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Role of Virtual Universities in the Scheme of Future Development of Distance Education and Delivery of Open Distance Learning Resources: Possibilities and Issues

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Abstract

In today's fast paced, rapidly developing and changing global scenario of education, there has been a phenomenal interest in the growth of what some are calling as 'Digital', 'Online' or 'Virtual Universities'. Information and Communication Technologies (ICTs) have now radically reconfigured the landscape of higher education, especially, Open Distance Learning, and the very 'nature' of the existing universities. The emergence of online courses and of Open Course Wares (OCWs) has decreased the importance of formal campus education. In recent years, there has been a phenomenal increase in enrolment of students in higher education sector, due to which the existing facilities of higher education are not enough to accommodate them. Therefore, an ardent and urgent need is now being felt by the teaching learning community of making use of Virtual Leaning Environments (VLEs). The students instead of enrolling into regular courses are preferring to 'login' from a distance so as to get access the 'course-ware' of their interest and other related educational programmes of their academic interest. At global level, there is a PAN Network which is 'P' African Network of 47 countries in which around 10,000 students in these 47 countries are getting their degrees through this Network via online courses and virtual education mechanism. Virtual education is now being depicted as solution to the increasingly demanding problems of higher education.

***Key words**: Higher Education, Open Resource Course Ware, ICTs, Virtual University, Virtual classroom*

Introduction

In the recent years, globalization and advancements in technology have driven changes in the sphere of social, technological, economical environment and political landscapes at a rapid rate and magnitude that is too great and too multiple to ignore. As the society is changing, the skills that students need to be successful in life also changes. So, the gap between the knowledge and skills

most students acquire in schools and universities and those required in today's world and technology-infused workplaces should be abridged upon. In order to thrive in a digitally driven economy, students of 21st century need digital age proficiencies. This can be done through radically integrating ICTs in our educational systems in order to fulfil its objectives; namely the preparation of students for the world beyond the classroom. With the increase in student enrolment, at higher education and school level, the traditional universities and colleges are unable to cope with mad rush of admission to all those who possess minimum eligibility and desire to continue their higher education (Sansanwal, D.N., 2001)[15]. Thus, in order to cater to the ever increasing demand of student enrolment, concept of virtual education has come in place.

Virtual education aims at providing computer generated virtual environment, which can be used as the most advanced tool of visualization for a large number of scientific approaches such as study of computer structures, near realistic simulation of natural phenomenon and conducting hazardous experiments. Virtual education refers to instruction in a learning environment where teacher and students are separated by time or space, or both, and the teacher provides course content through the use of methods such as course management application, multimedia resources, the internet and videoconferencing. Students receive the content and communicate with the teacher through the same technologies. Course content taught through the use of these technologies is called Virtual Coursing, as the course is not taught in a classroom face-to-face, but through some substitute mode that can be associated with classroom teaching or in a Virtual classroom where the learning environment is created in the virtual space. The objectives of a virtual education are to improve access to advanced educational experiences by allowing students and instructors to participate in remote learning communities using personal computers, and improve the quality and effectiveness of education by using the computer to support a collaborative learning process. The use of advanced technologies such as computers, interactive multimedia, CD-ROMs, Computer-Aided Learning (CAL) , VC-player, Over Head projector, Slide projector, Liquid Crystal Display (LCD) projector, Radio-cum-cassette Recorder, Microphone, Cell phones, Public address system, Fax machines, Email and Internet etc has now enabled the learners of flexible learning to stimulate a Virtual Learning Environment (VLE) and take the learners to a virtual campus wherein teacher-learner interaction becomes possible in the cyberspace.

The explosion and boom in the field of knowledge and Information technologies has virtually changed the content and context of what is learnt and how it is learnt—the concept of Virtual Universities and Virtual classroom is a manifestation of this technological revolution.

Virtual Universities: An Alternative to Burgeoning Demand for Higher Education

The term 'Virtual University' characterizes an organization that provides higher education on the Internet. The institutions that provide virtual education use internet-based distance learning as a primary business mode and thereby creating a Virtual Learning Environment (VLE). Some of the organizations are truly "Virtual", existing only as loosely tied combines of the universities, institutes or departments that provide together a number of varied courses over the internet. Others are real organizations with a legal framework, yet named virtual because they appear only on the internet. An example is the Virtual German University (VGU) in Germany. VGU provides distance education over the Internet, carried by a network of partners that act and interact on the internet, but on the other hand it exists as a civil law organization. Another example is United Kingdom Open University (UKOU) which provides online distance learning Graduate and Post graduate courses in the field of Management, Biotechnology, Microbiology and Law.

