

**Editor's Note:** Brick-and-mortar based educational institutions are slow and expensive to build and not easily scalable to fluctuations in demand. eLearning adds flexibility for rapid growth or reduction in different programs of study to meet changing demands.

## **Promoting Computer-Assisted Instruction in Higher Education Institutions (HEIs) to Enhance Learning: Case study of the University of the Western Cape, South Africa**

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### **Abstract**

The advent of globalisation has brought with it different innovations that include improved ways of communication. In Higher Education Institutions (HEIs), the impetus brought about by globalisation has seen HEIs craving for the assimilation of Information & Communication Technologies (ICTs) within their constituencies. Increased student numbers bestowed upon HEIs has necessitated lecturers to re-align and change their teaching approaches and opt for e-learning; its advantage over the traditional mode of instruction enables HEIs to contend with the high influx of students seeking higher education opportunities.

This paper provides a case study of the University of the Western Cape, which has made inroads into the adoption of e-learning among its students and staff. The University has also embarked on a number of initiatives to enhance assimilation of e-learning among the university population, through use of e-tools used previously as part-time discourses and employed them for educational purposes. Various teams in the E-Learning Department have also embarked on a collaborative approach to promote the use of ICTs to enhance learning and provide an opportunity for a paradigm shift from the traditional mode of instruction to computer-assisted instruction.

**Keywords:** e-learning, instruction, enhance, promoting, education, collaborative, institution, e-tools.

### **Introduction**

e-Learning has become an indispensable and an essential component of education as well as a learning and business tool. Globalization, the proliferation of information available on the Internet and the importance of knowledge-based economies have added a whole new dimension to teaching and learning (Holmes and Gardner, 2007:8). Volery (2000:36) concurs that if universities do not embrace e-learning technology that is readily available, they will be left behind in the pursuit for globalisation. Ribiero (2002:4) argues that if universities are to maximise the potential of e-learning as a means of delivering higher education, they must be fully aware of the critical success factors concerned with introducing online models of education. This has resulted in a scramble for more efficient and effective ways of information dissemination, as more tutors, students and trainees, and institutions adopt online learning where there has risen a sudden need for ICTs and other resources that will examine and inform this field. In the HEIs, e-learning has helped to transform education and has become associated with, and construed in a variety of contexts, such as distance learning, online learning and networked learning (Wilson 2001:67). Volery (2000:32) argues that the fast expansion of the Internet and related technological advancements, in conjunction with limited budgets and social demands for improved access to higher education, has produced a substantial incentive for universities to introduce e-learning courses. In the context of this paper all of these instances will be considered, as well as complementary strategies that the University of the Western Cape's E-Learning Department has put in place to enhance e-learning among its staff and students. The thrust of this paper is to highlight how various e-tools and teams have collaborated to complement the

institutions' efforts at provide higher education to students and how it has attempted to equip academic staff to execute their teaching in an environment where technology is increasingly gaining momentum as a collaborative component of the whole learning process. Numerous e-tools and strategies, such as team-work, are explored in this paper and how this has facilitated the provision of higher education to students at UWC. The author hopes that the findings and recommendations that have been cited for UWC can equally be applicable to, and adopted in other HEIs in developing and developed countries.

## Methodology

The paper will also seek to address the research question which reads: *To what extent and with what results have ICTs and specific e-tools such as wikis, chat-rooms, discussion forums and podcasts have been utilised and manipulated at UWC for educational purposes to enhance teaching and learning?* In an attempt to answer this question, the author undertook a survey among 50 post and undergraduate students, mostly those employed in the e-Learning Department, to assess the depth of their comprehension of e-tools available to them that they can use for educational purposes. The authors collected information for this paper through interviews, questionnaires as well as observation of students who used these tools. The authors interviewed 50 students on the applicability of various e-tools in a learning situation and how these students and their peers have manipulated these tools in learning situations. In addition, the author distributed questionnaires on which participants were required to express their personal experience in using podcasts, chat rooms, wikis, blogs, face book, discussion forums as learning tools. The observation method was also used on students as they used these e-tools to facilitate interaction with fellow students. In addition to the above cited e-tools, the author interviewed senior students on how wireless Internet facility and institutional initiatives such as the e-teaching and e-learning portals can enhance learning at the institution.

