

# Institutional e-learning readiness (A case study of TUT)

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## Abstract

The realities of skills shortage are overwhelmingly taking its toll on academics, teaching and learning in the country resulting in an unprecedented excessive work load on few academic staff around to such a great extent that their academic career, training, further development and research outputs suffers a huge consequence. The current trends in our institution are pressurizing existing models of education, learning contents development, life-long learning, and research output and threatening our education standard to such extent that intense disruption to traditional higher education institution and corporate training is imminent. However, it is very common for managers and educationist to hear arguments that instructional technology will be the key focus to educational policies and qualities as we embark slowly but steadily into the new millennium. Not so long, schools and their governing councils are devising and investing in computers, network and web based technologies. In particular, educators have realized that computer networking through e-learning offers flexible and powerful way of accomplishing wide range of opportunities that have been long important and resourceful in schools, such as gaining access to universal information resources that relieve academic staff of their work load leaving time for professional development and time to improve on their research output which have been so elusive for sometime now. Technically, e-learning or Web-based education is arguably a very costly business to install and even more costly to maintain. Hence the purpose of this study is to evaluate and assess organisation readiness in implementing this cost intensive technology.

**Keywords:** E-learning, Web-based education, Web technology, Web-based Technology, E-learning readiness

## 1 INTRODUCTION

The realities of skills shortage are overwhelmingly taking its toll on academics, teaching and learning in the country. The academics institutions across the country witnessed high retention rate that is second to none in the last couple of years due to the on-going merger process of various institutions of higher learner. We need to reiterate that the shortage of these skills resulted in unprecedented high and excessive work load to such a great extent that academic career, training and further development suffers a huge blow, if not

dead or abandoned despite numerous plead by the management of education for academic staff to further their studies, engage in research activities and improve on their qualifications.

The current trends in our institution are pressurizing existing models of education, learning contents development, life-long learning, research output and far more threatening our education standard to such extent that intense disruption to traditional higher education institution and corporate training is looming. We are afraid that if things continue this way and efforts are not

directed toward finding alternative or lasting solutions, we could be sitting on a time bomb and the after effects could be devastating for academics, teaching and learning.

Therefore, It's not an over emphasis to infer that education is the foundation of any modern society and Web-based education is ultimately the next evolutionary step. Fiske and Hammond (1997) stated that quality education is a universal goal. They observed that it is very common to hear arguments that instructional technology will be the key focus to educational policies and qualities as new millennium passes by. It is also worth noting that South African Government has welcomed and embraced any innovative technology that can significantly improve educational standards and computer literacy and could enable South Africa as a country compete effectively and take a lead in the global education forum. This is evident from various Government initiatives involving various NGO's to install computers and Internet facilities in schools, even rural areas has got their fair shares of the goodwill and not to mentioned the huge budget allocated to Education and Science / Technology ministries in the recent year.

E-learning as new innovation in teaching and learning is taking the stage by storm with new initiatives and activities that are superior in many important ways over the previous method of teaching and learning to creates long lasting innovations in the society. This leaves much to be desire in term implementation and in turns leads to our research question:

***Are we ready or in good position to adopt the use of e-learning to foster our efforts in academics, teaching and learning, to enjoy the e-learning economics of scale that alleviate problems currently encountered in terms of high work load, decline research output and professional development?***

Hence the main effort of this research is to take a closer look into the process of implementing a Web-based technology as dynamic and evolving as the e-learning into the traditional classroom environment and to evaluates our level of preparedness and readiness for implementing the new

generation of tools for teaching and learning. Further more and towards answering our research question, the following section 2 will highlight and present the details of e-learning, the benefits thereof, the advantages and disadvantages of e-learning and the future e-learning education in our institutions. Section 3 will discuss the strategies for implementing e-learning, evaluates and shed more light on the pre and post installation requirements by evaluating our level of readiness for e-learning implementation. Finally, section 4 will concludes the study. This section will make informed conclusion and recommendations on our state of readiness for e-learning implementation.

