
Determining the Most Suitable E-Learning Delivery Mode for TUT Students

Solomon Adeyemi Odunaike,
Odunaikesa@tut.ac.za;

Daniel Chuene
ChueneND@tut.ac.za

Department of Software Development,
Tshwane University of Technology (TUT)
Pretoria, 0001 South Africa

Abstract

Traditionally, in education and business environment, Information Technology has been seen as purely a support or operational tool. Advances in computing, information storage, software, and networking are all leading to new tools for teaching and learning and are also changing the paradigm for new initiative in the classroom teaching. The Internet Technology is in forefront of transforming education and opportunities around the world by allowing different kind of interaction and innovation among various educational institutes and students alike all participating in the global online innovations. The new modes of learning need to be explored to determine possible impact and most suitable choice of strategies. Understanding our student extents and capabilities of learning on their own coupled with the availability of basic and necessary equipments required for e-learning will have profound impact on the choice of e-teaching, e-learning and e-education delivery mode. A right choice of delivery mode is very essential and fundamental in moving forward to attain the much needed greater height in quality education. A wrong choice however, could deal a devastating blow on any progress made so far in the implementation of e-learning which would in turn have a ripple effect on the quality, acceptability level, pass rate and cost. Every effort must be made to guard against making wrong choice of e-learning delivering mode and this research will investigate and evaluates which e-learning delivery mode will be best suitable for Tshwane University of Technology (TUT) students.

Keywords: E-learning, E-education, Internet technology, On-line education

1. INTRODUCTION

Schools, institutions of higher learning, corporate and industry leaders have discovered the impact of multimedia presentations and how it can aid in delivering their message. It is an undeniable fact that Internet Technology is taking the lead in transforming education and thereby providing limitless opportunities around the globe for educational institutions and students alike to collaborate irrespective of where they are located. E-learning is one such opportunity provided for by internet technology. It can be defined broadly as a way

using technology to deliver learning and training programs. Arguably, a wrong choice of e-learning delivery mode could deal a devastating blow on any progress made so far on the implementation of e-learning which would in turn have a ripple effect on the quality, acceptability level, pass rate and cost. Every effort must be made to guard against making wrong choice of e-learning delivery modes, and this leads to our research question:

Which e-learning delivery mode will be best suitable for TUT students?

TUT is a University of Technology based in the Gauteng Province in South Africa. It was established in 2004 out of a merger of three former Technikons namely, Technikon Northern Gauteng (TNG), Technikon North West (TNW) and Technikon Pretoria. It has three main campuses in the Gauteng Province, and four satellite campuses in other provinces. It enrolls approximately 60 000 students which are drawn from the nine provinces in South Africa as well as neighbouring countries like Botswana, Namibia, Zimbabwe, DRC, Angola and Swaziland. We also have International students from other Africa countries like Nigeria, Kenya, e.t.c. and other Asian countries while a large component of the current student population is from rural South Africa.

The main aim of this research is to determine the most suitable e-learning delivery mode for TUT students. Furthermore and towards answering our research question, the following section 2 will highlight and present the details of e-learning, the benefits thereof and types of e-learning delivery mode. Section 3 will discuss the research methodology. Finally, section 4 will present the findings of this research while section 5 will conclude the study. This section will summarise and make informed conclusion and recommendations on our choice of e-learning delivery mode and the future e-learning education in our institutions.

2. LITERATURE REVIEW

Advances in Information Technology have brought about various new tools that facilitate teaching and learning. Varieties of new modes of learning are also emerging and are pushing for new initiatives in classroom teaching and learning. (Rosenburg, 2001) mentions online learning as one viable mode of instruction. He however indicates that there are several issues that need to be taken into consideration. One is that online training packages should not merely be a replication of stand-up training; but the structure of the delivery mode should take into cognisance the needs of the learner as well as the learning situation of the learner. It should be borne in mind that is not all institutions of higher learning that can manage to offer learning by digital means due to various reasons. (Rosenburg, 2001) cites readiness and willingness to share information, the will by management to invest in

infrastructure and resources, the readiness of trainers to design curriculum as key factors that need to be considered in order for deliver by digital means to succeed.

2.1 E-Learning Education

It is very common these days to hear arguments here and there that instructional technology in form of e-initiatives will be the key to educational quality in the new millennium. (Fiske & Hammond 1997) argue that quality education is a universal goal. This view was equally supported by (Mergendollar, 1996) which implores and urges policy makers to encourage a greater investment in educational technology as a means and path to educational quality. Other educational technology enthusiasts like (Connick, 1997) argue that educational technology in form of e-learning initiatives will dominate the environment for a long time to come with outstanding quality and will continue to increase rapidly to create "new educational culture".

(Campbell, 2001) defines e-education to involve e-teaching and e-learning along with various administrative and strategic measures needed to support teaching and learning in an Internet environment. Furthermore e-education could be further defined as the delivery of education by electronic means using formal teaching methodologies and styles.