## Learning as computer-assisted instruction

In an attempt to explore the significance of ICTs in education, this paper presents e-learning in the context of computer-assisted instruction, herein referred to as e-learning. E-learning, as understood by most, is a self-regulated or facilitated mode of learning making use of ICT. It has been envisioned that, through the Education Reform and the Curriculum Reform in many countries, students should possess the necessary skills and be sufficiently motivated to learn by way of e-learning, thus breaking the physical barrier of classroom learning and sparing precious school hours for other equally pressing and worthy activities conducive to students' development (Resnick and Resnick, 1992:23).

Today's economy is characterized by industrial change, globalization, increased intensive competition, knowledge sharing and transfer, and a revolution in information technology (Zhang & Nunamaker, 2003:186). The authors further point out that in order to succeed in such an economy, one must commit to a regimen of lifelong learning. This insatiable demand for continuous knowledge has resulted in a dramatic increase in the utilization of technology as an educational tool with which to convey information to the learner, a trend that can be witnessed in both institutions of higher education as well as the corporate world (Zhang & Nunamaker, 2003:186). Historically, there have been two common e-learning modes: distance learning and computer-assisted instruction. Distance learning uses information technology to deliver instruction to learners who are at remote locations from a central site. Computer-assisted instruction (also called computer-based learning and computer-based training) uses computers to aid in the delivery of stand-alone multimedia packages for learning and teaching (Ruiz, 2006:207). These two modes are subsumed under e-learning as the Internet becomes the integrating technology (Ruiz, 2006:207).

## **Enhancing teaching and learning at a HEI: Case study of UWC**

In line with global trends in utilising ICTs in education to improve and supplement learning in HEIs, the University of the Western Cape put into motion its own E-Learning whose main objective would be to buttress the delivery of instruction to the student population, as well as impart skills for the academic staff so that they could have confidence in the use of technology for teaching and learning purposes. This gave rise to the notion of, and introduction of an E-Learning Department in 2005.

Since its inception, the E-Learning Department at UWC has thrived to facilitate the adoption and promotion of e-learning within the institution. Programmes and training courses have been carried out for academic staff to enable them adopt e-learning in the execution of their core duties: that of information dissemination to students. The E-Learning Department has also endeavoured to equip both staff and students with skills that would enable them to access information online and to manipulate the presence of Internet and technology for teaching, research and learning purposes. This paper attempts to give a critique of attempts and efforts that have been made by various players at UWC to enhance teaching and learning.

### **4.1 Creation of e-teaching and e-learning portals**

The creation of institutional websites to facilitate student/lecturer and student-student interaction has gone a long way in enhancing learning and teaching at UWC. The websites are the e-teaching and e-learning facilities which students and lecturers can access on the main institutional website. Despite such challenges as the crashing of the Internet system and other black-outs, the university has gone all out to ensure that the Internet is always available to the university community and that appropriate infrastructure and resources are available. Students can post their assignments online, lecturers can post notes and notices that pertaining to students learning, tutorials and tutorial questions can be posted online to facilitate advance preparation by students. Past examination papers are availed to students through the online facility to help students have a feel of the examination environment and questioning techniques.

In an attempt to keep abreast of electronic developments, UWC has not been found wanting in technological innovation, especially those pertaining to the enhancement of learning. This resulted in the introduction of E-teaching and e-learning portal. The e-learning is the older version of the Learning Management Systems (LMSs) within the institution. The e-learning version of the LMS sought to provide introductory lessons to the application of online learning. Due to the fact that it was getting outdated, the institution is in the process of phasing it out in preference to e-teaching. However during its tenure, it has nurtured both students and academic staff alike on the use of technology for learning purposes. Academic staff could upload learning content and allow students to download such material. Students could still access assignments and even write online tests and examinations.

