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**E-LEARNING AND CONVENTIONAL LEARNING IN 21ST  
CENTURY INFORMATION AGE: A CASE STUDY OF  
STUDENTS FROM SELECTED UNIVERSITIES IN BUFFALO  
CITY METROPOLITAN EASTERN CAPE SOUTH AFRICA**

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**ABSTRACT**

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| Aim/Purpose | The main aim of the study is to critically examine the forces that can impede or support students to use e-learning in higher education teaching and learning environment which require not only pre-technological literacy's but easy access to the e-learning platform and ICT devices.   |
| Background  | The concept of e-learning has grown considerably in the past three or four decades, which according to Pollock and Cornford, (2003) has prompted a great deal of interest in using and integration of technology into teaching and learning environment thereby transforming the very nature of the traditional higher education system. Murphy et al., (2001) have highlighted that not only does the new technologies supplement the conventional course delivery in institutions of higher learning, but they have also become a catalyst for change in higher education. South Africa as a developing nation has adopted the introduction of ICTs in the education system with the hope that it may offer some solutions to the challenges of education in South Africa. The South African Department of Education believes that developments in ICTs and its introduction to the education system creates access to learning opportunities, redresses inequalities, improve the quality of learning and teaching, and deliver lifelong learning (Department of Education, 2004). Even though internet access and ICT devices are becoming more common in South Africa, the use of them for teaching and learning purposes are limited. According to the White Paper on E-education in South Africa (SA, 2004), the Province of Eastern Cape has ranked lowest in |

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terms of number of schools with computers for teaching and learning and as a result many students from Eastern Cape Province who enter higher education do not have adequate technological literacy levels to cope with the demands of higher education teaching and learning environment.

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| Methodology                       | The design of the study was a case study and it utilized quantitative method. The number of sample units in the study was 65 students from Walter Sisulu University, University of South Africa, Pearson Institute of Higher Education (formerly called CTI) and University of Fort Hare campuses based in East London Eastern Cape Province South Africa. The data were analyzed using MS Excel spreadsheet database for conversion into percentages for the descriptive statistics.   |
| Contribution                      | It is essential to understand the forces that can impede or support e-learning. Possible solutions can be suggested for successfully integrating e-learning into higher education teaching and learning environment to meet 21 <sup>st</sup> century students' needs. The South Africa case study identified that a number of respondents indicated that the resources are available for e-learning on their university campuses. But these available resources are not efficiently used by most respondents to support their studies.  |
| Findings                          | The results indicated that in the area of infrastructure required for e-learning, the majority of respondents indicated that the resources are available for e-learning on the campuses of the sampled universities. But these available resources are not efficiently utilized by respondents to support their studies.  |
| Recommendations for Practitioners | While universities and other institutions of higher education are encouraging integration of e-learning into the curriculum, it is also imperative that their teaching and learning strategies and policies take into account that some students are unevenly challenged in terms of technological skills and still require additional support.   |
| Recommendation for Researchers    | There is the need to explore in depth the aspects that lead to the successful integration of e-learning into conventional lecture method of courses delivery.   |
| Impact on Society                 | With the dawn of 21 <sup>st</sup> century digital and knowledge-based economies evolution where the integration of computers and other ICTs tools in higher education teaching and learning environments have been found to be very beneficial to students, hence not only pre-technological literacy's of students but easy access to the e-learning platform and ICT devices are critical to higher education learning environment. Assessing students technological skills and access to e-learning platforms to which this study contributes will assist in improving quality education which has a greater impact on society |
| Future Research                   | In the context in which this study was conducted further examination of the technological skills of academic staff of the successful integration of e-learning into curriculum would be advisable   |
| Keywords                          | Information and Communication Technologies, technological skills, training.   |