2.2 E-Learning delivery mode

It was observed by (Kapur, 2003) that several web sites and education companies are offering Web-based solutions and that many are turning to the net for education. While online courses are most of the time strictly online, delivery of e-learning will include amongst others additional features such as live chats between students and lecturers, online assignments, discussion boards, playback of recorded material and email support. The key benefit with e-learning is that unlike with normal regular classes, students can learn at their own pace. With features that allow for the recording of classes, missed classes will be a thing of the past. Technology-enhanced education covers a wide range of teaching and training:

- Using internet as electronic repository (where learning material and course are posted on the Learning Management System (LMS))

- On-line or e-mail enhanced courses (those taught in a regular classroom and supplemented with email chats or content delivery - hybrid)
- Comprehensive online courses (those taught 100 percent online using a variety of Internet technologies).
- Using Blogs to frequently and chronologically publish personal thoughts.
- Podcasts allows a subscriber to receive programs and can listen to them at leisure. They are generally audio in MP3 format; however other formats such as video can be podcasted as well.

2.3 Reasons for E-Learning

The Internet as a powerful new means of communication is global, fast and growing rapidly making the world seemingly smaller and more connected, transmitting information at nearly real-time speed. No doubt, the World Wide Web is bringing rapid, clinical and radical changes into our lives. For Education, the efforts are very glaring. The Internet is making it possible for more individual than ever before to access knowledge and to learn in new and different ways. This not withstanding; (Rosenburg, 2001) infers there are reasons why the use of web in the classroom has not been gaining the required momentum and not been widespread. The reasons include but not limited to the followings:

- Knowledge – While it is not very simple and straightforward to create and maintain an extensive Web-based instructional site, other learners cannot manage themselves and learning on their own
- Reluctance – some educator are hesitant to adopt new methods or techniques of instruction while learners are battle ready to resist any form of change (culture of resistance).
- Resources – few schools can afford the time, support, training and recognition for teachers who wish to pursue new methods of instruction as demanded by Web-based instruction. Equally it is very likely that majority of learner can afford and maintain on-line connection
- Infrastructure – some schools lack the resources to develop large computer infrastructure as demanded by Web-based instructor.

Despite all the above negative impacts, there are numerous reasons for wanting to implement a Web-Based Instruction in a traditional classroom environment. Aldrich & Ross (2000) suggest that for one obvious reason, most educators would implement Web-Based Instructor with the aim of using a teaching method that is effective, efficient and enjoyable. Other advantages include the following:

- Enhancing student learning
- Spending more time with the students working in a small group or one-on-one
- Reducing repetitive teaching task
- Reducing paper flow and management
- Providing improved instruction materials

3. RESEARCH METHODOLOGY

3.1 Sampling method

Conforming to (Dix, Finlay, Abowd, & Beale, 1998), who state that the best way to find out how a system meets users' requirement and expectation is to 'ask the user'; it is therefore very important that we receive feedback from various users regarding their choice of e-learning technology.

Survey was used as the query technique to obtain information from the respondents. The questionnaire is targeted at the student currently being taught in the classroom and also using some WebCT to complement their studies as well as the lecturer who uses these applications in performing their duties.

3.2 Survey Population

The population for this survey are the students of TUT who are currently being taught in the traditional way and have at their disposal WebCT for their basic educational needs. Also included in this survey are lecturing staff that use WebCT and / or classroom environment to deliver lectures, together with the support staff charged with system / fault maintenance. The population in this study are mostly second level students (undergraduates) who are studying towards a diploma and Btech students (post diploma) studying Information and Communication Technology.

Leedy & Ormrod (2001) observed that rather than sampling a large number of people with the intent of making generalizations, qualitative research tends to select few

participants who can best shed light on the phenomenon or study under consideration. Therefore, the above suggests that convenient sampling of the population is highly favoured and would be more appropriate in this situation.

3.3 Survey data collection and analysis

The scalar style of questions was used. This is an adoption of the Likert technique. (Corbetta, 2003) stated that (Likert, 1932) proposed the scaling at the beginning of 1930s. The style expects the user to judge a specific statement on numeric scale of 1 to 5, usually corresponding to a measure of agreement or disagreement and may be in ascending or descending order of importance.

Although, open-ended questions give users an unrestricted or unbounded option of stating the issues the way they see it. It is not used in this study except where users' opinion is sought. Also, a "Yes" or "No" question was included to get affirmative answer from the respondent.

The analysis for the survey data will be done by collating all the responses. Pictorial analysis using chart will also be used.

4. ANALYSIS OF THE RESULTS

4.1 Analyzing the most suitable E-Learning delivering mode for TUT students

Before Internet access and web based applications became widely available, traditional classroom education use cable TV, video tapes, chalk and boards, magic markers and poster paper, tape recorded, movie projector, film strip projector, slide projectors, overhead projector, VCRs and a host of other equipments to deliver instruction to the learner. (Arsham, H. 2002) noted that each time there is a major and significant change in educational media, each time enthusiasts have announced with keen interest the transformation or even the end of the school system. Very rampant these days are talks of compromised education quality.

We believe that these technological innovations are profoundly influencing traditional university practices and policies and may even be fundamentally altering our conceptualizations of education. Hence the needs to find and evaluates the best suitable model.

4.2 Detailed Survey Results per Question

The survey instrument we used is shown in Appendix A. One hundred and sixty (160) questionnaires were sent out; one hundred and forty four (144) representing 90% responses were received. Hence the computation and evaluation will therefore be based on the 144 returned responses. All the sections of the questionnaire will be discussed and analyzed separately. Inferences will also be drawn on each of the questions.

4.2.1 Analysis of Survey Results in Section A

The objective of the grouping in this section is to ensure that the questionnaire was evenly distributed among students and gender classification so that the impending results could attest to the general feelings all groups that cut across gender, personnel and level of study.

