

The Virtual University

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ABSTRACT

The article views the concept of a virtual university. Various conceptual definitions are presented to debate the question on what a virtual university is. The author explains the important contribution of technology driven education in the delivering of academic programmes. Throughout the article the advantages of virtual education are highlighted. Some of the advantages include effective transfer of learning to the work place and quick feedback on performance. The article concludes with a future scenario of virtual universities.

1. INTRODUCTION

The contribution explores the notion of virtual university, noting that both *distance education* and so-called *online learning* have influenced the “traditional” concept of a university. These changes are related to the advances in information and communication technology and the fact that greater access to education and training impacts on the number of students higher education institutions need to cater for. The concept “Virtual University” is also a name used by many present day institutions to refer to courses and instructional programs offered through the Internet and other technologically enhanced media. These new technologies make it possible for such institutions to offer instruction without the time and place constraints that we find in traditional university programs. Virtual university education and training programmes are designed to meet a learner's learning needs when and where it is most convenient for them.

The article explores each one of the special qualities of the Virtual University to highlight why many existing tertiary institutions are

moving towards making more extensive use of technology, simply because it serves the needs of present day governments, communities, business, teachers and learners better than ever before. These special qualities include

- Registration on demand and examination on demand.
- Patient, ongoing, repetitive tuition 24 hours a day.
- Making extensive use of all the senses throughout the learning process.
- Effective transfer of learning to the work place.
- Immediate or at least quick feedback on performance.
- Tuition on all levels of Bloom's Taxonomy of learning.
- Person-to-materials interaction and person-to-person interaction.
- Computer-based assessment and facilitating quality control in virtually all fields of learning and performance and at all levels.

2. CONCEPTUALISATION

The concept “virtual” is described by the Oxford Dictionary as “actual,” “real” “present,” “current,” and “existing in fact,” In the context of a particular type of university the definition could be expanded to “This or that institution is actual or virtual for practical purposes though not in name or according to the strict definition...” In another sense the concept is also described as : “This person is, for all practical purposes, the virtual principal of the institution.” The concept “virtual university” has therefore been chosen by individuals to describe a dimension of this type of institution which is in a special position to provide tuition that is different from typically traditional universities.

Looking at these definitions one comes to the conclusion that the concept “traditional university” has been ingrained in our minds as an institution involved in tertiary education, that it has a campus and that there are students taking courses, writing examinations and receiving qualifications. There are also lecturers designing and presenting course materials and administrators, financiers and managers involved in the management of the institution under the leadership of a principal and a board of academics and managers. When we however look

at the evolution of universities in the last century this “traditional” concept of a university has seen many changes of which **distance education** and **online learning** have possibly been the most recent and dynamic of all changes.

The reasons for these changes are many but possibly the two most dynamic reasons are the development of technology for mass communication and the fact that many more millions of humans have been given access to education and training that will prepare them for tertiary education, than ever before.

The concept “Virtual University” is also a name used by many present day institutions to refer to courses and instructional programs offered through the Internet and other technologically enhanced media. These new technologies make it possible for such institutions to offer instruction without the time and place constraints that we find in traditional university programs. Virtual university education and training programmes are designed to meet a learner's learning needs when and where it is most convenient for them. One of many such examples is the Michigan Virtual University which describes its teaching style and success as: “The most important ingredient for success in the MSU Virtual University is a spirit of adventure. That is because Michigan State University Virtual University courses offer you and us an opportunity to pioneer the uses of new technology together.”(www.msu.edu). This web site states: *“Virtual University is a name used at Michigan State University to refer to courses and instructional programs offered through the Internet and other technologically enhanced media. These new technologies make it possible for MSU to offer instruction without the time and place constraints of traditional university programs. Virtual University offerings are designed to meet your learning needs when and where it is most convenient to you. Virtual University courses offer you and Michigan State University an opportunity to pioneer the uses of new technology together.”*