## INTRODUCTION

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The globally accepted phenomenon of right to education imposes an obligation upon countries to ensure that all citizens especially youth have opportunities to meet their basic learning needs. Over the years, teaching and learning processes have been developed through different methods/approaches in line with the various changes globally. With the dawn of 21<sup>st</sup> century digital and knowledge-based economies evolution engineered by rapid information and communication technologies (ICTs) and its mechanisms, arguably have sparked a global revolution in education and training. New models of teaching and learning are radically changing our concept of education. Currently, the introduction of computers and other ICTs tools in different forms and levels of education have been found to be very beneficial in education system of different countries (Seena, 2010). The concept of e-learning has grown considerably in the past three or four decades, which according to Pollock and Cornford, (2003) has prompted a great deal of interest in using and integration of technology into teaching and learning environment thereby transforming the very nature of the traditional higher education system. Murphy et al., (2001) have highlighted that not only does the new technologies supplements the conventional lecturing method of course delivery in institution of higher learning, but they have also become a catalyst for change in higher education. E-learning is the acquisition and use of knowledge distributed and facilitated primarily by electronic means (Jenkins and Hanson, 2003). E-learning, may involve the use of internet, CD-ROM, software, other media and telecommunications (SA, 2004). Integration of ICTs into conventional course delivery in higher education can benefit students in at least two critical ways in the 21<sup>st</sup> century digital and knowledge-based economies evolution. Firstly, exposure to ICTs will provide students with valuable hands on experience and the opportunity to some form of technological literacy's that will be useful in an increasingly technology saturated work environment. Secondly, according to Seena, (2010) integrating ICTs across the curriculum make it possible for students to become creators of knowledge in their own right. For instance, by facilitating their search for information on the internet and synthesizing this information in the form of a presentation or a project. The skills acquired through this process by students are personal information management, self-regulated learning and working, and research capability in combination with communication technology skills and teamwork which are highly prized in the global and local labour markets. Through the use of ICTs, the learning of these skills can be accelerated and sharpened. Furthermore, integration of ICTs in conventional course delivery approaches in higher education system encourages teaching and learning milieu which recognizes that students have different learning styles and have diverse perspectives, based on different backgrounds. Again integration of ICTs in the conventional teaching and learning environment embraces inclusive education by providing opportunities, alternative methods of instruction, and flexible assessments for learners who experience barriers to learning.

South Africa as a developing nation has adopted the introduction of ICTs in education system with the hope that it may offer some solutions to the challenges of education in South Africa. The South African Department of Education believes that developments in ICTs and its introduction to the education system creates access to learning opportunities, redress inequalities, improve the quality of learning and teaching, and deliver lifelong learning (Department of Education, 2004). Even though internet access and ICT devices are becoming more common in South Africa, the use of them for teaching and learning purposes are limited. According to the White Paper on E-education in South Africa (SA, 2004), the Province of Eastern Cape has ranked lowest in terms of number of schools with computers for teaching and learning and as a result many students from Eastern Cape Province who enter higher education do not have adequate technological literacy levels to cope with the demands of higher education teaching and learning environment. According to Kinuthia and Dagada (2008) much as technology can add new resources to existing course delivery in higher education, the availability of ICTs resources remains a great challenge for educators and learners within most institutions of higher learning. The prevailing situation cannot be maintained if we are to prepare our learners to face the challenges of the 21<sup>st</sup> century digital and knowledge-based economies evolution.

Thus the researcher undertook this study in the Eastern Cape Province to critically examine the challenges and potential benefit to students of the use of e-learning in higher education teaching and learning environment; and to determine whether the pre-condition of pre- technological literacy and easy access to e-learning platform and ICT devices are present.

### ***RESEARCH OBJECTIVES***

Specifically, the objectives of the study were to examine:

1. Type of ICT devices students have access to.
2. Pre-technological skills of students to use ICT programs/functions on the ICT devices they have access to.
3. Internet access on and out of campus.
4. The e-learning platform used by their university.
5. Potential benefit and challenges of the students when using their university e-learning platform.

For the purpose of this study, the scope of ICTs covers modern ICTs such as mobile phones, tablets, internet, computers, and social media.