## **2. THE BASICS OF E-LEARNING**

### **2.1 The benefits of e-Learning**

E-learning in form of computer-based training and learning, web-based training and learning, distributed learning, distance education is creating a stir in corporate world and it fast becoming a force to be reckon with by recording a substantial growth in the education and training field especially in traditional classroom environment. The reasons for this substantial growth according to Siemens (2002) are not far fetched. All along, personalized learning, learning objects and repositories, prior learning assessment (PLA), media formats, work/learning integration, electronic performance supports, knowledge management and technology assimilation with regular instructional activities are often described as the future of learning.

Campbell (2001) defines e-learning as a learning which takes place as a result of experiences and interaction in an Internet environment. It's not restricted and confines to regular school day and can take place in a variety of locations including home, school and community locations like libraries, internet cafes e.t.c. While Franklin and Peat (2001) implies that the classroom is now a "virtual learning environment" in which learning is no longer bounded by space and time. Hence teachers may merely post their syllabi or course outline on the blackboard, this has radically changed the whole scenario about method of teaching whereby the class venue for teacher and the students alike has been shifted to the computer. The

benefits are long and not limited to the following as listed by the worldwidelearn:

- Convenience and portability
- Cost and selection
- Flexibility
- Higher retention rate
- Greater collaboration
- Global opportunities

## 2.2 The advantages and disadvantages of e-Learning

Drave (2000) highlights the three reckoning forces driving the change towards e-learning as business, youth and the drive for greater competition. He further argues that there are two prongs influencing this strive from business and industry perspective. One being the needs for employees to have wide range of skills and attitudes that will allow them work effectively using technology to solve business problems in this information age. The latter, it was argued that business view online education as a lucrative market for selling wide range of technologies by promoting partnerships with schools to implement Information, Communication and Technology (ICT).

Aber (2002) argues that the students and the institution would benefit from the Web-based education collaboration. The institution will benefit greatly in terms of increased student enrolment, delivery of unique programs, ability to attract non-traditional student from rural and distant localities. Greater university visibility – empowered student and give them competitive edge in good recruiting tools and provide instructor with capability to teach from any location to any location. However Embleton (1999) cautioned that other important issues affecting Web-based education includes issue of copyright, problem associated with issue relating to Intellectual property rights and a host lot more. The advantages and disadvantages can be further summarised in Table 1 (see appendix)

## 2.3 The trends in teaching aids

Nothing has ever captured the imagination and the interest of educators simultaneously in and around the globe in the recent time than the World Wide Web. The web is now causing the educators from far and near, from pre-school to graduate school, in

respective of gender, age, race or colour to re-think the very nature of teaching, learning and schooling. Layton (2000) argued that lot of pressure comes from the youth of digital age wishing to learn in online mode but currently operates parallel learning environment with their regular school, he confirmed that competition is an on-going phenomenon among various tertiary institutions not only for students but also for academics excellence.

From time to time, teachers are always at the receiving ends, having to learn how to use new tools to help them present the material to be learned. Today, most of these tools previously learned and used by teachers are now history having been classified today as “low tech”. Among such lists are chalk and boards, magic markers and poster paper. Others like tape recorder, movie projector, film strip projector, slide projectors, overhead projector, VCR, laser disc by comparison have become more “high tech”. Shrivastava (1998) implies that with the emergence of digital economy fuelled by internet / www as a massive repository of business, economics, information, education faces challenges of historical proportions, restructuring the way teaching is organized and conducted in every functional area.

It should be noted that some integrated web solutions are available, notably among them are; The Blackboard Learning System ([www.blackboard.com](http://www.blackboard.com)), WebCT ([www.webct.com](http://www.webct.com)), Topclass ([www.wbtsystems.com](http://www.wbtsystems.com)), Lotus Learning Space ([www.lotus.com/home.nsf/welcome/learnspace](http://www.lotus.com/home.nsf/welcome/learnspace)), Virtual-U ([www.virtual-u.cs.sfu.ca/VLEI\\_deno/index.html](http://www.virtual-u.cs.sfu.ca/VLEI_deno/index.html)), Aulanet, ProjectoVirtus and Teleduc – a free distributed virtual distance education environment that has been developed since 1996. Some of these software tools are commercially available making Web-based education designing, implementing and management an easier task. It should be noted that Blackboard and WebCT have since merged.