There is very little doubt that technology in general is here to stay and we have certainly not seen the end of that development. By implication computers and the Internet are also certainly here to stay and amongst all the different types of literacy that humans have to master in these modern times, computer literacy has become one of fastest growing skills human life has

ever seen. The communication world has become totally dependant on fast moving information and we see the frustration and impatience on the faces of people if facts, information and solutions are not available at the push of a button. We have become so used to this “instant” way of life. Switch “on” and a light comes on, the stove plates get warm, the fan starts turning to cool us down, the car engine starts to transport us, the traffic lights change from red to green or orange to control and ensure safety in traffic movement, the telephone, fax, radio and television takes us instantly to the remotest places on earth and now increasingly so to the entire universe. Is it any wonder that people become impatient when other people do not react in the same instant way that technology does? Learning has now also moved into this era of technology that has given universities special qualities.

When we explore each one of the special qualities of the Virtual University we begin to understand why most existing tertiary institutions are moving towards making more extensive use of technology simply because it serves the needs of present day governments, communities, business, teachers and learners better than ever before. What are these special qualities?

- Registration on demand and examination on demand.
- Patient, ongoing, repetitive tuition 24 hours a day.
- Making extensive use of all the senses throughout the learning process.
- Effective transfer of learning to the work place.
- Immediate or at least quick feedback on performance.
- Tuition on all levels of Bloom's Taxonomy of learning.
- Person-to-materials interaction and person-to-person interaction.
- Computer-based assessment and facilitating quality control in virtually all fields of learning and performance and at all levels.

Looking at each of these qualities in the following paragraphs will indicate the overall quality of technology-based education, training and development or e-learning.

3. REGISTRATION ON DEMAND AND EXAMINATION ON DEMAND

The need for education and training has, in a traditional context, developed into well planned, highly structured study programmes, certificates, diplomas and degrees which take the student through a series of subjects and modules and finally to examinations that lead to qualifications.

Fast developing economies and communities and even faster changes in information have lead to a need for “just-in-time” training. A person moves from one speciality to another, from one career to another and needs new and updated training quickly and efficiently. These new needs have required educational institutions to be ready at any moment to provide the training and only those who have moved away from “registration at the beginning and examination at the end of a year or period,” can cope with these needs. Updating knowledge and skills in a fast moving world cannot wait for the institution to be ready only in the new year. This is why registration “on demand” or “when required” and “examination on demand” or “when required” gives so much more freedom of movement to the learner who needs knowledge or skills **now**. Is it any wonder that people who are applying for a particular post will contact an institution offering this service and ask: “I am applying for a particular job but see that I lack a qualification in this field. Can I register today and work through the material and get the qualification within 2 weeks since that is the date on which my application should be in?” In another case an attorney who had been working in a law firm but was going to get married, wanted to set up her own business in her new home town. She inquired on 14 February 2002 : “Can I register for the Certificate Course in Practice Management immediately and complete it by 31 March because I want to open my law practice on 1 April?” This was done and the learner completed “just in time” training at the moment it was needed badly. Few traditional, residential universities can comply in this case but the Virtual University with online education and training and registration/examination on demand, will have no problem. Why do Virtual Universities encourage learners to use e-learning?

The Breyer Virtual University in Idaho gives, amongst other reasons, the following:

All of our programs can be taken from anywhere in the world.
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Students may begin their programs of study at anytime; no waiting.
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We offer one of the most affordable higher education programs anywhere.

(adm@breyerstate.com)

Fast moving learners need to be accommodated, they need the opportunity to focus, to use their intellectual abilities to the full and the incentive to work at their own pace and perform, without having to wait until the slower ones are ready for examination. These learners can move fast and the Virtual University that provides this service will draw all these students. An example of such a Virtual University is Ashington University which gives the following information on information@ashingtonuniversity.com : Achieving an MBA in six months.