On the other hand the e-teaching portal enables academic staff to upload notes for students to access. In addition to uploading of notes, academic staff can also post notices, assignments, tests and tutorial material. The academic staff can also issue out instruction to students and reading material which students can download and read in preparation for lectures. Academic staff can also make use of this e-learning portal to write internal emails to students or groups of students or classes on any subject pertaining to their specific subject area. However, in recent months, the thrust has shifted to e-teaching over e-learning where it has been observed that equipping lecturers would benefit students more than focusing on e-learning which did not give the pre-requisite attention to the training needs of academic staff. This has seen the migration of documents previously uploaded by lecturers for students' consumption to e-teaching which is an upgraded version of the e-learning portal. It is envisaged that this development will spell the demise of e-learning facility in preference to the e-teaching facility, as the former is phased out.

## 4.2 Creation of a home-grown e-learning initiative

The University of the Western Cape has come up with its own home-grown Free Software which is an open source e-learning facility, known as KEWL. The system was developed in collaboration with a consortium of universities, commonly known as the African Virtual Open Initiatives and Resources (AVOIR) which has become a brand name in building capacity in software engineering in Africa. Some of the Universities in the consortium are Catholic University (Mozambique); Jomo Kenyatta University of Agriculture and Technology (Kenya); Makerere University (Uganda); Uganda Martyrs University; National University of Rwanda; University of Dar es Salaam; University of Eduardo Mondlane and University of Ghana; University of Jos. This has enabled students at UWC to expand their horizons by this collaboration with other tertiary institutions. The AVOIR has facilitated the creation of KEWL3.0 which is built within the Chisimba framework and hosts the institution's e-teaching site as well as a wide range of advanced communication; content creation and assessment tools.

The African Virtual Open Initiatives and Resources (AVOIR) build capacity in software engineering in Africa using Free Software (Open Source) as the vehicle. A partnership of 16 African Universities in an alliance that includes partners in North America, Europe, and Kabul, Afghanistan, AVOIR is a network with a node in each member institution. Each node participates in the development, deployment and support of software, seeks business and partnership opportunities that lead to sustainability, implements software in support of their institutional requirements, participates actively in communication and collaboration activities, and helps to market the network and its products and services. AVOIR has created the Chisimba framework and applications based on it, and will be offering a *Masters Degree in Free and Open Source Software* at UWC, starting in early 2009<sup>6</sup>. This development would further encourage students to undertake advanced studies in ICT-related disciplines which would inculcate in them a culture of appreciating the indisputable importance of ICTs in the ever changing world.

## 4.3 Utilisation of e-Tools

In addition to the available e-Teaching and e-Learning Learning Management Systems (LMS), students have also tended to make use of other available e-tools such as, podcast, wikis, blogs, discussion forums, chats, face book, e-books, manuals, to enhance learning within the institution. Those interviewed expressed that the use of these-tools is converting fun to learning because ordinarily these tools are used for having fun and other exchange with friends.

Respondents to the survey expressed the view that podcasts are a valuable storage facility that can facilitate the re-playing of a lecture for the sake of those who will have missed it or those who might want to review it. This is in line with the concept of reinforcement which in education is considered as significant for recall purposes as it reinforces desired behaviour in students. For educators the most relevant homology in learning is operant conditioning which is the simple idea that reinforcing a behaviour increases the probability of that behaviour recurring (Flora, 2004:5). Many respondents alluded to the advantageous nature of podcasts, with one respondent confessing that podcasts help to liven lectures as students could "*capture all the lectures and put them on podcast in order to view them, even those who will have missed classes*". Another respondent expressed the view that podcasts are a positive development to learning because they are able to present both video and audio captions of a learning episode as well as uploading and downloading materials that can equally be used for learning purposes.

Discussion forums were also cited by the majority of respondents as been able to provide live discussions on issues of vital importance, including discussions on topical issues of concern to

<sup>6</sup> Brief Overview of AVOIR (Available on [http://avoir.uwc.ac.za/index.php?module=news&action=viewcategory&id=gen14Srv6Nme27\\_3464\\_1219321674](http://avoir.uwc.ac.za/index.php?module=news&action=viewcategory&id=gen14Srv6Nme27_3464_1219321674))

students. The same advantages were cited for chat rooms which enable students and any participants to partake in discussions of topical issues. Blogs were viewed as important in that they enable student to place information and material online for access by other viewers. One respondent noted that blogs can “enable students to post content that they feel might be helpful to the rest of the student community”. The vital importance of wikis was summarised by one respondent who expressed the view that wikis provide an “information sharing platform” had room for updates and contributions from other users. Wikis have also been credited for their ability to broaden students’ horizons in areas outside their specialisms. They increase students’ general knowledge base.

