Indexing

TOJDE is abstracted, indexed and cited by the following databases around the world:

- The Education Resources Information Center – ERIC
- The Directory of Open Access Journals – DOAJ
- Elsevier ScienceDirect
- EBSCOhost Research Databases
- Genamics JournalSeek
- UlrichsWeb - Global Serials Directory
Table of Contents

From The Editor
Welcome to Volume 16, Number 1 of TOJDE

Alaattin PARLAKILIC
Modular Rapid E-Learning Framework (MORELFT) in Desktop Virtualization Environment: An Effective Hybrid Implementation in Nurse Education 3-18

Edvalda ARAÚJO LEAL & Alberto LUIZ ALBERTIN
Determinants of the Use of Technological Innovation in Distance Learning: A Study with Business School Instructors 19-37

P. SATYANARAYANA & Emmanuel DK MEDURI
Use of Information and Communication Technologies in India's First Open University: Experience and Perceptions of Learners and Learner Support Providers 38-51

Belgin BOZ YUKSEKDAG & Gul UNSAL BARLAS
The Attitude Scale Towards Distance Nursing Education (astDNE) 52-61

M. RAJESH
Revolution in Communication Technologies: Impact on Distance Education 62-88

Qadir BUKHSH & Muhammad Ajmal CHAUDHARY
Exploring the Role of Distributed Learning in Distance Education at Allama Iqbal Open University: Academic Challenges at Postgraduate Level 89-100

Ricardo T. BAGARINAO
Students' Navigational Pattern and Performance in An E-Learning Environment: A Case from UP Open University, Philippines 101-111

Handan DEVECI
Value Education Through Distance Learning: Opinions of Students who already Completed Value Education 112-126

José CAPACHO
Representative Model of the Learning Process in Virtual Spaces Supported by ICT 127-144

Murat YALMAN
Education Faculty Students' Views About Use of E-Books 145-161

Sangeeta NAMDEV DHAMDHERE
Importance of Knowledge Management in the Higher Educational Institutes 162-183

Aliff NAWI, Mohd Isa HAMZAH & Azwin Arif ABDUL RAHIM
Teachers Acceptance of Mobile Learning for Teaching and Learning in Islamic Education: A Preliminary Study 184-192

Sufiana Khatoon MALIK
Strategies for Maintaining Quality in Distance Higher Education 193-211

Shaista MAJID & Adeela RAZZAK
Designing A Model of Vocational Training Programs for Disables through ODL 212-237

Saima AHMAD & Sharker Md. NUMAN
Potentiality of Disaster Management Education through Open and Distance Learning System in Bangladesh Open University 238-248

Behzad NAZARI & Sahar NIKNEJAD
E-mail Writing: Providing Background Information in the Core of Computer Assisted Instruction 249-260
Dear TOJDE Readers,

Welcome to the Volume 16, Number 1 of TOJDE,
In this issue, there are 16 articles. These articles are written by 25 authors from 10 different countries including Bangladesh, Brazil, Brunei, Colombia, India, Iran, Malaysia, Pakistan, Philippines, and Turkey.

The 1st article is titled MODULAR RAPID E-LEARNING FRAMEWORK (MORELF) IN DESKTOP VIRTUALIZATION ENVIRONMENT: An Effective Hybrid Implementation in Nurse Education and written by Dr. Alaattin PARLAKKILIC. He explains the hybrid method is educationally more effective than traditional method comparing with previous year students' success and fit with students' requirements.

The 2nd article is written by Edvalda ARAÚJO LEAL and Alberto LUIZ ALBERTIN on DETERMINANTS OF THE USE OF TECHNOLOGICAL INNOVATION IN DISTANCE LEARNING: A Study with Business School Instructors. This article highlights the factors determining the use of technological innovation in Distance Learning (DL), as perceived by instructors of Business Education programs. The theoretical basis for the study is the Innovation Diffusion Theory.

The 3rd article is conducted by Dr. P. SATYANARAYANA and Dr. Emmanuel DK MEDURI. This article is titled USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN INDIA’S FIRST OPEN UNIVERSITY: Experience and Perceptions of Learners and Learner Support Providers. This study is adopted descriptive method of research, which is widely used in educational research.