“Ashington University is a private university that is rapidly becoming known as a pacesetter in executive business education. Through a uniquely designed educational delivery system consisting of heavy use of the Internet and technology, Ashington is pioneering the view that the skills required to manage a business can be applied to the management of a small business, health care, government, and non-profit organizations as well”

The study materials are designed by professionals for students working alone. All courses are fully self-contained. At the end of each chapter in the text, students are required to complete the exercises assigned for that chapter in the Course Workbook. This assignment will consist of questions requiring essay answers, multiple choices and filling in blanks left for this purpose.

The Ashington University Program is ideal for:

- *Individual business owners who recognize the necessity of enhancing their skills and knowledge in a period of ever increasing business over national boundaries.*
- *Mid-career managers with high potential who cannot afford to interrupt their career to attend classes on a full time basis.*
- *Preparing managers to accept even greater leadership responsibilities.*
- *Understanding the forces affecting decision-making and strategic planning in the global market.*
- *Adults who can attend from virtually anywhere in the world.*
- *Working with professors with academic and real world experience.*

4. PATIENT, ONGOING, REPETITIVE TUITION 24 HOURS A DAY

No traditional tertiary institution can be open and available 24 hours a day, 365 days a year. But...learners are becoming more and more demanding and impatient and do not want to wait for the weekend or recess to pass before she can ask the lecturer that vital question. Lecturers teaching popular courses can never be asked to repeat a lecture for one student who missed the class or the point. How much patience can a university teacher be expected to have to repeat a principle over and over again for a learner who is a bit slow but highly motivated and who wants to know? Once again the answer is found in the Virtual University. The technology-based Virtual University can boast with the most patient team of "lecturers" who never tire. Learners can work through the materials on CD or on the Internet a hundred times, use the "chat site" to communicate with fellow students and use e-mail to get important information. Without this facility they have to go to a campus and sit in a large class only to find that the lecturer is absent or has no time to answer all questions of every student no matter how important the questions may be.

The Virtual University has assessment facilities that challenge the learner to achieve 100% in every test. Tests can be repeated over and over and random selection processes keep the learner thinking. The learner can challenge himself to attempt tests that are designed to use measurement tools of increased levels of difficulty. The question or item analysis system can determine the level of difficulty of each objective type question and a learner can choose to do the test at a difficulty level of .3 on a 10-point scale and then on to levels of .4, .5, .7, .9 and .10. In this way the student has a very good idea of the level of knowledge mastered and this gives great confidence when the student wants to move on to a next module or course, or onto tasks that test the transfer and application of knowledge and skills in the work place.

5. MAKING EXTENSIVE USE OF ALL THE SENSES THROUGHOUT THE LEARNING PROCESS

It is a well known didactic principle that the more senses are involved in the learning process the better the chance that effective learning will take place. In paper-based distance education the sense that is in use on a constant basis is the visual sense where text, diagrammes and pictures are seen, understood and remembered. Adding sounds through audio tapes or CDs enhances the learning especially where images and sounds compliment each other. Adding the touch, the taste and the sense of smell is not always necessary or possible but where they are vitally important, like in cookery training or working in a laboratory, learners have to wait to get to the hands-on training sessions before this can happen. The Virtual University can however provide all the preparatory training for such a hands-on session and only those learners who have achieved a pre-determined level of competence in the preparatory phase are allowed to attend the application phase. Those that take longer can be given more opportunities and more time to reach the entry level and only then will they slot into the practical, hands-on phase.

During the practical phase more senses are used which will enhance the quality of learning but technology has advanced to such a level that simulation training (like the training of a pilot) has given virtually all the training experiences that a learner needs to master a particular set of skill. We all have read how devastatingly accurate the training of the pilots involved in the 11 September attacks on the Twin Towers was....with skills mostly achieved through a computer simulator programme.