## 2.4 Technical & common features of some e-learning applications

Today’s newest “high tech” educational tools include computers, www and interactive software and from teaching point of view, they offers many advantages ranging from

classroom management, record keeping, assessment, lecture planning, lecture presentation and a host lot more. Then it could be argued that this computer software exists in order to enable teachers to organize and accomplish all these tasks perfectly and timely than the traditional methods. No doubt, Web based educational technology is nudging literacy instruction beyond its oral and print-based tradition to embrace online and electronic text as well as multimedia. It is changing and revolutionizing the way teaching and learning is being planned, delivered and administered – definitely Web-based education through e-learning is on course to redefine education. Table 2 (see appendix) outlines the comparison between some major e-learning systems currently available.

## **2.5 Concerns and Future of Web-based education**

E-learning or Web-based initiatives has come a long way since the early days of static HTML pages, but it is an industry that is still in an early stages of development. Christensen (2000) explains how “disruptive technology” can unseat established market leaders, existing procedures and dominant technology. Christensen observed that the new disruptive technologies are always cheaper and easier to deploy and are always typically first commercialised in emerging or insignificant markets. He further argued that Web-based education “has all the characteristic of disruptive technology” and that the future e-learning applications will automatically recognise a user’s learning style preference and deliver the content using text, audio or visual format in order to optimise and personalise the learning experience.

In their submission and report WEBC (2000), Web-based commission to the then US President and the Congress of United States unanimously declared that there is no going back because they have enough evidence to believe that Internet and Web technology if used wisely will enhance education. The traditional classroom has been transformed and that Web-based education is just beginning with something of far greater promise emerging in the middle distance. In his remarks, Clinton, B. (1996) declares that Web-based technology

in its current form and stage of development allows us to realistically achieve long age-old dream and goals in education – to centre learning on the student instead of the classroom, to focus on the strengths and needs of individual learners and most importantly, make lifelong learning a reality. Hence it could be argued that the future of Web-based education looks very bright.

The discussion and debate has shifted in the use of Web-based education. The focus is now on how to make Web-based education effective and useful to the institution. However, we could argued that this shift will raise some concerns and issues like the existing institution needs to evaluate their readiness to adopt e-learning technology – the primary aims of this study. Other concern includes the need for separate departments, faculties and institutions to create processes for communication and sharing knowledge, the need for quality control processes to be developed. Finally, Web-based education requires from time to time systematic revisions and more importantly, budgetary support and a new view of what it means to transform the materials online (versus transfer of the materials on time) while not forgetting copyright issues.

## **3. E-LEARNING READINESS**

Web-based education uses Internet for delivery of content and allows student access to course materials, reference information and in some cases writes examination or test and submits the later through same channel to the respective lecturer. Students can correspond and share ideas with other students taking the same course via e-mail and can also correspond with the instructor or mentors for clarification and more understanding of concepts. On the other hand, group discussion can be mediated by the instructor and can be facilitated in real time via any of the chat services. This effort allows the instructors to concentrate on clarifying the issues, concerns or concepts on one-on-one basis rather than delivering lecture to an audience while focusing on broader range of educational product and consistently, high quality educational delivery, professional development, research inputs rather than the burden scheduling and allocating resources.

Over the recent years, we have witnessed efforts by various organisations and institutions striving to implement e-learning system as part of their curriculum. Some of these efforts do not see the end of the day. Others hardly survived beyond initialization or pre-implementation deliberation. A host of other initiatives gathered all the necessary momentums needed to succeed but died mid-way into their implementation because of the facts that adequate evaluation of the institution readiness for e-learning education has not been effectively evaluated, or better still the e-learning readiness evaluation has been a complete over sight. Hence e-learning readiness evaluation in our opinion remains the foundation and most critical focus point of e-learning in an organisation or institution because the decision at this stage may make or mar or have a great significant effect on the success of e-learning implementation.

Rosenberg (2001) sounded some note of warning to these categories of users while emphasizing that e-learning in its own right is complicated and arguably a costly business venture. Any attempts to underestimate their complexities might lead to underestimating the needs, future problems and the underlying cost. The web is a different medium, teaching styles have to be adapted to this new environment. Faculty and department have to adjust to the new pedagogy that uses technology as an integral component in teaching. Hence the needs for e-learning readiness cannot be over emphasized.