The use of the Facebook facility at UWC, just like anywhere else, has assumed unprecedented levels both by the student population and others beyond it. Although Face book cannot be categorised as belonging to the e-learning stable, its use as an interactional tool among the predominantly student population has further popularised the use of technology for communication and interaction, which in turn has further brought to the fore the indispensable nature of ICTs in everyday life. It has provided an opportunity for students to have fun through the exchange of photos, notes and chats, which has manifested itself in the everyday lives of students and other members of the public.

Face book has also enabled users to explore new opportunities, such as seeking new friends and getting connected to old ones. This has provided for a much-needed break from the students’ “*busy academic schedules*”. A snap survey of 50 undergraduate and postgraduate students at UWC, most of whom work part-time in the E-learning Department expressed the view that the face book facility has become an indispensable way of not only seeking old friends and acquiring new ones, but enhances learning through the exchange of study notes and information about courses that their friends are pursuing and those offered at various universities across the globe and how these courses are comparable to those offered at UWC. Some have even indicated that through friends at other universities, they were able to compare and share notes on courses offered at their respective universities. This has tended to enlighten them about prospects of further studies elsewhere where there may be centres of excellence in their respective areas of study. Such information dissemination have enabled some students, especially those intending to pursue postgraduate studies elsewhere, to start contemplating whether they would like to pursue further studies at UWC or at another university outside South Africa. This exposure to other universities outside South Africa through face-book has been an enriching experience to students as they will be able to make informed decisions about their next destination or job opportunities after their studies at UWC.

#### **4.4 Wireless Internet and GroupWise Intranet facilities**

The ever growing demand for data and multimedia content has seen a surge in evolutionary wireless networking (Amimo-Rayolla, 2007:5). This growth, largely driven by the success of data and media streaming over the all-encompassing communication medium, the Internet, and ubiquitous availability of digital multimedia technology, has seen a sudden influx of partly complementary, partly substitutive network technologies such as HSPA, WLAN, WI-FI, Flash-OFDM, DVB-H and Bluetooth, bringing with them an upsurge in throughput (in Mbs) (Amimo-Rayolla et al,2007:6).<sup>7</sup>

The Wireless Internet facility aims to provide access to methodologies and technologies that will enable collaboration amongst learners and teachers, while providing for video and audio

<sup>7</sup> Otieno Amimo-Rayolla, Anish Kurien, Marcel Odhiambo “ Wireless Broadband: Comparative Analysis of HSDPA vs. WiMAX” Southern African Telecommunication Networks and Applications Conference (SATNAC, 2007)

communications over what is essentially a wide area network. This will provide learners and teachers with access to information resources and communications tools. The University of the Western Cape has also rolled-out a secure wireless network to many buildings on campus. This network requires that students authenticate using their UWC username (usually with your student number, staff number or third-party number) and password. The wireless network is “uwc-secure”. Given that the wireless network has been available at strategic point such as the Student Centre enables students, even over week-ends to utilise this facility to do their studies. This has encouraged students to make maximum use of the wireless and subsequently enhanced learning within the institution.

For easy and hassle-free communication, UWC has its own intranet facility, GroupWise that enables students and staff at UWC ease of communication, especially on matters of academic concern. To avoid congestion, the GroupWise portal has three releases (GroupWise1, 2 & 3) which would decongest the system and make it convenient for users to communicate and post messages as well as access assignments and test questions online, even at a time when Internet reception is poor. It acts as a forum where all registered students can interact. Notices can also be posted on this intranet facility for the benefit of students, primarily those registered with the University. Faculty or Department-specific notices can be posted by appropriate lecturers to relevant students. Student personal details such as contact details, courses being pursued can be accessed by fellow students, especially in the event they want to share notes and other reading material. This has also enhanced interaction among the student population at UWC. The most vital aspect of the GroupWise facility is that even in the event that the network is down or offline, students can still access the facility and be able to interact. It is also on GroupWise that employment or scholarship opportunities are flighted for students to respond to.