Even ABET or adult basic education and training can be successfully presented by the Virtual University. Most ABET learners have a sense of hearing and particular finger and hand movement skills. By voicing the sounds on the computer screen while a cursor draws the eye and hand to practice the correct letters, the learner can link sounds to letters and words, repeat them over and over again until the reading process takes off and improves. By following an image of a handheld pencil tracing the form of an O or C the learner can copy the movement on paper while following the screen hand and so move from letters to words, to sentences and paragraphs. New technology also captures what you say and translates this to images and words on the screen. Through these techniques you can start saying simple sentences, read simple words and statements and see them appear in text. Now these can be repeated over and over until the learning is perfect. Here the senses of sight, sound and touch are used to create a dynamic and exciting learning experience. This learning linked to challenging tests gives immediate feedback which is very encouraging and gives confidence. Tests and exercises are designed on a basis of one-step-at-a-time which fast learners can elect to skip but slower learners can repeat until they are confident to move on.

6. EFFECTIVE TRANSFER OF LEARNING TO THE WORK PLACE

The necessity to transfer learning at the earliest possible opportunity to the work place has led to techniques and concepts called: "on-the-job-training" and "hands-on-training." Traditional teaching can very seldom simulate accurately the work place situation to determine if the learner is able to handle the transfer. Courses are mostly theoretical and once the

learner has mastered the knowledge component and has seen some of the skills performed, s/he is given the chance to exercise the skills in a laboratory or in the work place. In very many cases traditional learning prepares the student for an examination in the field but once the qualified person reaches the work place they so often hear: "Now that you have mastered the theory the time has come to learn what goes on in practice." The time lapse between mastering the theory and acquiring the work skills can sometimes be months or years during which much of what was learned as a skill has been forgotten or has become very rusted or even outdated.

The Virtual University does however NOT take the learner away from the work place. Time spent on e-learning is interspersed with time on-the-job and the direct link between what is being learned and its application as a skill in the work place, is very dynamic and effective. Learners want to experiment with newly acquired knowledge and skills to see "if it works" and when it does work they are encouraged to experiment more. Their vocabulary is increased through the new words and concepts they encounter in the training and the application of the new concepts in the work place and typical job-jargon gives them confidence and more courage to experiment.

Alternating mastering theory and practical application on the basis of only allowing learners to attend a practical session if they have mastered the theory on a predetermined level e.g. 80%, creates an incentive and places a barrier in the system where time will not be wasted on learners who are not ready for transfer of learning to the work place. All this is possible through the Virtual University where a learner can repeat the learning process until s/he is ready for on-the-job-training - and not before. This makes the task of the educator easier because this selection process helps them to determine the level on which the hands-on training should begin and an analysis of the learner's performance in the theoretical phases helps them to focus on areas that some learners find more difficult than others and on parts of the course material that are more intricate. Learners not found ready for transfer of learning simply carry on with the mastering of theory until they are ready to attend a practical application phase of the course.

7. IMMEDIATE OR QUICK FEEDBACK ON PERFORMANCE

We have all experienced the effects of praise or reprimand in a learning situation. At school the “pat on the back” approach has always been more motivating than calling a learner “a stupid child.” With adults this is even more discouraging because no one wants to lose face in the presence of other students. Immediate feedback on what was correct in tests and assignments has always been more effective if what was done correctly is fed back first before the incorrect responses are criticized. Another motivating factor is the time taken by assessors to give feedback on performance. At some universities the student numbers are so great that lecturers do not find time for detailed assessment. Students receive credits for submitting assignments and receive a memorandum which they can use to assess their performance in the assignment. In many cases the feedback takes so many months to be returned that students lose interest in the assignment and very seldom take the trouble to evaluate their own performance.

In the Virtual University computer-based assessment is immediate and includes references to sources where answers are still incorrect after many chances at finding the correct solution. In some cases a Module is concluded with a quick test of 30 MCQs on the Internet and the students get the opportunity to repeat incorrectly answered questions TWICE before a reference to the sources is given. Learners are also informed on when and how well they have mastered and how long it took them to complete the test. It becomes a challenge to get the highest pass mark (100%) in the shortest time. In addition e-portfolio assignments offer the learner the opportunity to analyze material and provide creative answers to scenario-type questions. Learners are often divided into peer groups who assess all the other assignments of learners in the group online - and have lively e-discussions on the quality of the assignments in the group. An assigned lecturer acts as moderator and controls the quality of individual performance and peer-feedback given in the group.