A1 Gender grouping / composition

Gender	Respondent	%
Male	91	63
Female	53	37
Undecided	0	0

Figure 4.1: Tabulated survey results summarizing gender distribution

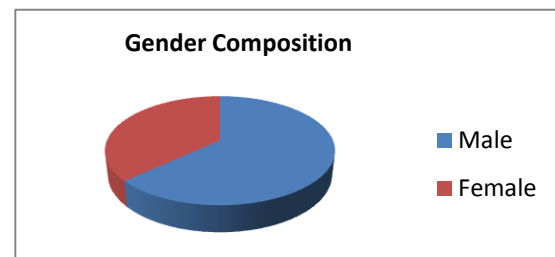


Figure 4.1: Graphical survey results summarizing gender distribution

Evaluation:

The results show that the questionnaire was fairly distributed among the gender to reflect the gender composition of our classroom (2:1). The impending results from this study would reflect the general feelings that surpass issues of gender inequalities.

A2 Respondents grouping / composition

Respondents Group	Respondent	%
Lecturers / Admin	18	13
Students	126	87
Undecided	0	0

Table 4.2: Tabulated survey results showing personnel distribution of questionnaire

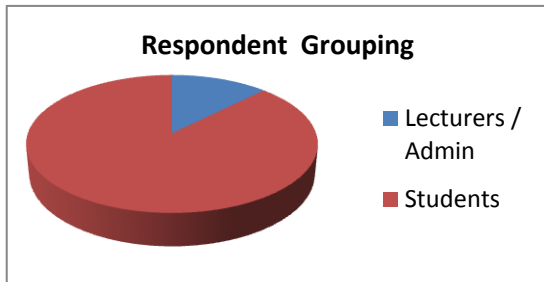


Figure 4.2: Graphical survey results depicting the distribution of questionnaire among respondents

Evaluation:

We could not get more staff to fill the questionnaire because the timing of distributing the questionnaire coincided with examination periods and marking – a hectic period in academic calendar in terms of work load. Otherwise, there was a positive response from the students and few lecturers.

A3 Level of studies composition

Level	Respondent	%
Diploma	47	33
BTech	94	65
MTech	0	0
Undecided	3	2

Table 4.3: Tabulated result showing specialization responses to the questionnaire

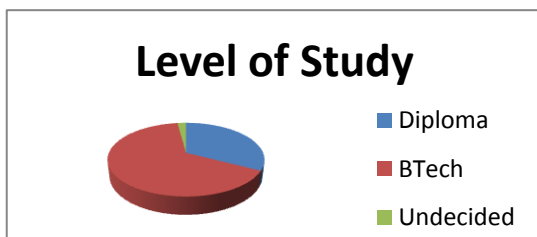


Figure 4.3: Graphical survey result depicting different specialization responses to the questionnaire

Evaluation:

The Btech students were specifically included in this survey so that we could tap into their experience in seeking the best delivery mode for e-learning because most of them are working and could afford basic requirements of e-learning.

4.2.2 Analysis of Survey Results in Section B

The main reason of questions in this group is to evaluate the availability of computer and Internet requirements for e-learning. This is necessary because majority of our students are from rural areas where some of the equipment needed for e-learning may be luxury.

B1 Own a computer or Laptop?

Have computers?	Respondent	%
Yes	125	87
No	17	12
Undecided	2	1

Table 4.4: Tabulated survey results showing respondents owning computer / laptop.

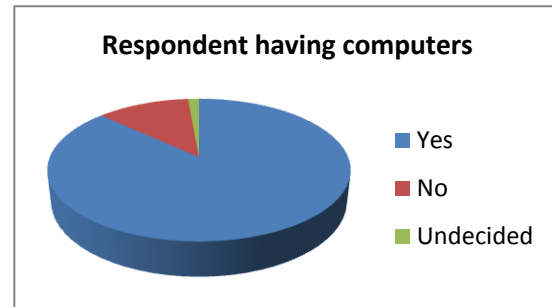


Figure 4.4: Graphical survey result showing respondents owning computer / laptop.

Evaluation:

It is worth noting that 87% of the respondents have a computer / laptop. This is in sharp contrast of the study carried out by (Dehinbo, J. O. 2002) which indicated that only 15% of the students have access to computer and subsequent research carried out by (Odunaike S.A. 2006) which reflects 63%. This means that students are have begun to realise the importance of having a computer which in turn frees up space for other students in the computer facilities provided by the school.

B2 Have access to computer facility during school hours?

	Yes	No	Undecided
Respondent	122	20	2
%	85	14	1

Table 4.5: Tabulated survey results showing availability of computer during school hours.

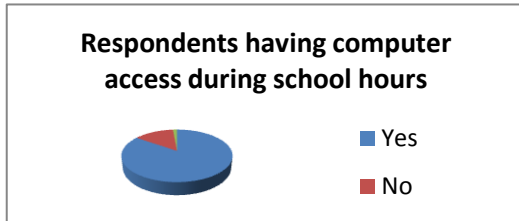


Figure 4.5: Graphical survey result depicting availability of computer during hours.

Evaluation:

The majority of the respondents indicated that they have their own computers, we expect the few respondents to make use of the computer laboratory and facilities provided by the institution during school hours.

B3 Have access to Computer after school hours?

	Respondent	%
Yes	126	88
No	17	11
Undecided	1	1

Table 4.6: Tabulated survey results showing availability of computer after hours.