#### **4.5 e-Book, Open Source and Virtual Library**

The e-book and open source as well as virtual library, coupled with the availability of a reliable Internet network have been contributory factors that have enabled students to access journals and other privileged online documents. All this has contributed to the creation of a conducive climate for knowledge acquisition and has enhanced learning through facilitating students’ ability to independent research on issues that are connected to their studies. Inter-library loans on specific reading materials are also available to students. Students just need to access the UWC library portal which will subsequently show the consortium of libraries in the neighbourhood where books or items that they want can be found. The consortium includes the Universities of Cape Town, Stellenbosch and Cape Peninsula University of Technology. To access borrowing privileges to these universities, students from any of the institutions simply get an introductory letter from their host institution and they become members of the respective libraries with borrowing privileges. The student can then acquire a letter of introduction from UWC library and immediately they become members of the sister university’s library and enjoy borrowing powers and privileges. All these factors have contributed to increased information accessibility to students and academic staff, thereby enhancing learning and easing the burden of teaching.

#### **4.6 e-Learning Incentives for Academics**

One of the most conspicuous institutional innovations that the university has come up with to incite academic staff into incorporating e-learning in their teaching has been the provision of incentives in the form of laptops. Laffont and Martimort (2006) present the incentives theory and central to this theory is a simple question as pivotal to modern-day management as it is to economics research: What makes people act in a particular way in an economic or business situation has become a baffling question for psychologists. Laffont and Martmot (2006:2) have cited the need for incentives “to work hard, to produce good quality products, to study, to invest and to save...”. The neo-classical approach to the incentive theory portrays incentive as aligning the objectives of its various members, such as workers, supervisors and managers with profit

maximization. For this purpose, maximization would come in the form of exhorting academic staff to make maximum utilisation of e-tools for learning purposes. The purpose of incentive is to motivate those involved. According to Hassoubah, and Izhab (2005:2) motivation is a hypothetical construct that has indicated its impact on the process of learning. Educationists argue that of all the personal and psychological variables that have attracted researchers in this area of educational achievement, motivation seems to be gaining more popularity and leading other variables (Tella, 2003:8). Hall (1989:12) expresses the opinion that “Motivation raises question on why people behave in the way they do it”. The University of the Western Cape has devised ways to encourage lecturers to incorporate e-learning within their teaching. As an incentive for lecturers who incorporate e-learning in their teaching, the university has provided laptops as a way of showing its commitment and support for those lecturers who use e-learning in the delivery of lectures. At this institution, lecturers have been encouraged to work towards the acquisition of an e-learning incentive, namely a laptop. In this case, lecturers are bound to take the good gesture of a laptop in positive terms and are therefore likely to behave positively towards adopting e-learning in their teaching. Their performance has been measured against a set rubric which depicts outcomes that lecturers are supposed to achieve in order for them to gain access to the incentive. The set of rubrics that has been used as a target range from participating in a face-to-face e-learning training session, developing an interactive online course, allowing students access to e-learning training to ensure that they are able to navigate the system effectively; participating in lunch-time class presentations at e-learning seminars, as well as having to share their online experiences and challenges with the greater campus community. All these activities require commitment on the part of the academic staff. This venture has enabled the e-Learning Department within the institution to market itself as a centre of excellence in the use of ICTs in HEIs.

#### ***4.7 Adopting Teamwork as a collaborative Approach to [e]learning at UWC***

Endeavours have been made by the E-Learning Department’s various teams to address the needs of both students and academic staff in an effort to make e-learning the mode and medium of instruction and information dissemination within the institution. Through the adoption of a collaborative approach various teams within the unit have been able to make complementary to make the promotion of e-learning come to fruition. The different teams have re-aligned their objectives to complement the effort of each other. In addition to collaboration among these teams, there is also collaboration with various departments and faculties within the institution as well as stakeholders. The teams in question comprise the Instructional Designers’ Team; the e-Learning Student Support Team; the ICT Staff Training Team; the Digital Media Team; the Material Development Team, the eLearning Development and Support Team (EDSU) Research Team and the Digital Academic Literacy Team. The task of each of these teams contributes to the building of a broader picture on e-learning success at the institution.