There is very little doubt that immediate feedback is extremely

motivating and encouraging and this falls in line with the “instant reaction” -life we are leading in modern societies. The “switch-on-off” syndrome gives great satisfaction if technology and electronics are working and great frustration if not! Learners want this syndrome, this effect to be applied in their learning and this can only be found in the Virtual University where computer-based assessment is applied constantly, at short intervals and on great numbers of students. Objectivetype assessment instruments have become very sophisticated. Developing from TRUE/FALSE, to YES/NO questions to Multiple Choice Questions, the variety of objective type questions has grown to over 30 different types. Some examples are:

- Choose Always, Perhaps, Never status.....
- Change the incorrect concept.....
- Choose the logical outcome.....
- Arrange in sequence.....
- State the most important opposing position....
- Link cause and effect.....
- Choose the steps left out.....
- Complete the hierarchy logically....
- Choose the most unlikely consequence....
- Calculateand choose the correct answer.....

Cleverly stated questions and effective item analyses can provide objective measuring instruments that can assess all levels of thinking that Bloom has included in his Taxonomy of Levels of Thinking.

8. TUITION ON ALL LEVELS OF BLOOM'S TAXONOMY OF LEARNING

Because of the great variety of test items, different forms of assessment and feedback and the ability of computers to assess vast fields of information, tuition on all levels of Bloom's Taxonomy and assessment on all these levels have become possible.

On Level 1: Knowledge and the learning of facts and memory of facts can be tested over and over without the technology tiring and offering the learner the challenge to work through the tests

against time. Most virtual training systems state the time it has taken to work through a test and offer the challenge and opportunity to redo the test items randomly selected in order for learners to get 100% in the shortest possible time.

On Level 2: Understanding, the assessments can test not only recall of knowledge but also understanding the information by giving tuition wherein the learner is challenged to understand facts in context, link learning to other relevant fields and must demonstrate understanding in the tests.

On Level 3: In Application, the challenge is to create situations and scenarios where learners can be allowed to apply the facts, theories and skills they have learned. Mental skills, skills of understanding, recall and making associations with the realities of the work place, are now turned into manual skills, manipulation skills and body functions that allow the learners and supervisors to demonstrate and observe what was learned in the virtual situation before it being applied in the work place. During the design of this learning that takes place in levels one and two, the designer must have a very good idea of what the activities in the work situation can and will be and pre-level 3 activities must be included in those phases that will make the learner comfortable with, but also be encouraging and creating an expectancy that will make him/her look forward to the on-the-job application. The strong link to the virtual learning situation lies therein that the learning material is accessible throughout the application phase. The computer-based material, with examples, is constantly available in the same way as the so-called workshop manuals where techniques and tasks are set out step-by-step. In the computerized "workshop manual" the task is however set out in graphic detail with virtual demonstrations that the learner can apply - also step-by-step - without the fear of making mistakes that can cause damage or even loss of equipment or lives.

On Level 4: Analysis - the virtual learning situation creates as many scenarios as is needed to develop the learner's ability to analyze facts and activities, break them down to basics, the bare essentials and deduce from the content of the analysis what can be done to change, improve or adapt the activities to reach the ideal requirements and standards set in the work place. The

complete process of analysis can be shown in detail, learners can be taught the theory of analysis and its application in a particular environment and many examples are given of where this activity has proved to be successful. The beauty of the virtual learning environment is that by including examples from the specific work place, course material can be tailor-made to suit the client. Learners and clients will be satisfied that course designers have taken the trouble to adapt the content to the client's situations and feel that their particular problems have been incorporated in the analysis.

On Level 5: Synthesis where learners are challenged to find the best solutions for situations after they have discovered during the process of analysis - a number of possibilities that could be applied. Once again the virtual learning situation can be designed to contain the logic of the synthesis process, give the possible outcomes of decisions found in practice and give the criteria whereby solutions could be evaluated in the next level of the Taxonomy.

