DIGITAL LITERACY AMONGST FIRST YEAR UNIVERSITY STUDENTS FROM UNDER-RESOURCED SCHOOLS

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ABSTRACT

Electronic Learning (E-Learning) has enabled students in higher education to access further learning resources online through mobile and digital platforms. Higher learning institutions have adopted E-Learning strategies and technologies to enhance the teaching and learning process. Such resources enable students to access learning material and content beyond the campus environment. Furthermore, the continuous use of e-learning enables students to enhance their basic computing and digital skills which would be vital for employment requirements. In an African context, although e-learning enables learning through various technology platforms, children from underprivileged backgrounds come with little to no computer literacy education to sustain the needs of mobile and electronic learning platform use in a higher learning institutions. Coupled with a culture shock of moving from rural and peri-urban environments to the urban university environments, e-learning can place great demands on student's basic digital literacy skills required in educational institutions. This study seeks to understand the e-learning challenges experienced by students from disadvantaged backgrounds with limited digital and computer literacy skills investigating how higher learning institutions can support basic computer and digital literacy acquisition. Through a quantitative case study in a South African university, 79 students provided perspectives on their experiences of transitioning to the computer and digital needs of higher educational institutions through a questionnaire study. This study found that the institution under study had placed various training and support programs at an institutional level to support student's computer and digital literacy needs. While such support was commonly acknowledged by participants, the study also found the vital role that faculty and various departmental level interventions can have in improving electronic and mobile learning experiences for students.

KEYWORDS

E-learning, South Africa, Digital Literacy, High Schools, Higher Education

1. INTRODUCTION

Electronic and mobile learning enables teaching and learning of any subject area through technology platforms with limited to no traditional face-to-face facilitation (Takalani, 2008). They provide various facilitation and learning tools such as message boards, chatrooms, and interactive assessments which can be marked by computers as well as unlimited access to electronic resources (Jantjies and Joy, 2016). E-learning can occur on mobile and desktop platforms and requires effective and efficient network technologies to ensure that it is used proficiently (Haddard & Draxler, 2002). South Africa, considered to be an emerging economy, has 26 public higher learning institutions. Many of these tertiary institutions have embraced Information Communication Technologies (ICTs) as a driving tool to facilitate and support E-Learning. Furthermore electronic and mobile learning have been adopted by many societies and institutions to achieve innovative competencies and to enhance quality education and social development (Denis, 2014). Moreover, the South African government has also firmly placed e-learning as an important aspect of teaching and learning in both basic and higher education in the South African context (DHET, 2001). With advancing technologies that support electronic and mobile learning such as augmented and virtual reality technologies also now emerging as emergent technologies in this area, we need to investigate the support which students can be provided in handling such demands. While many higher educational institutions have placed great investments and value in enhancing teaching and learning through e-learning, a lack of critical technical skills and embracing e-learning innovation

in basic education school levels has been reported as the major obstacle and challenge of being unable to provide young children with digital skills necessary for 21st century learning (Jantjies and Joy, 2016). By examining existing ICT implementations in a South African university, this study aims to understand the obstacles and challenges of embracing e-learning technology used as a teaching and learning tool in higher education.

2. COMPUTER AND DIGITAL LITERACY COMPETENCIES

The term digital literacy has seen an evolution from our understanding of basic computer literacy. With the advancement of computer functionalities introducing the pervasive role of the Internet and related applications, there was a need for an encompassing terminology. Computer literacy could be summed up as the use of computer processor applications such as Word processors and the ability to perform basic functions on these applications. Digital literacy can further be defined as the ability to retrieve and use information effectively through platforms such as search portals, databases and related applications (Buckingham, 2010). The definition of digital literacy is however not static as innovations of the platforms of retrieving, processing and using information are constantly emerging. An example can be the use of social media platforms to retrieve, process and use information to make informed decisions. Such technologies have also been used to support learning in higher education with examples of these platforms being used to collect data on trending issues (Alexandra et al., 2017). South African students from underprivileged background often lack experience of using electronic devices in their schooling environment. This is common particularly with students from underprivileged schools classified under the South African education system as quantiles, with quintile one being non-fee paying schools and quintile five being highly resourced fee paying public schools. Many quintile one and two schools often have similar basic teaching and learning infrastructure, however lacking computer labs or teachers skilled in basic computing to impart these skills onto learners (Jantjies and Joy 2016). These learners are thus often faced with the challenge of meeting the mobile and electronic learning demands in higher learning institutions.