Therefore, Virtual Universities are distance learning institutions whose mission is to offer classroom education in web space, or the Virtual Environment (VE), to the students, in contrast to the traditional face-to-face space of the classroom. Virtual Universities have filled a much-needed void early in the adoption cycle of learners seeking to gain college degrees using a non-traditional mode of delivery.

Virtual Education and a Spectrum of Instructional Modes

Today a wide variety of instructional modes are available which offer courses based on hypertext, videos, audio and other animated materials. These courses are as following:

1) **Hypertext Courses**: Structured course material is used as in a conventional distance education program. Here, all material is provided electronically and can be viewed with a browser. Hyperlinks connect text, multimedia parts and exercises in a meaningful way.
2) **Virtual Classroom**: These classrooms are live teacher instruction and feedback online that enable real-time voice interaction, whiteboard sharing and breakout session to enhance a students' learning experience. This provides students an opportunity to interact with the teacher as well as classmates by oral and written communication.
3) **Video-based Courses**: These are like face-to-face classroom courses, with a lecturer speaking and Power Point slides or online examples used for illustration. Video-streaming technologies are used. Students watch video by means of freeware or plug-ins.
4) **Audio-based Courses**: These courses are similar as above one, but instead of moving pictures only the sound track of the lecturer is provided. Often the course pages are enhanced with a text transcription of the lecture.
5) **Animated Courses**: Enriching text-oriented or audio-based course material by animations is generally a good way of making the content and its appearance more interesting. Animations are created using different technologies.
6) **Web supported textbook Courses**: These are based on specific textbooks. Students read and reflect the chapters by themselves. Review questions, topics for discussion, exercises, case studies etc., are given chapter-wise on a website and discussed with the lecturer. Class meetings are held to discuss matters in a chat room.
7) **Peer-to-Peer Courses**: These courses are taught "on demand" and without a prepared curriculum. A new field of online education has emerged in 2007 through new online education platforms.
8) **Social Networking using Web 2.0 Technologies**: Through social networking using Web 2.0 technologies in Virtual classroom promotes social interaction, student-centred instruction and problem-solving curriculum.

Creating a Virtual Learning Environment through Integrating Interactive Learning Tools and Technologies in Higher Education

A Virtual Learning Environment (VLE) has to be created so as to facilitate student teacher interaction and delivery of course material to the students. In VLE, the student and the teacher do not necessarily have to be at the same location and at the same time. Thus, the VLE provides the flexibility of personal communication as well as remote communication with the instructor. One of the basic design aims of the VLE system is to build a VLE communication system. A VLE is a computer program that facilitates computerised learning or e-learning. Such e-learning systems are sometimes also called Learning Management System (LMS), Content Management System (CMS), Learning Content Management System (LCMS), Managed Learning Environment (MLE), Learning Support System (LSS), Online Learning Centre (OLC), Open Courseware (OCW), OR Learning Platform (LP), or Open Resource Software (ORS) programs; it is education via computer-mediated communication or Online Education.

A wide variety of **Interactive Learning Tools and Technologies** are being used in higher education so "as to harness and achieve quality and excellence in teaching and learning" in today's higher education system. They are as following:

1) Online Conferencing: Online conferencing refers ton the use of the internet to confer with a number of people simultaneously. This facility can be used for person-to-person interaction or group communication. Online conferencing features like posting messages, sharing files or instant messaging in real-time, popularly known as 'chat'-help enhance and promote an interactive learning environment.

2) Video Conferencing: In videoconferencing technology, two or more people at different locations can see and hear each other at the same time, sometimes even sharing computer

applications for collaboration. This technology offers possibilities for schools, colleges and libraries to use these systems for a variety of purposes, including formal instruction (course, lessons & tutoring), connection with guest speakers and experts, multischool projects, collaboration, professional activities and community events. Usage of this technology requires a computer with CU-SeeMe software, a video camera and an internet connection.

3) Blog:

The term blog is a blend of the terms web and log. A blog is a user generated website where entries are made in journal style and displayed in a reverse chronological order. Authoring a blog, maintaining a blog, or adding an article to an existing blog is called blogging. Individual articles on a blog are called "blog ports", "ports" or "entries". A person who posts these entries is called a blogger. Many blogs provide commentary or news on a particular subject; other function as a more personal online diaries. Therefore, blogs have reshaped the web, impacted politics, shaken up journalism and enabled millions of people to have a voice and connect with others.

4) Really Simple Syndication:

Really Simple Syndication (RSS) is a web feed format used to publish frequently updated digital content, such as blogs, news feed, podcasts etc. Users of RSS content used software programs called "feed readers" or "fee aggregators". The user subscribe to a feed by entering a link to the feed into the reader program.