The e-Learning Student Support Team conducts Learning Management System student training where both lecturers and students from different faculties and departments are taught on how to use the LMS. This has resulted in some of the faculties offering online courses in collaboration with universities and experts from other parts of the world.

The ICT Staff Training Team provides training, support and one-on-one consultations to both students and staff in using the Learning Management Systems (LMSs). Schuler & Jackson (2006:34) highlight that training and developmental initiatives could enhance the knowledge and skills necessary for work related performance, however the most proficient employee needs to be motivated in order to function competently.

The e-Learning Support Team assists and guides staff and students in adapting and converting courses to web-based delivery. They also assist staff with integrating various technologies to

improve the design and delivery of course content. At the beginning of every year, the Education Development and Support Unit undertake orientation sessions for first year students, in collaboration with the Office of Student Support Services. During the orientation sessions, students are shown how to access the e-learning system, navigate online modules, change their profile pictures and access their emails, including showing students how to create narrated PowerPoints presentations using the Audacity Software that enables users to add voice to their presentations. This also allows users to create mini podcasts for assessment purposes.

The Digital Academic Literacy Team provides computer literacy student training to students and staff. The Digital Academic Literacy course has been designed for novice computer users to become empowered within their first semester with general computer skills - mainly word-processing for academic purposes. The students also acquire search engine skills, learning how to use the Internet effectively and to distribute information according to the approved procedures at the university. Whilst many students come to the computer skills classes, support team considered these an opportunity to introduce relevant and useful content, focusing on themes around citizenship within a national and international context and more importantly on the HIV/AIDS pandemic.

The team tasked with the development of teaching and learning materials, the Materials Development Team (MDT) assists with the creation and development of suitable learning materials as well as working with e-learning practitioners creating manuals, simulations and other educational materials for their courses. Currently, the MDT is working towards a FOSS environment, producing training and online manuals and simulations. Users need to receive documentation that enables the facilitators and administrators of the system to understand the various application tools in use.

The Instructional Designers (IDs) team has a major responsibility toward the academics that need training and support in order for them to engage effectively with the E-learning tools and enhance the teaching and learning process within the institution. The IDs ultimate responsibility of the team is to help the lecturers and facilitators at UWC to develop the necessary computer skills, perspectives and confidence to incorporate e-learning as a complimentary mode of instruction for the students. The team delivers face-to-face training on a weekly basis using the university's LMS during which lecturers are trained on how to use the core functions of the system which include; creating an online course, assessing and evaluating the progress of students and effectively communicating with students online. These training sessions start as a one-on-one consultation lecturers' respective office and are sustained through ongoing e-mail and telephonic support. To date, over 156 lecturers have voluntarily secured training across faculties, with an increasing number of lecturers showing enthusiasm to get training on how to enhance their teaching through the adoption of different e-tools.

The EDSU Research Team, commonly referred to as the Research Team undertakes research in niche areas within the E-Learning Department and endeavours to make publications of their findings in peer-reviewed journals. This team forms the core of the E-Learning Unit's research component and strives to promote publication of articles and to make presentations at national, regional and international conferences. The team was involved in the editing of a manual for academic staff to facilitate their adoption and utilisation of e-learning, providing an easy DIY guide to teaching and learning through the use of e-learning. The manual provides a number of e-tools which academics like to use in their teaching, and attempt to simplify technical terminology which those academics who are non-technical would easily contend with.