The 4th article, titled THE ATTITUDE SCALE TOWARDS DISTANCE NURSING EDUCATION (astDNE), is written by Lecturer Dr. Belgin BOZ YUKSEKDAG and Assoc. Prof. Dr. Gul UNSAL BARLAS. This article highlights the Attitude Scale towards Distance Nursing Education (astDNE) is a valid and reliable instrument.

The 5th article is written by M. RAJESH, on REVOLUTION IN COMMUNICATION TECHNOLOGIES: Impact on Distance Education. This study signals the vibrant interface between social and technological issues in the Educational field is an important area of discourse.

EXPLORING THE ROLE OF DISTRIBUTED LEARNING IN DISTANCE EDUCATION AT ALLAMA IQBAL OPEN UNIVERSITY: Academic Challenges at Postgraduate Level is the 6th article and written by Qadir BUKHSH and Dr. Muhammad Ajmal CHAUDHARY. This study is undertaken to investigate the challenges faced by the Faculty Members of Department of Business Administration and Computer Science at Allama Iqbal Open University Islamabad Pakistan.

The 7th article is written by Ricardo T. BAGARINAO, titled STUDENTS’ NAVIGATIONAL PATTERN AND PERFORMANCE IN AN E-LEARNING ENVIRONMENT: A Case from UP Open University, Philippines. The study analyzed the navigational patterns of learners in an online course in Science, Technology, and Society using movement ecological concept. The course site consists of five important pages, namely: home page, resource page, user page, forum page, forum discussion page, and forum add post page.
The 8th article is titled **VALUE EDUCATION THROUGH DISTANCE LEARNING: Opinions of Students who already Completed Value Education**, and written by Assoc. Prof. Dr. Handan DEVECI. The purpose of this research is to determine the opinions of university students about providing value education through distance learning system.

The 9th article is written by Assistant Professor José CAPACHO, and titled **REPRESENTATIVE MODEL OF THE LEARNING PROCESS IN VIRTUAL SPACES SUPPORTED BY ICT**. This paper shows the results of research activities for building the representative model of the learning process in virtual spaces (e-Learning).

**EDUCATION FACULTY STUDENTS’ VIEWS ABOUT USE OF E-BOOKS** is the 10th article and written by Murat YALMAN. This study is aimed at determining the views and preferences of preservice teachers regarding e-book as well as their levels of general knowledge about this technology.

The 11th article is written by Ms. Sangeeta NAMDEV DHAMDHERE and titled **IMPORTANCE OF KNOWLEDGE MANAGEMENT IN THE HIGHER EDUCATIONAL INSTITUTES**. This study explains the importance of Knowledge Management of past knowledge of an Institute.

**TEACHERS ACCEPTANCE OF MOBILE LEARNING FOR TEACHING AND LEARNING IN ISLAMIC EDUCATION: A Preliminary Study** is the 12th article. This article is written by Aliff NAWI, Mohd Isa HAMZAH and Azwin Arif ABDUL RAHIM. The focus of the study is to examine some aspects on types of handset used, the use of mobile applications, mobile learning activities, and the acceptance of mobile phones in teaching and learning.

The 13th article is written by Behzad NAZARI and Sahar NIKNEJAD, and titled **E-MAIL WRITING: Providing Background Information in the Core of Computer Assisted Instruction**. This study focuses on e-mail writing abilities between teachers and students.

The 14th article is titled **DESIGNING A MODEL OF VOCATIONAL TRAINING PROGRAMS FOR DISABLES THROUGH ODL**, and written by Dr. Shaista MAJID and Adeela RAZZAK. The study highlights designing a model of vocational training programs for disables.

**STRATEGIES FOR MAINTAINING QUALITY IN DISTANCE HIGHER EDUCATION** is the 15th article. This article is written by Dr. Sufiana Khatoon MALIK and aimed suggesting strategies for bringing quality in distance education programs at higher education level.