5) Podcasting: Podcasting is a fusion of two words: iPod, Apple's popular digital music player and broadcasting. Podcasting is a new method of publishing audio files (usually MP3) to the web, which are then made available through subscription and automatically downloaded to a personal computer or portable MP3 player. Podcasting involves a shift from e-learning to m-learning. E-learning or electronic learning refers to any computer-based learning that enables the students to access and make use of course materials at a distance and at their convenience. M-learning or mobile learning capitalizes on the increasing ubiquity of wireless networks and Podcasintg in higher education devices such as laptops, PDAs (personal Digital Assistants), wireless phones, MP3 players and ipods.

6) E-journal: E-journal is an electronic version of a journal that is found and read on the web. Electronic journals are the same as any journal that we can photocopy at the library, but they are made available from a vendor through a web browser from almost any location that we have on the Internet. E-journals encourage more general changes in scholarly communication and lead to more speedy publication. Some of the directories of E-journal are: www.e-journal.org/ and http://www.sciencedirect.com/

7) Digital Libraries: Digital libraries are emerging an important area of research and education. A digital library is a collection of documents in an organised electronic form, available on the Internet or on CD-ROM disks. Depending on the specific library, a user is able to access magazine/ articles, books, papers, images, sound files and videos. Digital libraries can immediately adopt innovations in techno logy providing users with improvements in electronic and audio book technology as well as presenting new forms of communication.

8) Net Snippets: Net Snippets is a web research tool that provides a suite of personal and collaborative solutions for managing academics online research. Net Snippets is a seamless collection of content from the open web library resources, databases or local files and emails in one accessible location. It allows one to focus on his/her research rather then on technicalities involved in capturing and citing sources from multiple types of format. Using Net Snippets, one can instantly capture, annotate and save the content and sources without leaving the browser. It automatically packages all our findings into one zip file that can be sent to by email to peers and experts.

9) Concept Mapping Software:

Concept mapping software (or "mind maps" or "graphic organizers") is a software the demonstrates the visual relationship of concepts (Words, ideas or numbers). Concepts maps have been proven to improve students reading, comprehension and writing skills (Gouli, Goguli and

Grigonadou, 2003)[7]. Concept maps helps the learner and teacher determine what the learner knows; they can help students meaningfully integrate new information into existing cognitive structures.

10) Research Software:

Some of the applications of ICT in research are as following:

a) SPSS (Statistical Package for the Social Sciences) Software: These statistical tools include modules for performing classification, regression and other types of statistical analyses. Market researchers, health researchers, survey companies, government and education researchers use this tool. In addition to statistical analysis, data management and data documentation are essential features of this software.

b) Mathsoft Mathcad:

More than 2.7 million individuals use Mathcad to perform, document and share calculation and design work. The unique Mathcad visual format and scratch pad interface integrate standard mathematical notation, text and graphics in a single worksheet making Mathcad amenable for knowledge capture, calculation, reuse and engineering collaboration.

c) SAS (Statistical Analysis System) Software: From the traditional analysis of variance and predictive modelling to exact methods and statistical visualization techniques, this software runs statistical processes like variance and regression, mean, media, mode and Standard Deviation. It is capable of running complex multivariate analyses also. SAS software provides tools for both specialised and enterprise wide analytical needs. Business analysts, statisticians, researchers and engineers design this software for use.

11) Word Processing Software: Research (Russel & Abrams, 2006,)[13] has consistently shown that technology can improve students' writing if students are given open-ended prompts and if they go through the formal writing process-brainstorming, drafting, revising and rewriting. Students have numerous options for writing specialised writing software, Multimedia author ware, web logs or "blogs", wikis and web pages. Yet basic word processing software, either open source (such as open office) or proprietary programs such as MS Word remains the most popular classroom-based software, as writing remains one of the most fundamental of learning tasks (Mayer, 2001, p.15)[11].

12) Interactive White Boards:

An Interactive White Board (IWB) is a large display that connects to a computer and projector which then displays the computer's desktop onto the board's surface, where users can control the computer with a pen, their finger or other device. The board is mounted on a wall or floor stand. Researchers suggest that IWBs enhance student enjoyment of learning and allow teachers to present information in a more dynamic fashion. Research on IWB use in USA schools appeared to result in improved test performance for low achieving students, in subjects like Maths and Science.