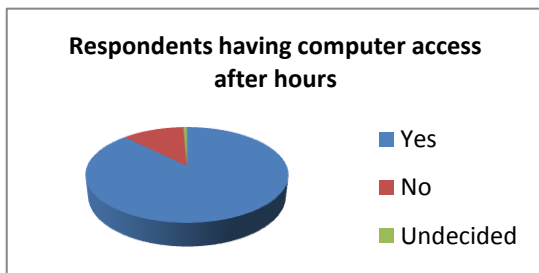


Figure 4.6: Graphical survey result showing the availability of computer after hours

Evaluation:

The total of 126 respondents representing about 88% of the population has access to computer facilities after hours. An encouraging number indeed, efforts should be made to communicate the afterhours open laboratory facilities for the other group of students struggling to have afterhours access.

B4 Have access to Internet facility during hours?

	Yes	No	Undecided
Respondent	109	32	3
%	76	22	2

Table 4.7: Tabulated survey results showing availability of Internet facility during hours.

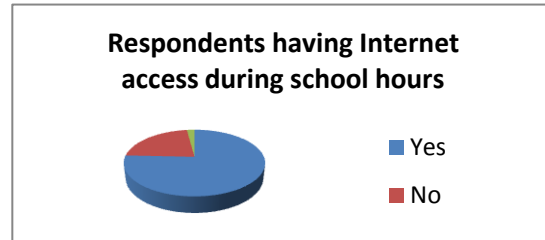


Figure 4.7: Graphical survey result depicting availability of Internet facility during hours.

Evaluation:

The majority representing about 76% of the respondents have access to Internet facility during schools hours. The same number of respondents was not having internet access some years ago in the study conducted by (Odunaikie S.A 2006). It means efforts of the Faculty of ICT to provide a dedicated Laboratory equipped with internet access is paying dividends.

B5 Have access to Internet facility after school hours?

	Yes	No	Undecided
Respondent	100	43	1
%	69	30	1

Table 4.8: Tabulated survey results showing availability of Internet facility after school hours.

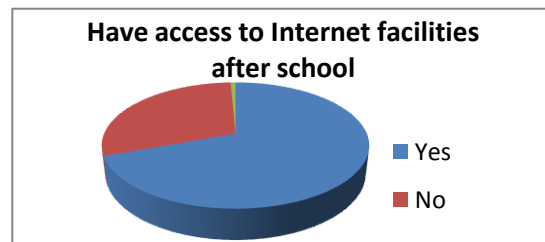


Figure 4.8: Graphical survey result depicting availability of Internet facility after hours.

Evaluation:

Like B4, the respondent's 70% is very encouraging and highly welcomed as a factor in determining the best suitable e-learning delivery model. It is worth noting that the earlier research revealed the same amount of respondent was not having access couple of years back.

B6 Where to access Internet facility during school hours?

Accessing Internet after hours?	Respondent	%
Home	13	9
Work / School	90	63
Internet Café	24	17
Mobile Phone	27	19
3G	25	17
Undecided	2	1

Table 4.9: Tabulated results showing where respondent access Internet facility during hours.

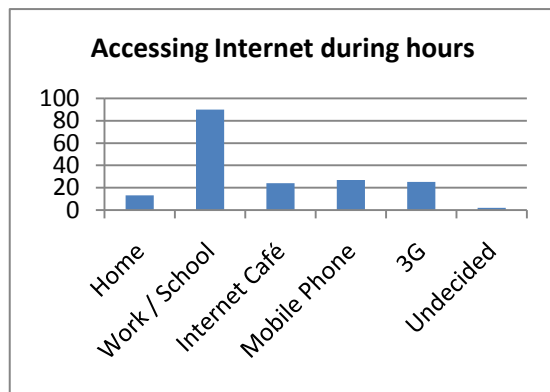


Figure 4.9: Graphical survey result depicting places of accessing of Internet facility during hours.

Evaluation:

The majority of the respondents, (63%) rely heavily on their respective work place and school for internet connection. There could be only one reason for this phenomenon, avoiding high cost of internet connection. Also, the trend these days is to make connection through mobile phone and 3G (36%) at a budgeted rate.

B7 Where to access Internet facility after school hours?

Accessing Internet after	Respondent	%
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hours?		
Home	15	10
Work / School	17	12
Internet Café	29	20
Mobile Phone	49	33
3G	44	31
Undecided	5	3

Table 4.10: Tabulated results showing where respondent access Internet facility after school hours.

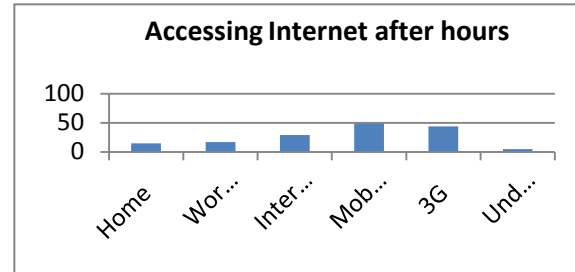


Figure 4.10: Graphical survey result depicting places of accessing of Internet facility after hours.

Evaluation:

Most of the Internet access afterhours take place using mobile phones and 3G (64%). On the other hand, respondents are willing to stay behind at work or school to get on-line connection. Others relied on friend or go to public place like the library or post office and internet cafe to access but just for very limited hours or on weekends probably.