3. ELECTRONIC AND MOBILE LEARNING IN SOUTH AFRICAN HIGHER EDUCATION

South African higher learning institutions similar to many other institutions across the world, enroll high numbers of students in order to provide them with a high quality education. All universities in South Africa are equipped with network infrastructure, computer labs and often require students to have a basic computer and digital literacy skill set (DOE, 2001; DOE, 2004). The global challenge of a high demand of educational qualifications has forced many of these institutions to explore non-traditional teaching techniques of blended learning through the use of technology to not only extend learning beyond the classroom but to also enable students from various parts of the world to access education (Balfour et al., 2015). This provides great opportunities for students across the world to access education and gain digital skills while on the contrary becomes a challenge to those who are not computer and digital literate to navigate learning using the level of skills required to enable seamless learning (Rohleder et al., 2008).

In 2001, the South African Department of Higher Education and Training (DHET) introduced an e-learning policy to guide the use of technology in higher education. This policy among others highlighted the preparation of students who will be able to participate and contribute positively towards transformation in the education sector (DOE, 2001). This policy stated in its plan that in order to achieve the use of technology as an enabler in the learning process, emerging professionals need to be well prepared and experienced to teach through the support of these mediums. Wenger (1999) stated that such a policy could be achieved through participation of communities in practice, proper digital facilitation and investment in a learning process. In addition to that the South African department of higher education highlighted that by 2030, about 1.6 million students will be enrolled in South African universities increasing the need to digitize learning and enable higher educational institutions to cope with the need placed by lack of skills in the country. South African universities are thus challenged to produce competitive and quality education that is able to prepare students to match global job opportunities (Denis, 2014:1). The growing demands of e-learning also include infrastructure and related

support such as network support, computer labs and a further need to hire personnel with high technical skills in order to operate technology and execute institutional operational services smoothly. E-learning has further motivated a need to change traditional teaching approaches in order enable the adoption of the technologies across institutions (Denis, 2014:9). With the emergence of social media, augmented and virtual reality technologies used to support teaching and learning, it becomes vital for academic institutions to support students from underprivileged environments to cope with the needs of technology supported learning.

4. RESEARCH METHODOLOGY

The study followed a sequential exploratory design using a pragmatism philosophical outlook. We further used a mixed method approach where qualitative data is used to explain the quantitative findings with the aim of understanding electronic and mobile learning experiences of students in order to improve their proficiencies (Creswell, 1998; Bryman, 2016). Using an online questionnaire distributed to first year information technology students, the study aimed to answer the following research question:

How can e-learning experiences be improved for students with limited computer and digital skills from underprivileged schools?

A total of one hundred students were randomly provided with a link to an online questionnaire with only 79 students completing the questionnaire. Using a descriptive statistics analysis, data gathered in this study was analyzed to understand the students experiences (Boyatzis, 1998; Bryman, 2016).

4.1 Findings

4.1.1 Student's Backgrounds

This section established an understanding of the background of students' surroundings (i.e. area of living, access to electronic devices) before entering the university. 78 first year students (i.e. 98.7%) participated in this study, with one second year student (i.e. 1.78%) participant that could not be ignored, as he/she is also part of first year class. The study revealed that, the majority of first year students registered for information technology, were coming from urban areas before entering the university. The number of students coming from rural areas was reflected as less than 25% as shown in figure 1 below.

Figure 1. Students dwelling locations before entering university

Figure 2. Electronic device access after enrolling into the university

In understanding resource access among participants, many of the participating students had access to smart phones at 80% of participants and laptop devices with 71%. Mobile devices were thus the most prevalent devices as reflected in figure 2 in compared to desktop devices.

4.1.2 Computer Literacy Support

When asked about basic computer literacy skills before entering university on a scale of one to five, with one being the lowest rate and five being the highest, about 7% of students rated themselves poor when it comes to computer literacy skills with 9% who felt their literacy skills are fairly poor. 38% felt fairly confident with the digital skills acquired before coming to university. One student also felt his/her literacy skills still lack even after entering the university. Figure 4 and 5 represent the different levels of digital literacy skills before and after entering university, with figure 4 representing the rise in skills level of participants.

Figure 3. New students' literacy skills before entering university

Figure 4. New students' literacy skills after entering university

The questionnaire also included qualitative sections which enabled students an opportunity to elaborate on their responses. When students were asked whether the university is providing computer literacy training (i.e. reading and writing using computers) for first year students entering the university, about 10.1% said the university does not provide such support and 89.9% agreed that the university provided computer literacy training sessions. Students were also asked whether they felt computer literacy skills were necessary for every student entering the university. Only 10.1% reflected that such skill provisions were not important while 89.9% agreed that computer literacy trainings are important for every student entering the university mainly reflecting the challenges they faced when entering university with little to no computer and digital literacy skills.

Responses from those who felt it is it vital for every student entering the university to be provided with computer literacy skills were as follows:

Respondent1: "Yes. Many assignments require people to have skills like using Microsoft excel and other applications for assignments."

