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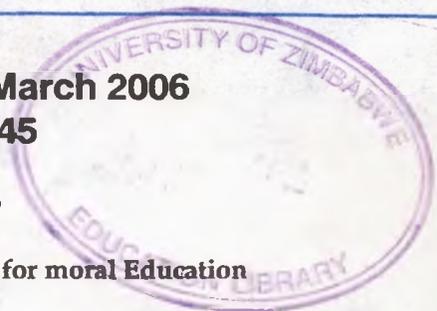
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A STUDY ON THE HUMAN FACTOR ISSUES OF LECTURERS AND STUDENTS THAT HINDER THE ESTABLISHMENT OF E-LEARNING ENABLED TERTIARY INSTITUTIONS IN A TRADITIONALLY FACE TO FACE INSTITUTION

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Abstract

Information and Communication Technology (ICT) provides various opportunities and challenges for improving and revamping the learning experiences of students and lecturers. The purpose of this article is to identify and discuss the challenges of introducing ICT driven education in a traditionally face to face tertiary institution in developing African countries. It has generally been observed that the introduction of ICT in such institutions has been met by resistance. Although a number of factors have been identified, this article concentrates on the human factor issues such as the attitudes and perceptions of lecturers and students. Human factor issues in the development of ICT based curricular impact on, rapid acceptance, successes and failures of its implementation. Data for this article was collected using questionnaires, interviews as well as other secondary sources. From the data collected it was realized that lecturers and students are not aware of their new roles in the new learning environment. This was found to be one of the reasons why there is generally resistance when it comes to the

implementation of ICT in education. A detailed discussion of the evolving roles and streamlining of the human factors for favourable outcomes is presented. Finally the article gives recommendations for an adaptive, purposeful staff and students development programme which takes cognizance of the human factor issues.

Introduction and background

The introduction of e learning in traditionally face to face tertiary institutions has been met with mixed feelings and some form of resistance by lecturers and students. This situation was found to be common in most universities that have started to work towards the introduction of e learning. These include University of Botswana, Harare Polytechnic and the University of Zimbabwe. The situation was found to be different when compared to some developed countries when they introduced their e learning. Although there was some form of resistance, the degree was found to be different due to the different conditions in which these institutions are found.

After realizing the difference in the economic situations of the developed countries as compared to that of the developing African countries, the researchers found that the African developing countries are facing more challenges as they try to embark on

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e-learning as a training methodology. Some of these challenges were found to be human factor issues. It is the purpose of this article to investigate and highlight these human factor issues, and then propose a methodology to deal with them so that the implementation of e learning will be a success.

Conceptual frame work

We are on the threshold of an exciting and revolutionary period, in which the scientific study of man will be put to work in man's best interest. Education must play its part. It must accept that a sweeping revision of educational practices is possible and inevitable (Skinner 1954). For this revolution to be a success, both the learner and the instructors have to be involved. In other countries, these changes are in the implementation stage. In this regard there has been a growth in e learning in both the universities and in commercial training organizations in UK as suggested by Fitzgibbon and Jones(2004) in their article, *'Jumping the hurdles: challenges of staff development delivered in a blended learning environment.'* While in developed countries researches are now on implementation stage, developing countries are still debating on whether to implement e learning or not. This article, will start from a point whereby it has to be pointed out that there is no way a University can stay afloat if it is not considering open distance learning (ODL) and e learning.

Initiatives are now evident that those institutions which are using ICT in education are no longer looking at their national boundaries for clients. They are no longer focusing on the traditional school leavers but are now moving towards accommodating life long learners and international students.

In distance education, as pointed out by Evans and Ping Fan(2001), virtual lectures have a number of advantages including interactivity adaptation, simulation, and integration. They facilitate active rather than passive learning associated with the conventional open learning material. However, there are challenges to lecturers and students as to fully exploit the potential of virtual environment so as to provide the interactivity. Thus there are many challenges towards making effective use of ICT in education in the developing countries, one of the most important being the lack of adequate technological infrastructure as suggested in *Mathy Vanbuel, Imfundo knowledge bank article 1*.