Various authors, notably Aldrich and Ross (2000); Bonk (2001); Colbrunn and Van Tiem (2000) all reiterate that the main logical starting point for evaluating e-learning readiness is to assess the organization readiness by evaluating and identifying with the organization goals, needs, motivator, resources and constraints. All these summed up will invariably lead to the clue as to whether the organization or institution is in fact ready or not. There are several suggestions under various headings and captions, however Aldrich and Ross (2000); Barron (2000) and Hall (1997) all suggested that e-learning readiness should be scrutinized vigorously under the following heading: Human Resources, Learning Management System (LMS), Learners, Content, Information Technology, Finance and Vendor. However, for the purpose of

this study, we would like to assess e-learning readiness in Tshwane University of Technology (TUT) under the following assessment criteria and heading:

- Business Readiness
- Stake holders Readiness
- Technology Readiness
- Content Management Readiness
- Training Process Readiness
- Culture Readiness
- Financial Readiness

### **3.1 Business Readiness**

In any organisation, their main aim is to remain competitive, viable and to some extent maintains a profitability level which is a key component to their survival. Although TUT is partially funded by the government, the remaining budgets are sourced through tuition fees and sponsors. In the current economic meltdown, global downturn, amidst tight budget and high expenditure the tendency is for the institution to adequately budget and strategically plan their intentions of implementing e-learning, which of course comes with a huge cost. In other words, there must be some sort of visible business readiness to adopt e-learning into their curriculum. Although TUT has procured the WebCT system but much efforts and adequate funding is needed in terms of training, enhancement and provision of skilled manpower to execute and drive the strategy.

### **3.2 Stakeholders Readiness**

In TUT, we could identify different stakeholders that could be affected by the e-learning implementation. However for the purpose of this study, we will be considering e-learning readiness and how it affects two prominent stakeholders – academic / non academic staffs and the students. In a study conducted by Dehinbo (2002) and the recent follow up study by Odunaike (2006) on the assessment of availability of computer and internet to staff and students during and after hours showed a considerable increase to reflect the efforts of the institution in providing dedicated laboratory and internet access over the years.

However, it should be noted with concerns that though the efforts are highly commended but much still needs to be desired as it hardly goes round the school

population with students having to scramble for opportunity to gain access. Huge percentage of staff and students could still not afford computer at home not to talk of internet accessibility. By all standards and with wide spread credit crunch, its just not affordable by majority of these stakeholders.

This will be in sharp contrast with Campbell (2001) definition of e-learning as a form of education not restricted and confines to a regular school day and could take place in a variety of locations including home, school and community locations like libraries, internet cafes e.t.c. and Franklin and Peat (2001) which concludes that the classroom is now a "virtual learning environment" in which learning should not be bounded by space and time. Hence, we could conclude that the stakeholders are not ready because the essential components of e-learning activities are not in place.

### **3.3 Technology Readiness**

Advances in computing, information storage, software, and networking are all leading to new frontier for teaching and learning and are also changing the paradigm for e-learning initiatives in the classroom teaching. It ranges from automated scientific instruments to supercomputers for modelling and simulation to web enhanced application software that will require massive range of hardware, software, networks configuration and internet technologies.

In our opinion, the existing technology and networks configuration in TUT should be able to cater and support adequately the requirement and the expectation of e-learning technology. Least we mention that the institution recently migrated from EC learning system to WebCT which infers that the technology is there and are fully ready to be deployed.

### **3.4 Content Management Readiness**

Technology-enhanced education like e-learning covers a wide range of teaching and training – from e-mail enhanced courses (those taught in a regular classroom and supplemented with email chats or content delivery) to comprehensive online courses (those taught 100 percent online using a variety of Internet technologies) have become an increasing viable component in higher education pedagogy, which has in

turns led to significant interest in the implementation of e-learning and consequently evaluation of its readiness.