On Level 6: During Evaluation the criteria suggested or designed in Level 5 are applied and the solutions to a problem declared workable or not. The virtual learning situation designs scenarios, demonstrations and simulations where the solutions are applied in a simulated environment and allows the learner to evaluate the validity of the simulation and then assess the relevance and possible success of the solution(s) offered. Once again the use of computer simulated situations has proved how strong the virtual learning situation can be. Pilot training is a good example and the use of computer games where millions is spent on designs that create a virtual reality, is proof that learning in this way can be challenging as well as entertaining. It is certainly popular if one sees the thousands that flock to computer parlors to enjoy computer games. From playing Solitaire on screen to challenging computer games like SIM CITY the virtual learning situation has come a long way. Learners can be confronted with virtual scenes that teach analysis, synthesis and evaluation with the enormous advantage of taking away all fear of failure, loss of face, damage or loss of equipment, loss of time or life before the decisions or solutions are applied in practice.

On a NEW LEVEL : Creativity - the virtual learning situation allows the learner to follow the logical step of improving on what was found ineffective in the Level 6 Evaluation phase of thinking. Again the role of simulation of all possible situations is a challenge to find the most creative new solutions that did not exist before. The reality and immediacy of the Virtual University is just that - a creative solution using all the advantages of technology to overcome the shortcomings of traditional teaching and learning environments, making learning a greater reality than ever before and turning learning into an enjoyable activity, a challenge, a game. The many examples of "games" that we see on television like the "Weakest Link" proves that men and women enjoy preparing for such challenges, for a quiz, a test of knowledge and even now an e-examination. Observing learners taking an e-examination is enlightening because the preparation for the examination is so much more structured and focused and just the fact and awareness that there will be no surprises gives the learner confidence and courage. A virtual examination is not designed "to catch a learner out" it is a test of recall of knowledge and skills and the concept of "competent" or "not yet competent" does not exclude learners who are not yet ready but encourages them to try and try again until they are found competent. In this field the Virtual University is also the most patient assessor never getting tired of offering and creating new opportunities to show competence. There is certainly loss of time but very little compared to that used in residential situations and to other types of losses. It is certainly not the type of loss that learners in a cookery school will see when a recipe is a failure and the ingredients land up in a dustbin.

9. PERSON - TO - MATERIALS INTERACTION AND PERSON-TO-PERSON INTERACTION

Interaction during learning with study material and with other learners and the teacher, is vital. Many hours are wasted when information is downloaded "en mass" and no time is given for understanding, trial and assimilation. Very few teachers in the traditional learning situation find time for interaction in a normal classroom situation. This deficiency has culminated in the study of theory in large groups and then application thereof in

workshops, laboratories and practical on-the-job learning sessions where interaction is integrated in a constructive way. With information changing constantly the Virtual University can however now use technology to ensure interaction with the learning material on an ongoing basis and we see that in some cases computer-based courses do not allow learners to progress to a following module before s/he has seen actual successful performance, on a pre-determined level, in a previous module. This type of interaction is of vital importance for the learner to gain confidence, to experience success and to look forward to new challenges.

Interaction through web sites, chat sites, video conferencing, computer conferencing and e-mail, make inter-personal communication a reality as never before. Technology allows the human mind to reach the remotest spots on earth, reach other learners and specialists in whatever field of interest they are working in and this interaction is important in the process of comparing your expertise with others in the field.

10. COMPUTER-BASED ASSESSMENT ON ALL LEVELS

Large student numbers are found more and more at universities and colleges as technology has brought new fields of expertise and new challenges to the doorstep of learners. Publicity and advertising have shown learners that what was previously seen as too difficult and beyond the reach of the normal person has become so accessible that the result has led to so many more being challenged to improve their quality of life by learning a trade, a skill, a profession. Job situations are broken down into manageable parts that can be taught and recognition of prior learning and experience towards qualifications has opened the learning world to many more millions than ever before. What this has led to is an increase of the learner to teacher ratio which in some cases has become unmanageable. The Virtual University's technology has come to the rescue of many such unmanageable training and development situations and organizations where the teaching is still done on a person to person basis but assessment is now done but the computer.