### **LITERATURE REVIEW**

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Ideally, as highlighted by Farrel, (2001) any changes in mode of delivery of education should improve the quality and equality of learning. Georgouli et al., (2008) believe that, notwithstanding the effectiveness of the traditional lecture style of higher education institutional method of course delivery, the new innovation of using a web-based learning management system is gaining popularity in tertiary institutions. The paradigm shift in the way higher education is viewed and delivered through a combination of traditional lecture style and web-based learning approaches is attributed to the 21<sup>st</sup> century digital and knowledge-based economies evolution (Obisat et al., 2013). Utilization of ICTs in education is considered to have advantages for students. Kannan and MackNish (2000) have point out that online course components influence learner motivation and self-directed learning. According to Basheer and Ibrahim, (2011) e-learning as a tool in higher education teaching and learning environment has continuously played a vital role to the progress of academic staff and students, and the improvement in the quality of teaching methods which have resulted in an extended access to higher education by enabling students access the system at anytime and anyplace as long as there is internet connection. This according to Kartha (2006) has resulted to an increase in the number of online courses where students can obtain their higher education qualifications in parallel with pursuing their personal goals while still keeping their careers. The study by Collins et al., (2012) found that cost and poor internet infrastructure considerably affected acceptance and use of e-learning in higher education. They also indicated in their findings that majority of students believe that their results would improve with e-learning implementation. The later finding of Collins et al., (2012) is confirmed in the studies of Cunningham (2000) who found that students felt that the use of e-learning was non-threatening and non-challenging and as a result of using it, their grades and writing skills improved. Thus, it is essential to understand the forces that can impede or support e-learning and possible solutions that can be suggested for successfully integrating e-learning into teaching and learning.

Numerous studies have highlighted that using educational technologies, including the Internet, to complement and enhance traditional instruction and learning will lead to effective learning outcome (Damoense, 2003; Liu et al 2009; Lundavall et al 1999). They also assert that technology offers many possible resources that can enhance and support traditional teaching instruction and delivery, and learning. It provides access to information sources, encourages meaningful interactions with subject specific content and enhances collaboration among individual's learners including collaboration between the instructor and learners. Thus technology facilitates collaboration, interactivity, supports

variety of learning styles, students' background and advances the equalization of learners. An Internet based learning environment according to Brack (1996) and Kearsely & Sheiderman (1999) enables users to exercise control over their learning experiences and is especially true for students with different learning styles, since the internet can be used in an asynchronous environment allowing them to work at their own pace at any suitable location. However, one cannot overlook the argument of Pendlebury and Enslin (2000) that argue that students' access to the educational goods of ICTs requires students to be computer-literate and that they should be able to handle information technology at a level appropriate to different fields of study. Pendlebury and Enslin (2000) argument was supported by the findings of the study, use of ICT by Kajee (2006) in University of Witwatersrand South Africa where majority of participants of the study were from disadvantaged backgrounds not only felt marginalized because of their limited electronic literacy but also could not complete their online tasks during lecture periods and had to return to the laboratory later to complete them while their counterparts with adequate computer literacy skills completed their tasks much quicker. Pretorius and Machet (2004) found from their study that students from well-resourced education systems and environments (which include exposure to ICTs) tend to attain higher literacy levels than students from under-resourced schools. Stanz and Fourie (2002) have showed from their study that academically stronger students benefited most from e-learning. From the above discussions it is clear that students technological skills and students literacy levels will have an impact on the ease or difficulty as well as benefits that students will derive from using e-learning.