In most contact based or traditional education, TUT not an exception, the lecturer is charged with presentation of lectures, development of curriculum, development and printing of learning material (study guides), development of tutorials and practicals e.t.c. These documents are duplicated and copies made available to students (far too costly and budget intensive) as against making them available on the WebCT. The copyright issues has also been major problem of what is available on the web coupled with the facts that most lecturers don't have standard teaching or presentation material for their course delivery. TUT staff still struggle to fulfill e-learning content readiness amidst the current level of high work load and schedule.

### **3.5 Training Process Readiness**

Despite the varieties of teaching and training opportunities that are available via technology, Smith (date unknown) pointed out that technology doesn't teach or train people by itself, it is the people who teach and train people using technology as a perfect education delivery tools. In TUT, we have witnessed on several occasions curriculum development training, safety and security training, teaching and learning training e.t.c. The fact is that the WebCT training is hardly schedule as often as the training in cooperative education. When they are eventually scheduled staffs hardly make their marks as they are pre-occupied with other teaching and administrative tasks.

It need to be noted that it is not only the WebCT training that suffers as a result of excessive workload, the staff professional upliftment, research outputs and career development also suffers the same consequence. There have been efforts by TUT administration to incorporate WebCT training into the academic calendar but aligning it with departmental time table or calendar has been an unresolved problems affecting WebCT training schedule thereby contributing to TUT training process un-readiness.

### **3.6 Culture Readiness**

Lim (2001) noted that though the advent of the World Wide Web has changed the way computer software are built but noted with deep concerns that this has not have the same effects on the academics because many academicians has not changed their ways of teaching. We could also add to this assertion by mentioning that it has not cause many to change what to teach and how to teach them due to their ignorance on how this particular mode of teaching could have an appealing effect and impact on the effective impartation on the desired concepts. This perception also attributed to the need to explore the readiness of e-learning along culture and attitude to change.

The crop of students in TUT before and after the merger remains predominantly black and previously disadvantaged students from the township and it's environ. Most of their early childhood and education are spent without any convincing technology. They are used to attending class adapting and responding to technology as they come their ways. Most are not only reluctant to embrace e-learning technology but also find it very difficult to manage their studies without lecturer assistance. Once again, affordability of the technology also play important role in this culture of resistant. This culture readiness problem we conclude is beyond TUT as an entity but continental and developing world as a whole.

### **3.7 Financial Readiness**

The e-Learning technology will impose in the nearest future the use of common platform for sharing of integrated database, continuous monitoring of the effectiveness of the e-Learning system, providing online access for all academic course materials, evaluation of students and depository of e-learning materials and resources as TUT knowledge repository. The institution should not relent on their efforts towards achieving these objectives and goals after procuring this expensive system, budgets must be set aside for their continuous maintenance at the expense of profitability sustainability.

There have been various efforts in the right direction to drive home the enthusiastic and expectation for the implementation of web-based technology in formal traditional classroom education. These efforts include the re-designing and conversion of some and

major classes into computer laboratory where lectures could take places in a web-based environment instead of traditional chalk and board. Hence it is not enough to judge institution e-learning readiness by the mere ability to procure the system but rather its readiness to finance the system through its teething problem to further nurtured its ambition to a great success. We think TUT if not financial ready to fulfill e-learning, they are somehow close in this task.

## **4 Conclusion**

The Web-based initiative is perhaps the most transformative technology in history, reshaping education, business, media, entertainment and society in astonishing ways. But for all its power and accomplishment, it is just being tapped to transform education. The web is a different medium, teaching styles have to be adapted to this new environment. Faculty and departments have to adjust to the new pedagogy that uses technology as an integral component in teaching. We argue that e-learning implementation is highly costly, too-demanding in terms of infrastructures and maintenance.

The WEBC (2000) concludes that "the Web or Internet is a medium today's kids expect to used for expression and communication – the world into which they were born." While acknowledging the fact that Internet is not a panacea for every problem in education, they reiterate that attention should be focused on the promise of the Internet and web-based learning. This includes centring learning around the student instead of a classroom, to focus on the strength and needs of individual learners. In order to make lifelong learning a practical reality, institution like TUT must re-evaluate and re-assessed their e-learning readiness.