13) Web 2.0 Applications: These applications are broadly classified as "blogs" or "wikis", micro-blogging sites such as Twitter, Media creation sites such as You Tube or PodOMatic and Social media sites such as Facebook. In contrast to, "Web 1.0"-the "read" web in which content creation was limited only to owners of the website and where users could only interact with the site itself, Web 2.0 is the "read/write" web, characterised by what Hargadon (2009)[8] call the "three-Cs"—contributing, collaborating and creating.

14) E-Readers: E-readers or "e-books or "digital readers" are digital books which are slate like devices that use electronic link. They tend to focus exclusively on reading. They function just like a paper book-student can turn pages, skip ahead to the end of the book, highlight text, annotate sections and bookmark their page. The benefit of e-readers as a learning tool is that hundreds of books and documents can be stored on the e-reader, thus giving students a portable, lightweight library.

15) Digital Learning Games:

Digital Learning, games in contrast to larger genre of general computer "games" has an explicit educational focus. They are virtual worlds or designed experiences (Squire,2006)[17] in which learners "play at" source role as they solve problems and make connections by learning to "think like" scientists, historians, journalists, soldiers, diplomats, or nay other group that employs

systematic methods of inquiry and problem framing in order to investigate the world. Digital Learning games can be CDROM or DVD based, or they can be Internet based, such as Skoolaborate, EcoMUVE, or Urgent Evoke etc. They can be both offline and online, collaborative (or solitary). They can also be played on mobile devices such as portable gaming systems, (for example; the Wii, Xbox or PlayStation etc), televisions, computers, iPads and Smart Phones.

Avatars: A Web Based Virtual Technology for Learning in Higher Education

The term avatar entered computer lingo during the 1970's, when a text-based MUD (Multi-User-Domain) called AVATAR was introduced. In this computer game. Each player's presence was established through an avatar character, usually, some type of representation of a living creature. Another use of the term involved a communication protocol called AVATAR (Advanced Video Attribute Terminal Assembler and Recreator) typically found in multi-user domains hosted on Bulletin Board Systems).

Pedagogy behind Use of Avatar Virtual Learning Technology

The pedagogical principles behind virtual learning are leading in the development of Virtual Learning Environments (VLE). According to Simons (2004)[16], "…… the time is finally ripe for digital pedagogy". Virtual Reality (VR) supports the constructivism learning approach (Economou, Mitchell & Boyle, 2000)[6]. Constructivism is the fundamental theory that motivates educational uses of virtual environments (Chittaro & Ranon, 2007)[3]. According to the constructivist theory, world interaction is relevant in the learning process. Besides reality, the most appropriate way to generate a content based on authentic learner activity may be through virtual environments (H.Harper, Hedeberg, & Wright, 2000)[9].

Why use Avatar Technology in Higher Education?

According to Antonacci et al (2008)[1], "Virtual worlds hold considerable potential as powerful medium for learning. The benefits of learning through virtual worlds exist in three key areas:

a)Virtual worlds give users the ability to carry out tasks that could be difficult for them in the 'real worlds' due to constraints, including cost, scheduling or location.

b) Virtual worlds' persistence allows for continuing and giving social interactions, which can serve as a basis for collaborative education.

c) Virtual worlds can adapt and grow to meet user needs.

Antonnaci et al (2008)[1] says, that "engagement in virtual environments enables students to experience learning opportunities that would not normally have been easily accessible, including, 'role-playing', operating simulated equipment, designing and building things or creating simulations of physical or procedural processes'. Through these activities, students engage themselves in high levels of cognitive functioning, "such as interpreting, analyzing, discovering, evaluating, acting and problem solving", while also being supported to "work outside traditional boundaries of reality".

Innovative Uses of Avatar Technology in Higher Education

Avatars are being used to help students and teachers and give them more direct training before they even meet their students.

Here are some of the possible ways avatars can be used in higher education:

a) Training Teachers

Avatars are being used in education for teacher training. As part of a new research program, at the University of Central Florida, specially designed avatars realistically initiate different types of students to help teachers practice classroom management and relate it to their students.

b) Vokis

Vokis are speaking avatars and teachers in all subjects but especially language class, are using them by recording their own voices to match their digital avatar. Using more animated avatars helps students whop feel disconnected from class-discussions or who are more audio learners rather than visual learners, process material and relate to the lesson more personally. Language teachers

have been using Vokis to help students with pronunciation and conversation too, letting them voice—over their avatars.

c) Second Life

The virtual reality environment Second Life has been used in higher education and for younger students for years but its potential for experiential leaning, role playing and online education is still impressive. Those who promote Second Life as an education tool applaud its ability to promote active discussion and participation and help. Students apply concepts in a concrete, realistic way.