B8 Budgeted Cost of access Internet facility

There are six main internet providers in South Africa; they are MTN, Vodacom, Neotel, iBurst, Sentech, and Telkom. Their internet connection rates vary as indicated below. (**\$1 = R7.35**).

Service	Speed (Mbps)	Usage (GB)	Price (ZAR)
Vodacom HSDPA	1.8	1	289.00
Sentech	1	a	299.00
Telkom ADSL	0.375	1	310.00
MTN	-	-	-
iBurst	1	1.2	369
Neotel	-	-	-

Table 4.11: Broadband costs per month
Source:jump.co.za

Cost of Internet		
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access	Respondent	%
R100 – R200	55	38
R201 – R300	26	18
R301 – R500	23	16
R501– R700	8	6
R701 and above	5	3
Undecided	24	17

Table 4.11: Tabulated results showing cost of access to Internet facility by respondents.

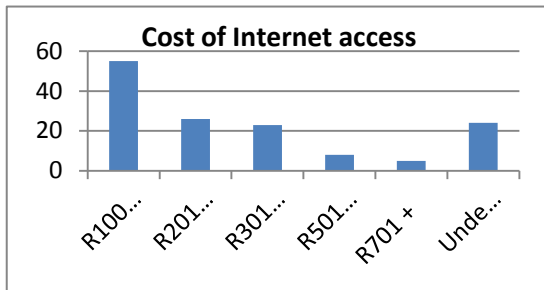


Figure 4.11: Graphical survey result depicting cost of accessing of Internet facility by respondents.

Evaluation:

Most of the Internet access afterhours take place using Internet cafés, mobile phones and 3Gs. It becomes evident that most respondents budget as little as R100 for internet access. In our opinion, most internet access and download will be done either in the office or on the school dedicated laboratory.

B9 Affordability of on-line connection

Affordability	Yes	No	Undecided
Respondent	58	79	7
%	40	55	5

Table 4.12: Tabulated survey results showing affordability of on-line connection.

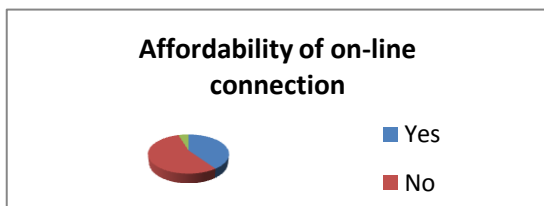


Figure 4.12: Graphical survey result depicting affordability of on-line connection.

Evaluation:

About 79 representing 55% respondents are not able to bear the cost while 5% are undecided. These figures give insight into the current cost of call and inter-connection rates which are high. We commend the efforts of ICT

faculty for the dedicated laboratory and propose that more of such labs should be made available.

B10 Choice of on-line courses

Choice	Yes	No	Undecided
Respondent	102	40	2
%	71	28	1

Table 4.13: Tabulated survey results showing choice of on-line study.

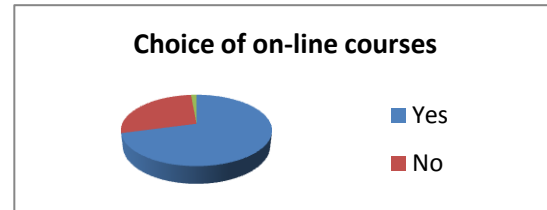


Figure 4.13: Graphical survey result depicting choice of on-line study.

Evaluation:

Here, respondents make on-line learning their preferred choice by a 71% margin. This development is welcomed as it shows e-learning acceptability level in our institution.

4.2.3 Analysis of Survey Results in Section C

The main reason of questions in this group is to evaluate e-learning acceptability level, and easiness in using internet for educational and research purposes. More importantly, this section is used to evaluate the respondents' previous experience and ability to manage their study in internet education. It becomes necessary to evaluate their readiness for e-learning.

C1 Can use computer and internet for education and research purpose?

	Respondent	%
Strongly Agree	77	54
Agree	46	32
Undecided	12	8
Disagree	2	1
Strongly disagree	2	1
No response	5	4

Table 4.14: Tabulated survey results showing ease of using internet for education purpose.

Evaluation:

From the responses in table 4.14, it shows that 86% are able to use computers and internet

for education and research purposes while the remaining 14% either disagree or has no opinion on the issue.

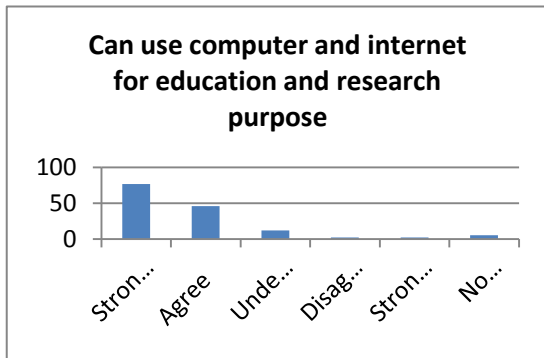


Figure 4.14: Graphical survey result depicting the ease of using the utility program.

C2 On-line education is convenient, No class attendance?

	Respondent	%
Strongly Agree	30	20
Agree	31	22
Undecided	31	22
Disagree	29	20
Strongly disagree	17	12
No response	6	4

Table 4.15: Tabulated survey results on user conveniences of on-line education, No class attendance.