### ***RESEARCH QUESTIONS***

To achieve the five main objectives of the study, the following questions were developed to guide the study:

1. Do you have computer Lab facilities at your campus? Yes/No
2. Are the computer Lab facilities at your campus operational? Yes/No
3. What is the ratio of computers to students (e.g. 1 computer: 3 students) in the computer Lab facilities at your campus?
4. How do you rate internet connectivity at your campus computer Lab facilities?
5. In general, how do you rate your campus's computer Lab facilities?
6. Which of the following ICT with internet connection do you own? List: PC, mobile phone, Laptop, Tablets
7. Does your university have Wi-Fi for students on campus? Yes/No
8. How do you rate the Wi-Fi connectivity on campus?
9. How do you rate your ability to use Information and Communication Technologies for example internet, social media, emails to search, send and retrieve information?
10. How do you rate your ability to use computer programs like MS Word, MS Excel, etc?
11. Which e-learning platform does your university use as an e-learning tool?
12. Are you able to access your university e-learning platform on your ICT device when you are off campus?
13. How frequently do you use the e-learning platform of your university to access study materials, interact with your lecturers, tutors and collaborate with other students?
14. How do you rate your ability to use your university e-learning platform?

15. Please state the benefits and challenges that you encounter when using your university e-learning platform.

## METHODOLOGY

The design of the study was a case study and it utilized qualitative and quantitative methods. Drawing on Kothari, (2010) the quantitative research methods enable the research to obtain relevant information using sample survey methods. A questionnaire with closed and open-ended questions was developed and used to gather the data which was analyzed using descriptive and inferential statistics. The size of the sample in this study was 65 students from Walter Sisulu University, University of South Africa, Pearson Institute of Higher Education (formerly called CTI) and University of Fort Hare campuses based in East London Eastern Cape Province South Africa. Based on the explanation of quota sampling by Babbie and Mouton (2001) to be a type of non- probability sampling in which units are selected into the sample on the basis of pre-specified characteristics so that the total sample will have the same distribution of characteristics assumed to exist in the population being studied. The researcher used both quota sampling to select the 65 respondents for the study.

The data were analyzed using MS Excel spreadsheet database for conversion into percentages for the descriptive statistics and thematic analysis was used for the open-ended question number 15 where respondents were asked to state the challenges and benefits of using their university's e-learning platform.

## ANALYSIS AND RESULTS

To address the objectives of the study the results of the study are presented below according to the research questions in the Literature Review.

### *THE EXISTENCE AND STATE OF COMPUTER LABORATORY FACILITIES ON CAMPUS*

The assertion of Kinuthia and Dagada (2008) highlighted in the introduction that much as technology can add new resources to existing course delivery in higher education, the availability of ICTs resources remains a great challenge for educators and learners within most institutions of higher learning. Therefore, questions were asked to establish the existence of computer laboratory on campus for students, whether they are operational, and the ratio of computers to students as well as internet connectivity within the computer lab facilities. The results are presented in Table 1 below.

**Table1: the existence and state of computer lab facilities on campus (N = 65).**

| <b>Does your university have computer laboratory facility for students on campus</b> |                  |                   |
|--|------------------|-------------------|
|  | <b>Frequency</b> | <b>Percentage</b> |
| Yes  | 65               | 100               |
| No   | -                | -                 |
| <b>Is the computer lab facility on campus operational?</b>                           |                  |                   |
| Yes  | 57               | 87.7              |
| No   | 8                | 12.3              |
| <b>Computer ratio to students</b>  |                  |                   |
| 1:1  | 40               | 61.3              |
| 1:2  | 21               | 32.3              |
| 1:3  | 4                | 6.2               |
| 1:4  | -                | -                 |
| 1:5  | -                | -                 |

| <b>Internet connectivity within the computer lab facilities</b>  |    |      |
|--|----|------|
| Excellent  | 22 | 33.8 |
| Good   | 28 | 63.1 |
| Average  | 7  | 10.7 |
| Poor   | 8  | 12.3 |
| <b>Respondents general rating of the computer lab facilities</b> |    |      |
| Excellent  | 22 | 33.8 |
| Good   | 41 | 63.1 |
| Poor   | -  | -    |