d) Bringing Historical Figures to Life

Some teachers are even designing avatars to look like Historical figures like, Albert Einstein, bringing important lessons to life for students. By animating important figures that student traditionally only ready about in textbooks, teachers are able to personalize and contextualize the subject.

e) Giving Remote Learners a Campus feel

Some Universities are providing open access, online courses and learning materials for the public. Unlike conventional open courseware, Avatar technology can help these universities to use Avatars and virtual reality so as to help learners feel like they are actually sitting in a classroom. By mimicking the layout of campus and classroom, students feel more engaged and enthusiastic, even if they are learning independently at home.

f) Personalized Avatars for students

Avatars are not just substitute teachers or guest speakers. Students are also getting to create their own avatars which they can take with them as they explore websites and virtual reality games online. These avatars allow students to cross the portal into the online world so that they are getting hands-on-experience instead of just passively listening to a one-way lecture.

Potential Benefits and Advantages of a Virtual University System

The advantages which Virtual Universities offer are as following:

1) Virtual Universities provide a great amount of flexibility to the learners in getting the desired learning experiences at the time and place along with the pace of their choice.

2) The learners do not have to present themselves for their pursuit of an academic course at a fixed time and place; it does not come in their way of doing a job or engaging in other learning pursuit simultaneously at a time.

3) The facilities regarding receiving instruction or gaining learning experiences are available to the learners during 24 hours of all the seven weekdays, hence allowing the learners to utilize their leisure hours in a better way without hampering their day-to-day routines.

4) The Virtual University System is capable of providing the services of the most experience and capable faculty belonging to any stream and discipline of the school curriculum, which is mostly denied or remains impracticable in the conventional educational set-up.

5) The system of Virtual Universities is capable of providing the learners the joy and benefits of real-time learning through the utilization of the most advanced technologies at its disposal on the part of the teachers as well as the learners in the form of CD-ROMs, DVDs, Internet, on-line chats, mobile and telephonic conversation, www, audio-conferencing, Radio-conferencing, teleconferencing and videoconferencing etc.

6) In the system of Virtual Universities, there is no fear of criticism, snubbing and ridiculing by the colleagues and fellow teachers and also the failure in the attempts does not prove an unaffordable affair.

7) This System of Virtual Universities may prove advantageous to the students on account of its on-line features related to admission, information about the courses and academic activities, assignments and projects, test and evaluation, grading and results, faculty available for the interaction, guidance and needed help, information about the commencement of the public examinations, next schemes, entry in the vocational and professional streams etc.

8) Getting education through Virtual University System is beneficial in terms of cost also. The students physically sitting at his/her place can get a high quality of professional and technical education of a prestigious foreign university at a affordable cost.
9) It also saves a lot of valuable energy of the faculty and administrative authorities that is otherwise going to be spent in conventional university set-up for the day-to-day administrative and management of the affairs.

Disadvantages and Limitations of a Virtual University System

1) The flexibility of this system to the learners for taking their studies at their will, convenience, comforts and adjustment of the space and timings according to their needs may be misutilized and misdirected on the part of the students especially when they are younger in age and rare not matured enough in feeling their responsibilities for the building of their career, are shirkers and lazy by nature.
2) In many cases, the organization and working of a Virtual University or campus is found quite hopeless in terms of its quality of study material and its delivery to the students. The staff employed for providing instructional, material, guidance and timely feedback is also very poor in quality, sincerity and devotion to the work.
3) The dreams and promises of providing real and conventional University experiences through virtual realties of the Virtual University System are hard to realize.
4) We aim to develop a wholesome personality of the students with what we teach and do with our students in the Universities and schools. Along with the curricular instruction work, the organization of co-curricular activities students' welfare services, community activities interaction with the parents and members of the community etc; help the conventional system of higher learning much in seeking the all-round balanced development of the children.

Conclusion

Virtual Education has been now depicted as a solution to the increasingly demanding problems of higher education; all of this has fired the imagination of academics, policy makers and educational specialists alike. In today's era of Information Technology (IT) and globalization, Virtual Universities can solve many problems and maladies coming in the way of realizing our constitutional obligation towards the younger generation, i.e; providing, *"Education to All"* and ensuring quality education to them at their doorsteps, according to their needs and convenience. Virtual Universities will develop an education-on-demand system for delivering tele-courses to home personal computers. While each student would work independently, computer conferencing, email and voice mail access to a faculty or advisor would be available to answer questions, evaluate assignments and provide guidance (Salvati, 1995)[14]. In this multimedia virtual environment, teachers can design–individualized instruction for students who can learn in real-time or on demand.

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