The 16th article is written by Assistant Professor Saima AHMAD and Associate Professor Sharker Md. NUMAN, and titled **POTENTIALITY OF DISASTER MANAGEMENT EDUCATION THROUGH OPEN AND DISTANCE LEARNING SYSTEM IN BANGLADESH OPEN UNIVERSITY**. This study provides some recommendation to develop the curriculum of some programs of BOU which can offer its program through the ODL method of teaching, using various educational medium like, tutorial support, printed study materials, electronic media, internet, and cellular phone, etc.

I wish a happy new year for all of you. Hope to meet again in 1st April, 2015.

Cordially,

Dr. T. Volkan YUZER
Editor-in-Chief
MODULAR RAPID E-LEARNING FRAMEWORK (MORELF) IN DESKTOP VIRTUALIZATION ENVIRONMENT: An Effective Hybrid Implementation in Nurse Education

Dr. Alaattin PARLAKILIC
Medical Informatics Department,
Gülnane Military Medical Academy,
Ankara, TURKEY

ABSTRACT
Generally it is not easy for an instructor to prepare and deliver electronic courses via e-learning. Therefore it is necessary to work and develop an easy system. In this context module technology was used to provide modularity in conducting educational development of e-learning course. Then, rapid e-learning was used for more quick and easy course development. In order to implement modular rapid e-learning, a desktop virtual environment was set up. Modular rapid e-learning was used by teachers and students in a one semester course and student success and reactions were evaluated. And also the overall hybrid system cost was calculated and reported. In implementation we combined modular course design with rapid e-learning and desktop virtualization in education of 3rd year nursing students for a one semester course. The effectiveness of this hybrid method was evaluated with respect to students’ success, students’ opinions and over all cost effectiveness. It was seen that the hybrid method was educationally more effective than traditional method comparing with previous year students’ success and fit with students’ requirements. The cost reduction was %41 comparing with traditional desktop and e-learning system.

Keywords: Modular design, rapid e-learning, desktop virtualization, course design, modular framework, e-learning modules.

INTRODUCTION
E-learning has attracted a lot of attention from researchers and practitioners. Various types of e-learning platforms and services have been introduced in different education institutions. However, there are many lacks in e-learning procedures. It is difficult to organize, update, maintain, and deliver e-learning courses (Guanl, Tan & Hua, 2009).

Many analyses have been made for e-learning solutions in education. One purpose of using e-learning is to support face-to-face education to increase students’ success. While discussing e-learning in education a new e-learning model should be taken into the account which is called “rapid e-learning”. This approach allows organizations to create e-learning more quickly, more easily and at lower price than possible conventional e-learning (Vries, Bersin, 2004).
Designing course for e-learning requires consideration of curricular obligations, available development tools and materials, but it also requires careful analysis of teaching and learning techniques. A modular design of rapid e-learning course can facilitate teaching, course design, delivery, and well growth of students. Lecture modules provide tutorials, scripts, interfaces, flexibility and richness for classes.

The course modules also should offer the instructor the ability to enhance, interrupt, change order of materials to be covered, or deliver chronological and sequential of instruction. Modular course architecture consists of a core framework combined with the required modules to build a custom-tailored course (Jeny et al, 2006).

Modern information technologies (IT) are becoming an integral part of an educational process. Education institutions need to gain more with low costs from their IT investments. Virtualization technology help to reduce operational costs, increase security, availability, and provide new learning scenarios. The IT change provides to improve the quality of the education (Targamadze et al., 2010). One of the alternative solutions in the IT world is virtualization technologies that have a significant influence on the teaching-learning process (Kurilovas and Dagiene, 2009).

This paper presents modular rapid e-learning as a framework with desktop virtualization together to reduce costs, improve availability, and enable new learning scenarios and fast learning development process.

This study is original because it combines desktop virtualization and modular rapid e-learning as a new hybrid use in education field that brings about a fundamental change in end-user computing and educational environment. The main research objective is to evaluate the effectiveness of the desktop virtualization technology with modular rapid e-learning, comparing with traditional system in the context of educational outcomes, student opinions about hybrid system and its cost.