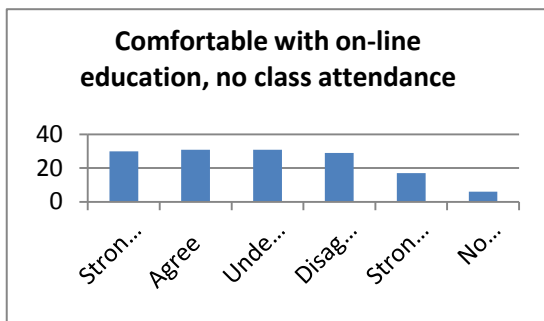


Figure 4.15: Graphical survey result on user conveniences of on-line education, No class attendance.

Evaluation:

Table 4.15 shows that there was a 96% response rate to this question and about 42% are actually in favour of this question while 32% fall short of finding on-line education without class attendance convenient. The result are not convincing, we are of the opinion that the department embark on awareness

drive to gather support about e-learning education.

C3 Confidence in passing on-line education

	Respondent	%
Strongly Agree	26	18
Agree	31	22
Undecided	39	27
Disagree	23	16
Strongly disagree	20	14
No response	5	3

Table 4.16: Tabulated survey responses showing confidence in passing on-line education.

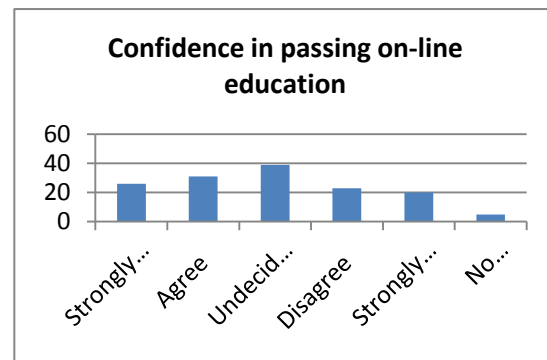


Figure 4.16: Graphical survey result depicting confidence in passing on-line education.

Evaluation:

Despite the 97% response rate to this question, a below average rate of 40% have confidence in passing on-line courses while 30% respondents cannot guarantee they will pass; the other 30% are undecided. We agreed that the no classroom contact as stipulated by question generated some panic.

C4 Experience in on-line education?

	Respondent	%
Strongly Agree	19	13
Agree	22	15
Undecided	33	23
Disagree	31	22
Strongly disagree	32	22
No response	7	5

Table 4.17: Tabulated survey responses showing respondents experience in on-line education.

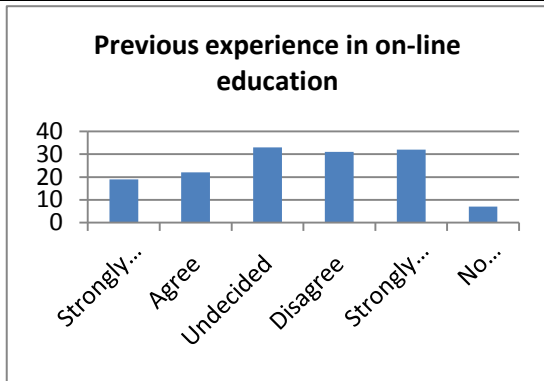


Figure 4.17: Graphical survey result depicting their experience in on-line education.

Evaluation:

The response rate was 95%, a low proportion of 28% respondents have previous experience in on-line education and about 72% have no on-line education experience or undecided. This highlights that crops of students have no previous experiences with education technology but experience technology as they progresses with their studies.

C5 Flexibility of on-line education

	Respondent	%
Strongly Agree	33	23
Agree	43	30
Undecided	31	22
Disagree	21	15
Strongly disagree	10	7
No response	6	4

Table 4.18: Tabulated survey responses showing flexibility of on-line education.

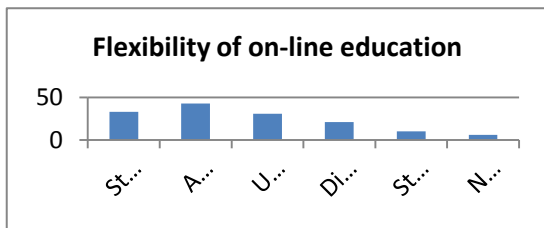


Figure 4.18: Graphical survey result depicting their flexibility of on-line education.

Evaluation:

About 53% of the respondents believe that on-line education is users-friendly and flexible. While 22% disagree on this issue and 25% remains undecided. We agree that based on the responses, respondents are prepared to attend courses at their own planning, space and time.

C6 On-line education as a Choice

	Respondent	%
Strongly Agree	23	16
Agree	26	18
Undecided	32	22
Disagree	28	19
Strongly disagree	29	20
No response	6	4

Table 4.19: Tabulated survey responses showing respondents choice of on-line education.

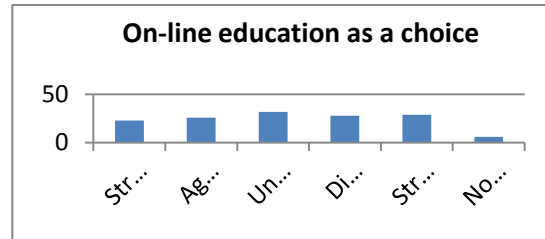


Figure 4.19: Graphical survey result depicting respondents' choice of on-line education.

Evaluation:

The responses to choice of on-line education were no different from others. About 40% disagree on the choice of on-line education as a model and less than 35% prefer it as their choice. In our opinion, this has nothing to do with on-line education as a model but highlight the fear and lack of confidence among students to study on their own.