In Table 1 above, all respondents (100%) indicated the existence of computer lab facilities for students on participant's university campuses. These results affirm the assertion that the introduction of computers and technology to supplement the conventional course delivery in institution of higher learning put forth by Murphy et al., (2001). 87.7% representing 57 of participants confirmed that their campuses computer lab facilities are operational. On the issue of internet connectivity in the computer labs only 12.3% of participants highlighted poor internet connectivity within the computer labs. The general rating of the computer labs was encouraging as only 3.1% representing 2 participants gave an average rating and there was no poor rating. The ratio of computers to students was also encouraging as more than half of participants (61.3%) indicated a ratio of 1:1. The findings from Table 1 also confirm the assertion of Georgouli et al., (2008) as stated in the introduction above and it also deviate from the assertion of Kinuthia and Dagada (2008).

#### ***MEANS OF ACCESS TO ICTS AND ABILITY TO USE ICTS AND COMPUTER PROGRAMS/FUNCTIONS***

Data were collected on the means of access apart from the computer lab facilities of ICTs, on the knowledge of technological skills to use ICTs/computer programs/functions. The findings are presented in Table 2 below:

**Table 2: Means of access to ICTs and ability to use ICTs and computer programs/functions (N = 65)**

|  | <b>Frequency</b> | <b>Percentages</b> |
|--|------------------|--------------------|
| PC or Laptops                                | 18               | 27.7               |
| Tablet                                       | 11               | 16.9               |
| Mobile phone                                 | 65               | 100                |
| <b>Ability to use ICTs/Computer programs</b> |                  |                    |
| Excellent                                    | 15               | 23.1               |
| Good   | 10               | 15.4               |
| Average                                      | 17               | 26.2               |
| Poor   | 23               | 35.4               |

Participants were asked about their means of access to ICTs and technological skills to use ICTs/Computer programs such as internet, emails, social media, MS Word, MS Excel, etc., which are necessary for sending and retrieving information. The results from Table 2 shows that mobile phones (100%) is the most important device used by respondents to access ICTs, followed by PC, 27.7%, and Laptop and 16.9%. The results also indicated a challenge in terms of the participants' knowledge of the technological skills required to use ICTs/Computer programs: 26.2% and 35.4% indicating average and poor abilities respectfully. These findings from Table 2 strengthen the position the study took and also support the arguments of Pendleburg and Enslin (2000) that argue that students' access to the educational goods of ICTs requires students to be computer-literate and that they should be able to handle information technology at a level appropriate to different fields of study.

**WI-FI CONNECTIVITY**

As highlighted in the introduction, e-learning enables students to study at their own pace at anytime, anywhere as long as there is internet connectivity. Hence, the study also checked whether the participant's various university campuses have Wi-Fi facility for students and further asked participants to rate the Wi-Fi connectivity. The findings are reported in Table 3 below:

**Table 3: Wi-Fi facility and Wi-Fi connectivity rating by participants (N = 65)**

| <b>Wi-Fi facility on campus</b>                      |           |            |
|--|-----------|------------|
|  | Frequency | Percentage |
| Yes  | 65        | 100        |
| No   | -         | -          |
| <b>How do you rate Wi-Fi connectivity on campus?</b> |           |            |
| Excellent  | 42        | 64.6       |
| Good   | 20        | 30.8       |
| Average  | 3         | 4.6        |
| Poor   | -         | -          |

All of respondents (100%) indicated a Wi-Fi facility on the various campuses for students and also the rating of the connectivity was good: more than half (64.6%) of respondents indicated excellent connectivity.