#### ***4.8 Inculcating complementarity through team-building outings***

In addition to the complementary and supplementary formal functions of different teams within the E-Learning Department, informal social outings for the sake of team-building and such



activities have been held at regular intervals where members of different teams come together and interact on an informal basis. At such informal gatherings, members from different teams get the much-needed opportunity to intermingle and share notes on different work-related and social issues and in a more relaxed atmosphere. This instills a sense of confidence and togetherness, and holds the propensity to promote close working relations. This is confirmed by Masters and Heath (2006:2) who note that "*Teams that play well together will work well together*". This helps to inculcate and build a spirit of oneness and togetherness, as well as improve sociability among the members from different teams such that being able to approach each other on work-related issues becomes easier. Such endeavours, though seemingly unimportant, are a vital tool in enhancing learning as the complementarity of teams would equally be buttressed. Long and Hadden (2002:5), have extended socialization to every part of human social life where they point out that in socialization everyone becomes both a socializing agent in all encounters with others.

#### **4.9 Conclusion**

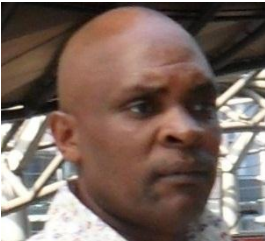
Given the various efforts and strides that the institution has made, UWC has the potential to be a leader in the use of ICTs in education. It has already proved that it leads the pack of those HEIs that are currently using ICTs for educational purposes because it is among the very few countries on the globe to have come up with a home-grown open source (as opposed to proprietary) programme. Its ability to nurture its students on the maximal use of e-tools ordinarily used for fun has also put the institution on the world map of those HEIs that have endeavoured to explore and manipulate ICTs for educational purposes. The drive to transform the pedagogical approaches used by its academics has also enhanced the delivery of instruction to students and to effect a paradigm shift from the traditional mode of instruction to the computer-assisted learning. The institutional leadership's commitment to maximise e-learning has been shown through the provision of state-of-the-art infrastructure and resources.

#### **References**

- AVOIR- Brief Overview of AVOIR (Available on [http://avoir.uwc.ac.za/index.php?module=news&action=viewcategory&id=gen14Srv6Nme27\\_3464\\_1219321674](http://avoir.uwc.ac.za/index.php?module=news&action=viewcategory&id=gen14Srv6Nme27_3464_1219321674))
- Flora, S.R (2004) *The Power of Reinforcement*. State University of New York Press
- Hassoubah, A & Izhah, Z (2005) "The Impact of Motivation on Learning" 12<sup>th</sup> International Conference on Learning, Learning Conference 2005, Granada, 11-14th July 2005
- Holmes, B and Gardner, H (2006), *E-learning: Concepts and Practice*. Sage Publications
- Laffont, J. and Martimort, D., (2006) *The Theory of Incentives: The Principal-Agent Model*. Princeton University Press
- Long, T.E. and Hadden, J. K. (2002). A Reconceptation of Socialization. *Sociological Theory* 3(1):39-49.
- Masters, B & Health, D (2006) "Teambuilding" Affordable Adventures-Getting your pulse racing. Available at <http://www.affordableadventures.co.za/references.php>. Accessed 18 June 2009.
- Otieno Amimo-Rayolla, Anish Kurien, Marcel Odhiambo "Wireless Broadband: Comparative Analysis of HSDPA vs. WiMAX" Southern African Telecommunication Networks and Applications Conference (SATNAC, 2007).
- Resnick, L.B & Resnick, DP (1992) "Assessing the Thinking Curriculum" *New Tools for Educational Reform* 4 (2) 37-75.

- Ribiero, T. (2002). From a distance: Look at distance learning's increased following. *Education*, 152(9), p. 85.
- Ruiz M. (2006) E-learning: Strategies for Delivering Knowledge in the Digital Age. New York: McGraw-Hill; 2001.
- Schuler, R.W. and Jackson, S.E. (2006). Human Resource Management: International Perspectives. International Student Edition. London: Thomson Learning.
- Tella, A. (2003). Motivation and Academic Achievement in Mathematics. York: Holt, Rinehart and Winston, Inc.
- Volery, T. (2000). Critical success factors in online education. *The International Journal of Educational Management*, 14(5), pp. 216-223.
- Zhang, D., & Nunamaker, J. F. (2003). Powering e-learning in the new millennium: An overview of e-learning and enabling technology. *Information Systems Frontiers*, 5(2), 181-207.

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