4.2.4 Analysis of Survey Results in Section D

The section was to ride on the back of the previous section C questions to get an affirmative answer and re-confirm the responses provided in the previous section regarding the choice of preference model of study.

D1 Prefer on-line Education

	Yes	No	Undecided
Respondent	49	81	14
%	34	56	10

Table 4.20: Tabulated survey results showing preference of on-line education

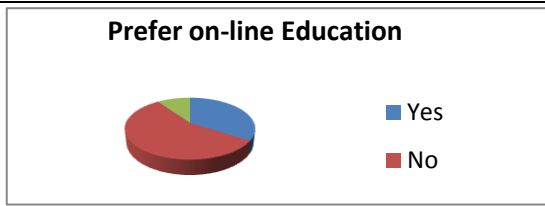


Figure 4.20: Graphical survey result depicting preference of on-line education.

Evaluation:

The respondents re-affirmed their disagreement and non-preference of purely on-line education as e-learning delivery mode. There was no discrepancy from the previous and similar question in section C6. 34% against 56% respondents reportedly prefer online education.

D2 Prefer on-line Education combined with Class attendance

	Yes	No	Undecided
Respondent	110	18	16
%	76	13	11

Table 4.21: Tabulated survey results showing choice of on-line combined with class education.

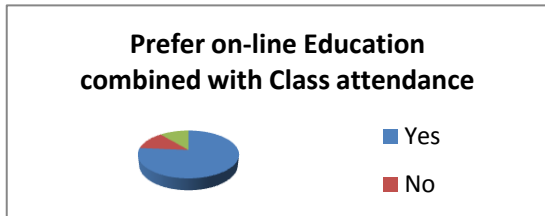


Figure 4.21: Graphical survey result depicting choice of on-line combined with class education.

Evaluation:

A clear margin of 76% are actually in favour of combining on-line education with classroom attendance while a mere 13% are against adopting on-line education with class attendance. The students made a statement of not abandoning traditional classroom education but we at least go for the combination. We suggest that the on-line education model should be introduced to them in stages.

D3 Prefer on-line Education combined with Technology- No Class attendance

	Yes	No	Undecided
Respondent	61	63	20
%	42	44	14

Table 4.22: Tabulated survey results of on-line combined Technology with No class attendance.

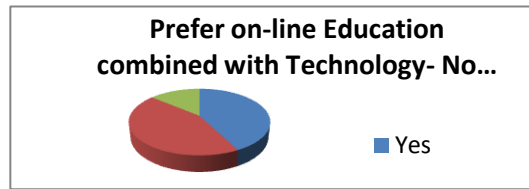


Figure 4.22: Graphical survey depicting on-line combined Technology with No class attendance.

Evaluation:

The response to this question was a balanced one. About 42% are in favour of combining on-line education technology with various technologies but no classroom attendance whereas the same margins of 44% are against this form of learning model.

5. CONCLUSION

(Pajo & Wallace, 2001) reiterate that the growth in computer applications and the use of Internet in particular has signalled change for the delivery of education especially in the area of teaching and learning. Arguably, the use of this model in classrooms will be a major development that will change the way knowledge is imparted to students inside and outside the classroom. This is not the case in our institution; our learners are more comfortable with blended form of on-line education with classroom teaching.

The students should be encouraged to embrace technology in their learning by introducing them to educational technology as they progresses into their studies. We propose that one course at a time be delivered using on-line technology; while the other courses take turns to be implemented as on-line courses. We believe with time, the student will gain more confidence and enthusiasm for on-line education

The efforts of the Faculty of ICT in providing dedicated facilities are highly appreciated. The fact that more students (87%); could afford their own computers and have access to internet connection either through ICT facility or through the phone proves that the majority of the student populace are e-learning ready.

We noted that mobile phones have made internet connection more accessible and

readily available. This is one technology that needs to be explored for flexible combination with on-line education.

Apart from being reluctant to accept changes – which could improve with time, inability to manage their study, inexperience in on-line education, we can conclude that the knowledge is there, the equipment is available and students can sustain on-line connection with infrastructure and resources provided by ICT management.

6. RECOMMENDATIONS

From the above findings and conclusion, it is evident that the learners at TUT will be comfortable with blended form of on-line education. We recommended that TUT should embark on a drive to make learners aware of the benefits that they can gain from e-education. We further recommend e-education be implemented with a pilot project and enhanced with various on-line technologies that can supplement classroom education.