As universities in the new university sector are trying to cope with the diversity of their students' learning needs, this diversity is multifaceted and can include intellectual development, skills development, socio-economic situation, motivation, length of time since last involved in formal study and so on (Lie & Cano 2001). In

coping with this sort of diversity, a traditional response may be to create smaller groupings of students with similar needs as suggested by Coles & Cuthbert(2002). However, the economic climate in developing countries cannot sustain small group teaching. So what can be done to address this problem? With the incorporation of ICT into education, e learning integrated with multimedia is probably one of a range of solutions that is being considered. In other countries especially the developed world, it is being used with a remarkable success. This article focuses on the developing world with emphasis on the African continent. The main focus being that, as African Universities struggle to stay afloat by implementing e learning on their traditional face to face learning environments, the article seeks to answer the following questions:

1. What are the key challenges they have to face?
2. Which are the human factors issues of an e learning enabled tertiary institution they have to deal with?

Assumptions

It is assumed that both the students' and lecturers' perceptions of the learning approach influence a lot on the final outcomes. Therefore, these universities need to build a positive perception in

both the students and the lecturers which is important for this to be a success.

Objectives

This article seeks to:

1. Identify and highlight the factors that might influence the students and lecturer attitudes and perceptions towards e learning.
2. Determine and point out the evolving roles of the lecturers and the students in the new learning environment.
3. Propose a way staff development programmes should be carried out as these institutions will be introducing the new way of teaching, taking into consideration the identified human factor issues.

Methodology

The data used in this article was obtained from a sample of 100 students from the faculty of arts, 95 students from faculty of science and 150 from the faculty of commerce at the University of Zimbabwe. Questionnaires were distributed to assess their computer experience as well as their attitudes and perceptions on e learning. Data captured was analyzed using SPSS. Results from the different faculties were compared and this helped to assess the challenges for different faculties. Another set of questionnaires was distributed to lecturers at University of Zimbabwe, Harare

Polytechnic , Harare Institute of Technology and University of Botswana, Mutare polytechnic and Mutare teachers college. A total of forty two (42) lecturers participated in this research.

Apart from the questionnaires, interviews were also conducted with the lecturers from the above institutions. These lecturers were selected from different areas of specialties which include arts, science, health, commerce and engineering.

Data collection and tools used

From the lecturers the data about knowledge of the new roles, computer experience, attitude towards e-learning and perceptions of e-learning was collected using the questionnaire. The questionnaire consisted of 17 questions grouped in three categories namely: the attitude towards e learning, Perceptions of e learning and knowledge about the new roles. Each question was associated with a five likert scale from which the lecturer was supposed to select the scale that was in line with his view. The scales were indicating the views as follows: 5 Agree entirely, 4 Agree 3 Not sure, 2 Disagree and 1 Disagree entirely. For each of the three variables the high total of the sub items indicated positive perception, positive attitude and not being aware of the new roles

Data was also collected using a participant observation method in which the researchers participated in a VILR workshop (15 March

2005) on the University of Gent's experience with their e learning platform (MINERVA)

Findings and discussions

Findings from the lectures:

Of the 60 questionnaires that were distributed only 42 were returned. This represented a return rate of 70 percent. The three variables that were being assessed were calculated out the following values. Perceptions had five items and maximum possible score 25, Attitudes had five items and maximum possible score 25. Knowledge of the new roles had seven items and maximum possible score 25. Further analysis on the mean and mode revealed the following:

Table 1: *Statistical representation of the mean and mode of the perceptions attitude of the lecturers and their knowledge about the new roles*

		Perceptions	Attitudes	New Roles
N	Valid	42	42	42
Mean		14.3333	17.1667	29.2619
Mode		13.00	17.00	33.00

The mean value of less than 20 is an indication of negative perceptions and attitude of the lecturers. The mean value above 28 on

the new roles indicated lack of knowledge about the new roles. Further analysis on the mode revealed that although 45.2% and 59.5% had a good perception of e-learning and a positive attitude respectively. It was unfortunate that 90.5% percent of those lecturers were not aware of their new roles in the new colleges or university.

Findings from the students

Three hundred and forty five (345) questionnaires to assess student computer experience and attitude towards e-learning and perception of the learning approach were distributed, and 206 were returned. Data from these questionnaires was captured and analyzed on the bases of the three variables namely the computer experience, attitude towards e learning and perceptions of e-learning.

The findings were different when students were put into groups by faculties. Of more importance was the lack of computer experience which was found to be associated with the non science faculties with the Faculty of arts on the top. We also noted that only 15% of the students enjoyed using computers. The researchers went on to carry out statistical analysis on the findings from the three groups of students to find if they were different.