In order to successfully in fuse the Web-based technology into the classrooms, TUT management must take initiatives to have the support of the entire stakeholders in educational community and be willing to resist the notion that the use of this "new wonder or gadgets" is an end in itself. They must provide desperately, the much needed leadership by following and adhering to the e-learning assessments criteria as suggested by this study. The lecturers as well as student must be included in the planning

and implementation. They should be encouraged to experiment the on-line tools to enhance their educational goals.

Therefore we conclude that all efforts must be on realization of the promise of Internet Education into practice to fulfill and enjoy the much needed economics of scale. The manager of education and corporate institution must embark of assessment and re-evaluation of all the pillars of e-learning readiness raised in this study to ascertain their complete readiness for this enormous and capital intensive project before embarking on it. According to the old adage, "what is worth doing at all, is worth doing well". Without doubt, proper assessment of e-learning readiness will go a long way in making the transition from traditional education to online education more successful.

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**Appendix:****Table 1:** Advantages and Disadvantages of Web-based educationSource: [www.fcs.iastate.edu/computer/tips/weboverview.html](http://www.fcs.iastate.edu/computer/tips/weboverview.html)

<b>Advantages</b>	<b>Disadvantages</b>
Convenient, anywhere, anytime, anyplace	Considerable work in set-up, up front
Structured, clearly expressed	Can't improvise
Standardized	Learners may not have all the technologies
Changed centrally	May have to use older technologies
Can engage expert easily	Some processes are difficult (group formation)
Large numbers of student possible	Some student will have less clues of what's happening
Course management system	"Cold way to teach and learn"
Time to think and respond	Delay in communication
Whole Web as a resources	May need special skills to produce
Robust	Technological dependence
Can be enhanced with multimedia	Some topic may not be appropriate
Synchronous chat (real time) possible	May be credibility issues in certain cases
Can be supported by text, cds, etc	May excludes some learners
Continual from individual to group learning	Learner require new skills to learn

**Table 2:** Present the technical specification of common Web-based education packages (source: [www.dsonline.computer.org/02/04/departments/edu\\_print.htm](http://www.dsonline.computer.org/02/04/departments/edu_print.htm))

<b>Common Web-based education Package: Technical Specification</b>				
	<b>Blackboard Learning</b>	<b>WebCT</b>	<b>Topclass</b>	<b>Lotus Learning Space</b>
Company	Blackboard	Universal Technology	WBT Systems	IBM'sMindspan Solution
Operating System	Windows NT/2000, UNIX, Solaris	Windows NT/2000, Solaris 8	Windows NT/2000, UltraSparch, Solaris	Windows NT/2000/98
Server security	Support Lightweight Directory Access Protocol, Kerberos and other systems	Support the Secure Sockets Layout Protocol and integration of third-party authentication such as Keberos or Lightweight Directory Access Protocol	Supports Secure Sockets Layer server security. The system administrator specifies user names and passwords	Learningspace Release 4 allows the creation of user profiles and course profiles. User profiles are used to assign permissions and courses to individuals and groups.
<b>Web-based education Package: Common Package features</b>				
<b>Student Facilities</b>				

Bookmarks	✓	✓	✓	✓
Multimedia	✓	✓	✓	✓
Security	✓	✓	✓	✓
Email	✓	✓	✓	✓
File exchange	✓	✓	Only for assignments	✓
Newsgroup	✓	✓	✓	✓
Chat	✓	✓	TopClass closely integrates with Centra's Virtual Classroom system	✓
Voicechat	✓	✓		x
Whiteboard	✓	✓		✓
Application sharing	✓	✓		✓
Self accessing	✓	✓	✓	✓
Progress tracking	✓	✓	✓	✓
Searching	✓	✓	x	x
Student support	✓	✓	✓	✓
<b>Support tools</b>				
Course planning	✓	✓	✓	✓
Course managing	✓	x	✓	✓
Course customising	✓	x	✓	✓
Course monitoring	✓	✓	✓	✓
Course design	✓	✓	✓	✓
Presenting information	✓	✓	✓	✓
Testing	✓	✓	✓	✓
Online marking	✓	✓	✓	✓
Managing records	✓	✓	✓	✓
Analysing & tracking	✓	✓	✓	x
Instructor support	✓	✓	✓	✓