7. REFERENCES:

- Aldrich, C. (2000). The e-learning 2000 hype cycle. Stamford, CT. Gartner Group
- Aldrich, C., & Ross, C. (2000). Evaluating an end-to-end e-learning infrastructural provider. Stamford, CT. Gartner Group
- Campbell, N. (2001). e-teaching, e-learning and e-education: A paper to inform the development of the ICT strategy in New Zealand for Ministry of Education.
- Connick, G.P. (1997). Issues and Trends to take us into the twenty-first century. New Directions for Teaching and Learning
- Corbetta, P. (2003). Social Research: Theory, Methods and Techniques. U.K.: Sage Publications
- Dehinbo, J. O. (2002). Frame work for determining suitable web development language for teaching in tertiary institution
- Dix, A., Finlay, J., Abowd, G., & Beale, R. (1998). Human-Computer Interaction. 2nd edition. U.K.: Prentice Hall
- Fiske, E., & Bruce, H. (1997). Identifying quality in American colleges and Universities. Planning for Higher Education.
- Franklin, S., & Peat, M. (2001). Managing change: The use of mixed delivery modes to increase learning opportunities. Australian Journal of Educational Technology, 2001 17(1),37-49
- Jump.co.za (2007). Broadband price comparison
<http://www.jump.co.za/articles/2007/08/broadband-price-comparison.html> Date accessed: 31/07/2010
- Kapur, R (2003). Cyber Classroom
www.rediff.com/search/2003/jan/22edu.htm Date accessed: 31/05/2010
- Leedy, P.D., & Ormrod, J.E. (2001). Practical Research: Planning and Design. 7th edition. USA : Merrill Prentice Hall
- Mergendollar, J.R. (1996). Moving form technologically possibility to richer student learning: Revitalizing infrastructure and reconstructed pedagogy. Section 4: Grading the policymakers' solution. Educational Researcher.
- Odunaike, S. A. (2006). The Impact of incorporating e-learning in traditional classroom education
- Pajo, K. and Wallace, C. (2001). Barriers To The Uptake of Web-based Technology by University Teachers.
- Rosenburg, M. (2001). E-learning: strategies for delivering knowledge in the digital age. New York McGraw-Hill

Appendix A

Research Questionnaire

Determining the most suitable E-Learning delivering mode for TUT students

JUNE, 2010.

Brief Introduction

The current trend in society – globalisation, technology, life-long learning requirement are pressurising the existing models of education, learning content development and more importantly, the mode of delivering the instruction. Traditionally, in education and business environment, Information Technology has been seen as purely a support or operational tool. But since the advent of Internet and later electronic commerce and lately e-learning, there has been a shift in paradigm because the later has facilitated a more cost-effective way of doing things.

New approaches to learning may cause intense disruption to traditional higher education institutions. Hence new philosophies of learning need to be explored to determine the possible impact and choice of strategies. The views of students, lecturers and support personnel, learning outcomes, courses or module availability and delivery mode need to be evaluated and explored for relevance in the new learning climate.

Understanding our student extents and capabilities of learning on their own coupled with the availability of basic and necessary equipments required for e-learning will have profound impact on the choice of e-teaching, e-learning and e-education delivery mode. A right choice of delivery mode is very essential and fundamental in moving forward to attain the much needed greater height in quality education and making greater use of the opportunities provided by the Internet technology. This research questionnaire key focus and emphasis is on the changes to teaching and learning that will result from an e-education or on-line Education environment.

Please kindly complete this questionnaire based on your intuition, knowledge, personal experience with Internet, web-based education and your expectation. Your participation is highly welcome. Thank you.

S. A. Odunaike
Tshwane University of Technology
Faculty of Information and Communication Technology,
Soshanguve Campus.

SECTION A – contains sectional information to be used for grouping in order to obtain heterogeneous composition. Please mark the appropriate category with an X

A1	Gender	Male	<input type="checkbox"/>		Female	<input type="checkbox"/>
A2	Technicians / Academic Assistant / Lecturers		<input type="checkbox"/>			
	Student		<input type="checkbox"/>			
A3	Present level of study		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

SECTION B – contains information to determine the availability of computer and internet – a basic requirement of E-Learning. Please mark the appropriate category with an X

B1	Do you have your own computer / laptop?		<input type="checkbox"/>	<input type="checkbox"/>		
B2	Do you have access to computer during school / work hour?		<input type="checkbox"/>	<input type="checkbox"/>		
B3	Do you have access to computer after school / work hour?		<input type="checkbox"/>	<input type="checkbox"/>		
B4	Do you access to Internet facility during school / work hour?		<input type="checkbox"/>	<input type="checkbox"/>		
B5	Do you access to Internet facility after school work hour?		<input type="checkbox"/>	<input type="checkbox"/>		
B6	Where do you get access to internet during school / work hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B7	Where do you get access to internet after school / work hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B8	If connection is by fixed line dial up / Internet Café / Mobile Phone / 3G, How much in Rand does it cost you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B9	Can afford the cost of on-line connection every month?		<input type="checkbox"/>	<input type="checkbox"/>		
B10	Would you like some of your course / subject to be purely on-line / internet based?		<input type="checkbox"/>	<input type="checkbox"/>		
	Recommendation					

SECTION C – contains information to determine the level of acceptability and easiness in using internet and attending on-line courses. Please mark the appropriate category with an X

		5 Strongly agree	4 Agree	3 Undecided	2 Disagree	1 Strongly Disagree
C1	I find it easy to use the computer and internet for research and educational purpose.					
C2	On-line class is very convenient model to use for the course without class attendance					
C3	I have much confidence in myself using the on-line model and passing without Lecturer assistance.					
C4	I have done some correspondence or on-line course before. Don't think it's a problem.					
C5	The on-line model will be user friendly and flexible to allow me more time to study on my own plan, space and time.					
C6	I would prefer using the on-line / internet model for my course than attending classes.					
	Recommendation					

SECTION D – contains summary / concluding information to determine the preference model. Please mark the appropriate category with an X

D1	I prefer purely an on-line / internet model of learning.		YES	NO		
D2	I prefer on-line / internet model combined with class attendance and lectures.		YES	NO		
D3	I prefer on-line / internet model supplemented with on-line materials like slide, video, messaging, on-line mobile chat facilities, e.t.c. but NO CLASS ATTENDANCE and LECTURE.		YES	NO		

Thank you for your time and co-operation.