Analysis between groups

The groups were tested using the T-Test distribution as follows:

T-Test Distribution: Arts group and Commerce group

The Levene's test of equality, the significance difference on the attitude towards e learning between the Arts group and Commerce group, showed that the two groups have equal variance on the attitude.

T Distribution: Arts group and Science group

The results show that the science group has a greater mean level of prejudice as compared to the Arts group. The results showed significance difference of mean on a two tailed to be 0.000 to show that the two groups are 100% different. This showed that there were differences with respect to attitudes in relation to different faculties.

Further analysis revealed that a correlation could be established between computer experience and attitude towards e learning.

Table 2 : The correlation that existed between student's computer experience and attitude towards e learning:

		Computer Experience	Attitude
Computer Experience	Pearson Correlation	1	.732(**)
	Sig. (2-tailed)	.	.000
	N	206	206
	Pearson Correlation	.732(**)	1
	Sig. (2-tailed)	.000	.
	N	206	206

** Correlation is significant at the 0.01 level (2-tailed).

The value of .732 showed the there is a significant correlation between the computer experience and attitude towards e learning.

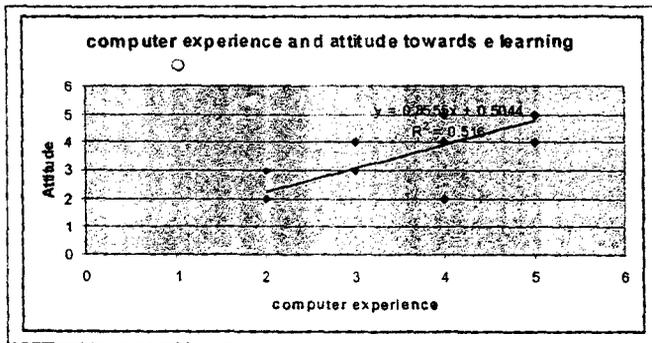


Figure 1 Graphical representation of the correlation: as the experience increase the more positive the attitude becomes.

In coming up with this article, the researchers took a comparative approach as they presented issues associated with the introduction of e learning in a traditionally face to face tertiary institution. Data obtained from this was compared with the experiences of Gent University when they introduced their e learning. This was done to show that the institutions in developing countries face more challenges.

Introducing ICT driven education.

Despite a lot of challenges when it comes to policy making and the availability of the necessary infrastructure as pointed out by Vanbuel(2002) in *Imfundo knowledge bank article 1*, there are also many challenges towards making effective use of ICT in education in these developing African countries.

As stated in previous sections, this article looks at capacity building as one of the major challenges that the institutions have to face. On capacity building the focus is mainly the human factor issues. In this regard the researchers looked at the students and lecturers. Lecturers need to be equipped with the relevant skills and competencies for them to meet the new challenges and new roles. Tinio (2003) pointed out that teacher professional development should have five foci:

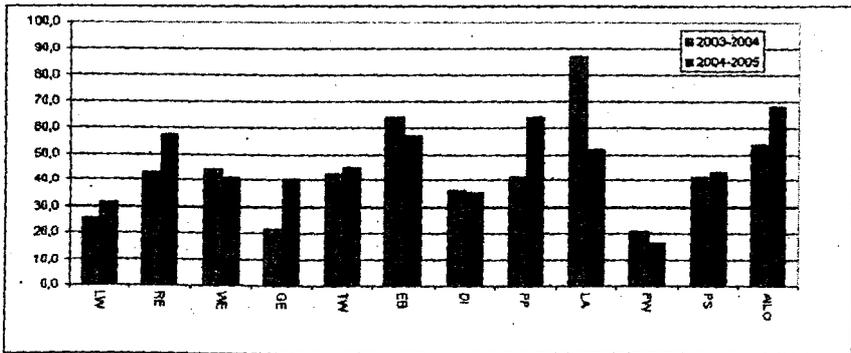
1. Skills with particular applications,
2. Integration into existing curriculum
3. Curricular changes related to the use of IT (changes in instructional design)
4. Changes in the teacher's roles
5. Underpinning educational theories.