MODULAR COURSE DESIGN CONCEPT

Modular course design enables flexibility in providing interchangeability, transferability and portability of digital learning objects as well modules and course materials (Hai-Jew, 2009). The modules can be optimized independently of other modules; failure of one module does not cause other modules to fail. In modular design, one can replace or add any module without affecting the rest of the system without technical help (Bliss, 2008). In modular design, one module can be re-used in other systems. Thus modules can be reviewed, edited, and implemented by different people (Berners-Lee, 2008). Kelly (2009) summarizes advantages of modular design as follows:

- Expedited course creation,
- Simplified course updates,
- Consistency for users.

**Instructional Strategies in a Module**

The concept in a module is to bring together related contents that can be defined as a unit, chapter, topic, or segment of instruction. It is a standard "self-contained" chunk of instruction.
A module refers to the chunking of the content conceptually and practically. Thus the course is a combination of one or more than one modules.

In module design related contents are clustered into a module. Subject-based modules may be formed around a type or class of an object. Also a module may be organized around a particular activity or problem-based learning task (Hai-Jew, 2009).

**Module Structure**
The basic structure of a module has learning objectives and learning outcomes. All the contents and resources within the module should support the objectives and outcomes (Hai-Jew, 2009). Learning objectives are specific statements, actions, performance criteria, and conditions of what students will be able to do upon completing the module.

A module should contain granular digital learning objects, multimedia contents, activities, assignments, discussions, practices, virtual experiences and simulations, and assessments (Boise State University, 2013). Modules may include some or all of the following elements as in figure: 1.

![Module Structure Diagram](image)

**Figure: 1**
Module Structure

**Setting the Objectives**
The objective for modular content specifies how it should be used. Without objective learning resources can’t be successfully developed for the learning object. One way to determine the best approach is to decide what skill is required to demonstrate competency of the objective. Students should be able to recall information fairly easily requiring a very low level cognitive skill – memory recall (Crowder, 2011).
Content Development
Modular content refers to a collection of learning resources developed as a single learning object. Each learning object functions like a building block – independent and self-contained but capable of being paired with other building blocks. When an online course is built using a collection of learning objects, it is considered to be built using modular course design. Scholarly text-based materials, are mostly edited, proofed and designed in an appropriate layout. When use of audio-based materials, they feature excellent sound quality. In the case of audio-visual presentations, they feature excellent sound quality and appropriate visuals to reflect what is being said. Materials that do not meet scholarly publishing standards may reduce the ability to be successfully pair for a learning object with other learning objects (Henne, 2007).

Interactivity
Interactivity contains using text, voice and visuals. Live broadcast of visual aids may offer rich body language and facial expressions to enhance the audio and visual communications. Immersive 3D spaces offer venues for individuals to communicate via digital materials (Henne, 2007).

Activity
Learning activities in web based education have become richer such as digital games. There are experiential simulations, digitized practices and full sensory discovery learning spaces. In each module there should be interactive activity for the entire class or for groups, which encourages critical thinking and practical application of the material covered in the learning module. In web-based courses links can be given to the rich resources on the Internet and publisher websites to enhance learning and stimulate students’ curiosity to dig deeper into the subject matter (Henne, 2007).

Assessments
Assessments should offer the satisfactory completion of the module. Assessments may involve simple perusal of modular contents for very low value assessment. Medium and high-value assessments may involve more specific evaluation of finer points of the learning within a module (Hai-Jew, 2009). Each module should include an activity before taking part in the learning activities within the module. The results can be compared to assessment results at the end of the module to measure learning outcomes. The end-of-module assessment should be in the same format as the pre-assessment to measure student progress (Henne, 2007).

RAPID E-LEARNING CONCEPT
Vries and Bersin (2004) saw that institutions have rushed into e-learning, but the time and cost were very high. This was a disadvantage. The two authors made a study “Rapid E-Learning: What Works” that builds e-learning programs in short time and in low cost. Elizabeth West (2007) declared that rapid e-learning addresses both less time and low cost issues by using technology tools to shift the dynamics of e-learning development. Kineo (2012) stated that they were looking forward to continuing in rapid e-learning approach in education field. E-learning Minds stated that today’s business needs change very often. Information used on the jobs has very short shelf-life. Preparing and disseminating relevant and timely information and instruction to the right people in a short time frame has become the main challenge for most training departments (E-learning Minds, 2012).