The advantages of computer-based assessment are that computers are accurate, objective, fast and reliable and will give both the learners and teacher feedback on performance in ways that would have taken the individual teacher many more hours of hard work and frustration. Time previously used for assessment can now be used for improvement of the learning material since the assessment results can also indicate areas too difficult for learners and areas that need better explanation and examples.

Computer-based assessment as designed for the Virtual University, is also now being used on a large scale at residential institutions. Research has shown that 80 universities in the United Kingdom have moved from paper-based assessment to technology based evaluation for just this reason using the advantages of the system to benefit all who are involved in teaching and learning. (ITD Conference January 2003). All levels of learning can now be assessed before the learner is required to demonstrate learning in the work place. Even ongoing assessment at the work situation can be designed to assist the trained worker to upgrade work skills on a constant basis. A simple example is the "spelling assessment" each computer programme has incorporated to evaluate the spelling and language abilities of a writer and give options to improve on those skills.

Some Virtual Universities have been established purely as assessment institutions who facilitate tests and examinations on behalf of other institutions. An example is the VUE or Virtual University for Evaluation. (www.vue.org)

11. WHERE WILL THE VIRTUAL UNIVERSITY BE GOING? AHEAD OF ALL THE REST?

The human species has come to accept that technology can be used to improve the quality of life on earth. Technology has come to stay and in most developed societies life without electricity, telephones, radio, television, vehicles and other modes of transport of all types and sizes would be unthinkable. Technology has become a mass communicator, a vast job creator and an

important tool to prepare humans for life and for jobs. Technology has become the communication tool between continents and states, between communities and corporations and at Virtual Universities and there is very little doubt that this tool will eventually be used by all education and training institutions. Present Virtual Universities concentrating on the use of technology might be ahead at this stage of development but - looking at what is spent on e-learning, the road ahead is very clear!!

The International Data Corporation (IDC) states that it *"is bullish about e-learning's future. The worldwide corporate e-learning market will soar from \$6.6 billion in 2002 to \$23.7 billion in 2006."* (www.onlinelearning.co.za).

IT (Information Technology) training finds that the *returns in e-learning boosted IT training to the extent that 80% of IT companies claim to have seen satisfactory returns on investment for IT training, with 50% planning to increase expenditure over the next year.* (www.onlinelearning.co.za).

The New Grant Report from IBM (International Business Machines) on Endowment for the Business of Government states: *"Private education and training institutions and private arrangements are bringing e-learning to thousand of Africans whose access to traditional education is hampered by poverty, political conflict and a lack of teachers and infrastructure."* (www.onlinelearning.co.za).

The international trend in establishing Virtual Universities is to create e-learning campuses alongside their residential campuses. In this way so many more students can be reached and prepared for campus-based, hands-on training. Students are accredited for whatever course they have passed through both modes of education and can move from one mode to the other as the needs arise. This makes their learning more flexible and studies can be adapted to personal and job situations as changes take place. In the past it has seldom been possible for students to move from the residential mode to the distance learning mode but this is now a reality especially where a residential institutions now also have a computer-based facility

where learners can be transferred to - should personal or work circumstances require such a situation.

Most universities in South Africa have seen the possibilities of e-learning and virtual campuses. Residential institutions however cannot move to online distance learning and tuition overnight because they will suddenly have no students on campus making the infrastructure of lecture rooms, laboratories, hostels, sport facilities, etc. an uneconomic investment with costly maintenance. Changes to virtual campuses will take time and planning and a slow integration of residential and online learning will take place. The few institutions that have chosen e-learning and e-tuition as their core teaching and learning mode have the advantage of not having a physical campus to maintain and can therefore plan on providing more affordable tuition opportunities than traditional institutions.

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