All these are viewed as challenges that African universities have to anticipate and face as they work towards introducing ICT driven education in a traditionally face to face institution. These five foci are not covered in a pre service teacher training, build on, and enhanced in service as should be the case. As a result there is generally resistance by the lecturers to integrate ICT in their courses. The University of Zimbabwe's experience reveals that close to a year after the university had opened Tsime as a learning platform for the lecturers to use, only 5 courses were online and these were from two faculties out of 10 faculties. The two faculties

are commerce and science. It was discovered that the lecturers for the five courses have a computer science background. Interesting to note is the fact that there are over five hundred lecturers at the University of Zimbabwe. The same results were obtained at Harare Polytechnic, where a call was made for lecturers to make use of the Moodle as their e learning platform, but only two courses were put on that learning platform. It was interesting to note that even from the Computer Science department the resistance was as high as in any other department. Only two lecturers uploaded their courses on the platform out of 13 lecturers in that department. From the other departments there was no response despite the fact that an in-service ICT training workshop was hosted for the lecturers free of charge. At the University of Botswana when they introduced WebCT as their platform, there was generally resistance even from the Computer Science department with some lecturers citing that the platform was not supporting the peculiarities of their courses. Therefore a lot more has to be done in order to address this issue of resistance by the lecturers who are used to the traditional face to face approach.

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These findings were completely different from those from the University of Gent in Belgium, a developed country. At the University of Gent after the university-wide roll-out of their system on September 15th 2003, the Faculty Activity on Minerva (e learning platform) was as illustrated in the graphs below for the academic years 2003-2004 and 2004- 2005.



Faculties

Percentages of the number of official courses per faculty with an activated Minerva course on December 17 2004

Key on faculty names used at University of Gent

Faculty of Arts and Philosophy (LW)

Faculty of Sciences (WE)

Faculty of Engineering (TW)

Faculty of Medicine and Health Sciences (GE)

Faculty of Bioscience Engineering (LA)

Faculty of Political and Social Sciences (PS)

Faculty of Pharmaceutical Sciences (FW)

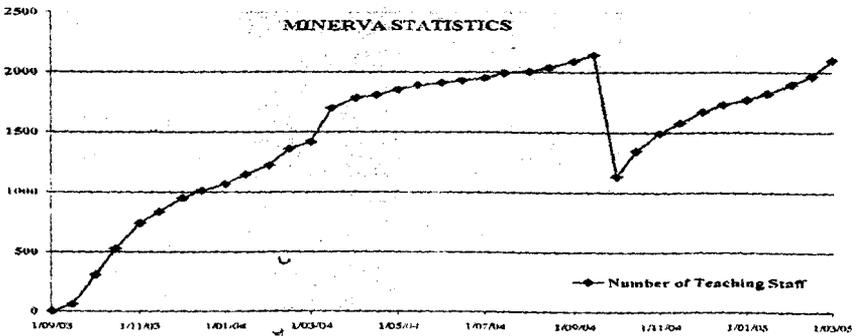
Faculty of Psychology and Educational Sciences (PP)

Faculty of Veterinary Medicine (DI)

Faculty of Economics and Business Administration (EB)

Looking at these statistics it could be noted that all the faculties readily accepted the initiative though the acceptance levels were different from one faculty to another. This was attributed to the ICT usage in those various faculties. This cannot by far be compared to the situation in developing countries as has been alluded to earlier. This therefore shows that there are a lot more challenges for the developing countries to effectively implement ITC in higher education.

The response of the lecturers at the University of Gent is illustrated by the graph below:



Number of teaching staff registered on the e learning platform

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The response of lecturers as illustrated by the graph above was different from that of the University of Zimbabwe and the polytechnics in Zimbabwe as well as the University of Botswana.

Challenges on students

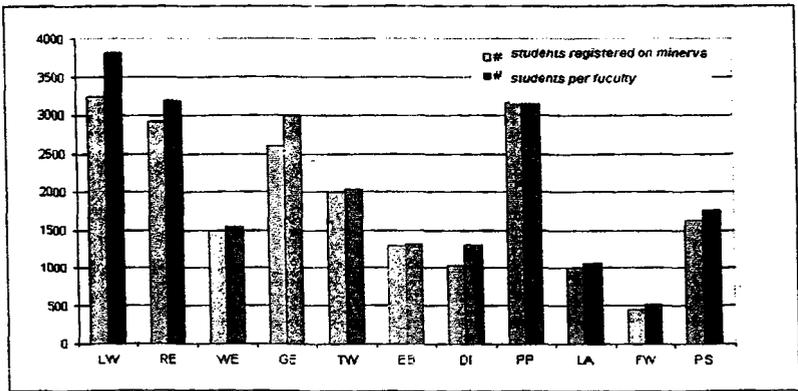
During the investigations at the university of Zimbabwe 100 students from the faculty of Arts that were selected at random completed questionnaires. The findings showed that there are a lot more challenges that developing countries have to face in trying to enhance the students' skills and experience in using computers. Of the 100 students selected the following statistics were obtained.

