions of students using ICT for learning.

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