Respondent2: "Yes. Not everyone is privileged with access to computers."

Respondent3: "It would really benefit all the students because the students who are not computer literate get an opportunity to learn a new skill that would be an asset to them throughout their studies and the students who are clued up about computers and how to use them, also have an opportunity build on what they know about computers."

The responses were consistent amongst students portraying an important need for computer and digital literacy support for all students entering higher education. Contrary to this some students felt that the university is not expected to provide computer literacy skills for every student entering the university. One respondent responded to say:

Resondent4: "Many students already have wide computer knowledge."

4.1.3 E-Learning Tools and Technologies

The aim of this sub-theme was to establish if there were any tools and technologies used by the university to support blended teaching and learning methods with focus on the university learning management system and related technologies. When students were asked whether they know about Learning Management Systems (LMS's) and what do they are used for, there were different responses on how they interpret the role of the university LMS:

Respondent5: "Yes. STUDYING, SUBMITTING, FEEDBACK etc."

Respondent6: "Yes, for online assessments, access slides, check my results online, update my personal details, and check my student account and others."

Respondent7: "Yes, to communicate with lecturer's and fellow students."

Nonetheless other students responded differently and felt that they are unfamiliar with LMS's. Responses were as follows:

Respondent8: "No, no one taught me."

Respondent9: "I do not understand what is meant by learning and management systems. Please elaborate."

Respondent10: "I know nothing about learning and management systems."

The findings reflected that many students were accustomed to the university learning management system and their use of the system was also largely dependent on the extent of use of the learning management system by the lecturer. The findings further reflected the important role that computer literacy and digital literacy interventions which the university provided in supporting them cope with the demands of higher education literacy. The university under study provided e-learning training services from a dedicated center which provided service to the entire university including both academic staff and students. While this support was very extensive, there was an evident lack of faculty and departmental digital literacy support framework to augment the centers work.

5. DISCUSSION

5.1 Students Background

Most of the participating students reflected that they mainly had access to smart phones and laptops. This reflects that many students under study had access to learning platforms beyond campus and thus had access to any learning material placed on the learning platforms. These results however while providing an overview of resources which the sampled population had access to, cannot be generalized considering that most of the participants came from urban areas and were all information technology students. Furthermore, Wi-Fi access at the university campus was free even to the general public allowing pervasive access to it. While the university under study is placed in a previously disadvantaged community, many of the participating students had access and ownership to devices that could enable learning beyond the university campus.

5.2 Digital Literacy Support

In relation to digital skills which students possessed before entering university the study revealed that student's digital skills vastly improved upon entering university. Much of this could be attributed to the workshop and training programs which the university has in place for all students. Furthermore the findings from the center which provides this support reflected that the support was mainly institutional and that faculties and departments often did not have their own support measures to enable students to have the necessary skills to cope with demands beyond the support that they provided. The workshops varied ranging from basic computer processing systems such as Word, to being able to use your email or being able to use the University the Learning Management Systems. Furthermore there were workshops for advanced users on qualitative and quantitative research tools. The responses of the participants further reflected the important role which higher learning institutions play in empowering students with computing and digital skills regardless of which programs which they were enrolled for.

5.3 E-Learning Technologies and Technologies

The findings from the study reflected on the important role that universities have in providing digital literacy support to students to cope with the demands of computing and digital skills required for higher educational learning (Bharuthram and Kies, 2013). In this study, results from the students' expectations on using learning management systems reflected that students were expected to have extensive skills to not only gather information to complete their assignments, but were also expected to have skills to extensively use the functions of the university learning management systems. The study further reflected that universities have a role to play in ensuring support for digital literacy skills as academics required students to have such knowledge when enrolling for the various programs which are offered.

6. CONCLUSION

In this study we evaluated the critical need for computer and digital literacy skills of young students entering higher learning institutions through a case study of one South African university. The explorative study provided an understanding which revealed that many students enter university without comprehensive electronic learning skills. Through an online questionnaire study, a survey evaluated the perspective of 79 first year students on the support that their institution provided in relation to digital skills. The findings reflected the intensive nature of computer literacy and digital skills needed by students to cope with the demands of learning in a digital era. The findings further reflected the importance of continuous e-learning skills support for all university registered students. Considering the investment of further electronic learning facilities and infrastructure for the institution and many other South African institutions, this study was important in understanding the impact of advanced e-learning systems on students with no computing backgrounds. Further studies will be conducted to establish the need for imparting such skills in basic education, to prepare students for the skills needed in a digital era.

ACKNOWLEDGEMENT

We would like to acknowledge the South African National research foundation for continued support.

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