Table 3: *Computer experience of students in the faculty of Arts*

N=100	%
Students who had used Internet	20
Students who had used e-mail	25
Students who had enjoyed using the computer	15
Students who had used windows	18

Of course these figures were different from those from the faculty of sciences where a group of students was also selected at random from students in the department of computer science.

Of the 95 students who completed the questionnaires after they were asked to make use of the e learning platform (Tsime), 60% were comfortable. They even went on to register themselves onto the platform (Tsime) on their own. 16 % rated themselves fairly comfortable, 24% comfortable, 20 completely comfortable. When they were asked as to whether they wanted to have most of the course material put on the e learning platform (Tsime), 65% of these students said they didn't want. From this assessment the researchers attributed this to the fact that the students were not experienced users of computers for educational purposes. This was different from the responses from the University of Gent which was as shown below.



Faculty

Number of students per faculty registered on Minerva (e learning platform)

These experiences were found to be different especially when we compare this with the statistics from developed countries. The lecturers and students are not the only set of people to be considered, there are administrators who also have a role to play in this process of establishing an e enabled tertiary education institute in developing countries. Although Valcke (2003) in his article, "*ICT in higher education : An uncomfortable zone for institutes and their policies,*" focuses on the developed world, he also appreciates the role that can be played by management at different institutions. He presented the development of change of management skills as a key to empower higher education to move forward in this field and to develop a more comfortable zone for higher education. It is hoped that the same can also effectively work for developing countries.

An analysis of the findings revealed that there are a lot of factors that make the responses different in developing countries as compared to developed countries. These factors show that there are a lot more challenges for the developing countries to effectively implement ITC in higher education. The purpose of this article is therefore to inform the developing world of these factors and how to address them for the effective use of ICT in education.

Some of these factors include the students and lecturers' experiences with ICT usage in education. Our experience with University of Zimbabwe students proved that the developing countries have to deal with the challenge of students' experience with the general ICT usage. These experiences also have an impact on the attitudes of the students towards the learning environment. This was also evident from the correlation that was established between computer experience and attitude towards e learning.

Attitudes and beliefs of lecturers and students

When ICT was introduced in other sectors of industry, it resulted in the displacement of so many employees. Lewes (1995) offers an example of prolonged discussions between academic staff of one European university and their strategic director concerning the future learning environment of their university: Instead of identifying the positive aspects of their future roles, the staff feared the removal of the skilled teacher from the center of a university education.

The misconception of the use of ICT in education by the lecturers is also posing a very big challenge when it comes to capacity building. This misconception is also attributed to very high degrees of computer illiteracy and the lack of experience of what it feels to be an online student or lecturer.

Evolving roles of lecturers and instructors

From the research conducted at the University of Zimbabwe and Polytechnics in Zimbabwe which are in the process of implementing e learning, it was discovered that most of the lecturers are not familiar with their new roles in the e learning enabled environment. From the questionnaires which were completed by lecturers from the University of Zimbabwe, Harare Polytechnic, Belvedere Teachers Collage and Mutare Polytechnic and Mutare Teachers College, it was discovered that the lack of knowledge in this regard also is one of the challenges that traditional institutions have to face. The general belief from the lecturers was that the use of e learning in a traditional face to face institution was going to reduce the work load on the part of the lecturer. This is not always the case especially considering the evolving roles of the lecturer. As the learning process moves from being a lecturer centered to a learner centered, the major questions to ask at this point are:

1. What is the impact of ICT on the lecturers' roles?
2. Are the lecturers prepared for the new roles?

As suggested in the following statement:

'Network technology creates enormous possibilities but demands high levels of skills from its users. The issue is not just technical mastery of network use but above all

cognitive skills of representing and developing meaningful questions, and interpreting information by integrating it with previously and giving it an appropriate context ' Sinko & Lehtinen, 1999;17

Several researches have proved that as ICT takes the center stage in the student centered learning, it is evident that the roles of the lecturer have to change. This is so, as certain teaching material become obsolete and students become distributed throughout several classrooms. Some forms of assessment have become redundant. It is no longer sufficient for the lecturers to merely impart the content knowledge. The lecturer must move to become organizers and enablers as suggested in (Sinko & Lehtinen, 1999).