**TYPE OF E-LEARNING PLATFORM, ACCESS, FREQUENCY OF USAGE BY PARTICIPANTS TO SUPPORT THEIR STUDIES**

Data were also collected from participants on the type of e-learning platform used by their university, whether they are able to access the platform on ICTs devices they own especially when they are off-campus, the frequency of usage such as downloading study materials, collaborate with other, etc., to support their studies as well as also to state the challenges and benefits they derive when using the platform. Table 4 shows the results:

**Table 4: Type of e-learning platform, access, frequency of usage by participants to support their studies (N =65)**

| <b>E-learning platform</b>  |           |            |
|---|-----------|------------|
| Type  | Frequency | Percentage |
| Blackboard  | 51        | 78.5       |
| Wise-up   | 10        | 15.4       |
| My student online   | 4         | 6.2        |
| <b>Are you able to access the platform on your ICTs device when off-campus?</b> |           |            |
| Yes   | 34        | 52.3       |
| No  | 2         | 3.1        |
| Not sure  | 29        | 44.6       |
| <b>Frequency usage of the e-learning platform by respondents</b>                |           |            |
| Daily   | 11        | 16.9       |
| Weekly  | 18        | 27.7       |
| Once a while  | 5         | 7.7        |
| Have never used it  | 31        | 47.7       |
| <b>Rate your ability to use the e-learning platform</b>                         |           |            |
| Excellent   | 17        | 26.2       |
| Good  | 12        | 18.5       |
| Average   | 6         | 9.2        |
| Poor  | 30        | 46.2       |

A finding from Table 4 above is that 47.7% of participants have never used their university e-learning platform. This can be linked to what Flippo (1960) points out because if one looks at the results from Table 2 the ability to use ICTs/Computer programs, it showed a high percentage of 26.2% and 35.4% for average and poor respectfully. In 1960 Flippo pointed out that the confidence of a person to participate in a subject is influenced by one having acquired the right qualification or training in the subject. Again this assertion can be linked to the 46.2% poor ability to use the e-learning platform finding of Table 4 as well.

#### ***BENEFITS AND CHALLENGES ENCOUNTER BY RESPONDENTS WHEN USING THEIR UNIVERSITY E-LEARNING PLATFORM***

Respondents were asked to state the benefits and challenges they encounter in using their university e-learning platform. Integration of e-learning platforms in higher education should be seen as a continuous process thereby requiring constant assessments of pro and cons to ensure efficient and effective teaching and learning environment. This was explored in an open-ended in question 15. Below are the findings which have been grouped according to common theme.

**Table 5: Benefits and challenges encounter by respondents when using their university e-learning platform**

| <b>Benefits</b>  | <b>Challenges</b>                                   |
|--|---|
| It saves printing cost because materials can be downloaded to student's ICT device | Typing difficulty                                   |
| Can access study materials anytime and anywhere                                    | Challenges with uploading and downloading           |
| Not forced to go to computer labs to upload assignments                            | Having to rely on friends/classmate to use the App. |

## **CONCLUSION AND RECOMMENDATION**

The Literature points to the fact that having e-learning tools and technological facilities in higher institutions of learning to support conventional method of lecture delivery of courses is vital in the 21<sup>st</sup> century global digital and knowledge-based economies evolution because learners can learn at their own pace, collaborate with other students at anytime, anywhere as long as there is internet connectivity. They can also acquire skills necessary for employability in the 21<sup>st</sup> century global digital and knowledge-based economies labour market. When used efficiently e-learning can be a magnificent tool in teaching and learning environment with lots of benefits to learners. On the question of infrastructure required for e-learning, the South Africa case study identified that a number of respondents indicated that the resources are available for e-learning on their university campuses. But these available resources are not efficiently used by most respondents to support their studies.

Considering the result of poor ability among students ( 46.2% of most respondents) to use their university e-learning platform, and also the stated challenges in Table 5 (Typing difficulty, downloading and uploading challenges, having to asked friends/classmates assistance in order to use their university e-learning platform ), training of students is paramount to developed competence in the use of technology if students are to use their university e-learning platform efficiently and successfully. Thus that while technology can add new resources to the conventional course delivery in higher institutions of learning, availability of ICTs resources and pre-technological skills remains a great challenge for students in the South African case studied by this case paper. The study of this South African case also found that 52.3% of participants are able to access or use their university e-learning platform on their ICTs devices when off-campus which confirms the findings of( Brack ,1996; Kearsely and Sheiderman,1999).

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