New roles of the lecturer in an e learning enabled tertiary institution

In this article, the academic staff members are made aware of their roles in this new way of teaching and delivering content to the learners. Most of the projects that were aimed at staff developing these academics in preparation for the new teaching and delivering methods seem to fail because the programmes failed to be articulate in the actual roles that the academics will have to take.

As indicated by Brabazon (2001) cited by Fitzgibbon and Jones(2002) in their article "*Jumping the hurdles: challenges of*

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staff development delivered in a blended learning environment.”, The academics’ roles are not eliminated but instead increased.

When you are working as an e modearator the structure of your working day changes. One Author remembers the day when she arrived for work shortly after 0800 am, checked her voice mail and picked up 10 masssages which had been left overnight, dealt with 18 or so emails from staff and students, went on line to monitor the forums from the group of online students.

The new roles which the lecturers are supposed to be acquainted with include the following:

Instructional designer

In this new environment, the lecturer should be seen as an instructional designer. He or she should know how to structure, organize the course, how to develop cases, problems, questions, how to organize feedback, how to balance theory and practice.

Quality controller

Through intervention at different levels during the learning process the lecturer must ensure that the quality of the learning process and material is maintained especially considering that there are new roles that some fellow learners can play in the learning process.

E-moderator

With e-learning, students control the pace of learning and this adds to the work of the e moderator. As the students will be interacting during the learning process the lecturer will be required to be moderating most of these on line discussions.

Continuous evaluator (assessor)

Since the learning process will be student centered, the absence of the continuous assessment will have negative impact on the learning process. Students will need to be assessed more frequently and get the necessary feedback in the process. Vonderwell (2003) as cited by Gudula Naiga Basaza, Martin Valcke & Anna Ruhweza Katahoire, (2004) in their paper entitled, "*Status of ICT use in distance teacher education in Uganda*", indicated that students insisted that instructors should give prompt feedback and response to student's inquiries and questions. Since feedback is defined as interaction between the learner and the instructor or system, it increases the quality of the learning experience.

E-coach

The lecturer should be seen as the e-coach and in this respect students will need to be coached on how to learn in this virtual environment which, in most cases, will be different from their traditional learning experiences. This lecturer should be seen to

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guide these students in the learning process. According to a research in September 2001, the West Country learning and skills research network (LSRN), it was concluded that the wide belief amongst staff is that learner guidance has a positive effect on retention. In line with this learner guidance was the issue of learner support. From the project report on, "Learner guidance and support: *Models used and staff views of effects on retention*", November 2002, learner support is defined as:

... holistic support for all of a student's learning through the tutorial system and other means. The whole college is involved in learner support with many different people carrying it out.

Learner support is therefore viewed as concerned with responding to individual student needs rather than with college policies or targets concerned with retention. In these E learning enabled tertiary institutions, lecturers must have the time and ability to use the technology that provide means of giving this essential learner guidance as well as learner support.

Planner

Not all lecturers are good planners especially with the most experienced ones. There is need that planning be on top of the list for the lecturers in this new learning environment, otherwise this will have a very negative effect on the students as they will be separated from the lecturer, either by time or distance. In all aspects they will need to see well organized, well planned, and well designed courses. In other words we would then talk of a learner friendly course.

Student tracker

From the survey conducted in some polytechnics, it was noted that although registers were being marked the purposes were different with different lecturers with some doing it as a college requirement. In University, the survey at the University of Zimbabwe reflected that no register was being marked. This was mainly attributed to the assessment procedures which had some limitations when it comes to the continuous aspect. There were several valid reasons as to why. In this e-learning enabled tertiary institution the lecturer will be required to track more on students, make follow ups on who did submit tasks, who forgot, what sort of assistance is required by different students.

When we look at the new roles we can definitely conclude that contrast to fears by some of the academic staff that have been used to the traditional face to face way of teaching, their roles will be

increased rather than eliminated. The lack of information in this regard has led to 'very little support or no support at all by some academics in these ICT projects as universities struggle to stay afloat. In some cases these projects take too long to take off or take off with a lot of resistance from such lecturers.

Student's perception of e learning

For many higher education students, teaching and learning using ICT is completely novel and challenging. It also calls for new skills which need to be developed in the students themselves. The use of ICT provides a new situation and medium for students in which to learn, and situational context differences suggest different learning strategies (Ramsden, 1998). This change of the learning styles and strategies, places increased cognitive load on the students. This would negatively affect the student perception of this learning environment. This in turn might affect their learning outcomes. This can be an area of discussion and research since there is lack of research evidence to justify that.

In the developing countries, the student's perception might be different on students from different faculties depending on the levels of their computer literacy, as well as usage. Students from faculties of sciences and engineering are found to be less affected, while those from non science faculties being the most affected.

Universities should come up with policies to address this problem. The University of Zimbabwe has introduced an ITC component in their compulsory communication skills course for every student being enrolled with the institution. This is a very positive move towards building students' computer experience which is of paramount importance in an e- learning enabled tertiary institution.

Students' roles in the learning process

Many traditional learning experiences do not prepare students for a high degree of self-regulated learning (SRL) and control required in Web-based courses (Brooks, Nollan & Gallagher, 2001 Eastmond, 1995; Hartley and Bendixen 2001; Hill and Hannafin, 1997, Loomis 2000). However literature has focused little on how to be a strategic learner in hyperspace. (Alexander, Graham & Harris, 1998, Dillon & Grabbard, 1998). Instead some studies have centered on performance and grades (Arvan , Ory, Bullock, Burnaska, &Hanson , 1998; Wengner , Holloway, & Garton ,1999); learner satisfaction (Hiltz , 1997;Richardson ,& Swan , 2003; Spooner, Jordan , Aglozzine, and Spooner 1999); learning styles (Clark, 1999; Neuhauser,2002; and instructional design that can support SRL (Cennamon &Ross, 200; Ley and Young, 2001; Niemi, Nevgi, & Virtanen, 2003). There are very few studies that try to address the issue of training these students who are used to these styles of learning to be able to adjust to this new style. As e

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learning is being introduced in communities which are dominated by the traditional learning experiences, this should be a factor that has to be considered mainly due to the new roles that the student is going to take in the new environment as students are being viewed not as passive receivers but active participants in the learning process.

Management

Administrators also have a role to play in this process of establishing an e enabled tertiary education institute in developing countries. Valcke (2003) discusses the crucial role of administrators in e learning projects implementation. It is imperative that those new management skills be developed to empower the management to be able to provide the crucial support functions.

Conclusion

Human factor issues play a very important role in the development of ICT based curricular. These issues need to be considered for the successful implementation of e enabled tertiary institutions. If these factors are not taken into consideration, the implementation may be very difficult. The issue of staff development must be taken seriously. The lecturers need to know their new roles in the new learning environment. The manner in

which staff development is carried out should be in such a way that the lecturers get the feel of being an on line student. The students need to be equipped with the relevant skills and computer experiences. This should be done to build a positive attitude and perception of the learning environment. Students' attitude towards e learning can be influenced by their computer experiences.

Recommendations

There is no single prescribed way of dealing with the issue of human factors in e learning. The following are some useful suggestions:

For the lecturers

1. There is need for staff development programs. These should be aimed at equipping the lecturers with the relevant skill that will be needed for the new roles in the new environment.
2. Where possible, such programs should be done as e learning courses, such that they really get a chance to know what it feels to be an on line student and lecturer at the same time. As they go through the course, they become aware of their new roles.
3. Lecturers need to be trained in elements of producing learning material that is ideal for the learning environment. (Multimedia training material production).

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4. Institutions need to come up with some form of incentives for the lecturers for innovative use of ICT in education.

5. Lecturers can also be sent for contact leave to other institutions which are well established in terms of e learning.

For the students

1. Students need to be trained on self regulated learning abilities.

2. Institutions must come up with policies that encourage the use ICT by students in the learning process.

3. Lecturers should try to cultivate the culture of ICT usage by students even in their face to face lectures so as to promote a good computer experience.

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