In education the field of knowledge is a crucial factor, since it is shorter than ever. Rapid e-learning can be very helpful in supporting teachers and students with access to the up-to-date
knowledge and developments. By rapid e-learning, practical training programs can be created in a short period of time. In this context the characteristics of rapid e-learning are as follows:

- Courseware can be developed in less than 4 weeks,
- Subject matter experts act as the primary source for development,
- User friendly simple authoring tools are used to integrate content and media,
- Learning duration is normally less than 20 minutes,
- It requires lower level of investment,
- Courseware has short shelf-life,
- It makes use of existing or available media from other sources (Vries, Bersin, 2004).

Rapid e-learning is not always the only solution to answer training needs but it is important to assess the needs of organization and then design the instructions to meet those needs; this includes methods of developing the instruction. And also not all contents can be developed in the rapid e-learning method. Rapid e-learning is best used for instruction that focuses on lower learning level such as knowledge and comprehension in which content is available and usable. It is suitable for frequently updated and time-sensitive content. Rapid e-learning is used to generate awareness and to recall information (Bersin, 2005). Dunkleberger (2011) stated that rapid e-learning is used when want to generate awareness, recall information, apply knowledge to specific situations, and master the knowledge.

**Rapid E-learning Development Tools and People**

There are many tools available for rapid e-learning. These tools are designed for simplicity and integration with desktop applications to output instructional content that is available to use (Dunkleberger, 2011).

Most of them convert content using these applications into different formats. There are many applications to produce learning elements as follows (HELM, 2013):

**PowerPoint to Web Converters**
The tools retain the animation sequences produced within PowerPoint and provide a means to add a narration to the slides. They also provide a user interface that allows the learner control over the progression of the materials.

**Screen Capture Movies**
Tools such as Camtasia and Captivate allow non-technical authors to record screen actions as a ‘movie’ or video clip. These are used extensively in training applications and help documents to illustrate screen actions graphically, and are particularly useful where text descriptions would be over-long.

**Software to add interactivity**
A wide range of utilities, free and commercial, are available which allow non-technical authors to easily create simple interactive e-learning features, such as assessments, crosswords, drag and drop exercise, and so on.

**Web Editing Tools**
These applications enable to quickly develop small interactive website for teaching purposes.
**Content Creation Tools**
Brainshark, CourseAvenue, Articulate Presenter, Trivantis Lectora and Macromedia Breeze can be used. Rapid e-learning programs usually incorporate some type of live webcasting technology.

**Web Conferencing Services**
Microsoft LiveMeeting, IBM/Lotus Sametime, WebEx, Skype, Openmeetings can be used to deploy rapid e-learning with conferencing synchronously.

**E-Learning Course Platform**
A web-based e-learning course platform can be used to manage users, courses, notes, plug-ins, security, reports and course content. An open source software like MOODLE easily can be used for e-learning course design.
The ideal people are Subject Matter Experts (SMEs) to produce rapid e-learning. However most SMEs don't know how to design Web pages, graphic design and don't have instructional design background. They are knowledgeable about their audience, what they demands and how to present the information in different formats. When organizations want to create effective e-learning they should make an instructional designer (ID) available to SME. An ID knows how to present the information for maximum effectiveness. For rapid e-learning authoring tools need to be simple to use and must be content-focused, not much graphics-focused. For rapid e-learning speed of implementation of content, and the ability to use non-specialists override other considerations (Rosen, 2011). SMEs develop the material and deliver to the target audience. The ID becomes the coach on the side, help with designing the participant interactions for e-learning course and act as an invaluable resource to aid in the SME’s success (Vries, Bersin, 2005).

In rapid development the discussion is on the facts and the results which are more important than theories and prejudices against technologies. A shared understanding among the professionals should be made to build trust and avoid 'quick and dirty' effect and non-fast prototyping case (Boulet, 2009).

**Modular Rapid E-Learning Development Process**
Rapid development depends on quicker system development. Timescale lessens by reducing and pruning some steps. ADDIE (Analysis, Design, Development, Implementation, and Evaluation) can be used and applied to develop rapid e-learning (Mcneill, 2007). The production of the storyboard is in the design step is time consuming. To remedy this situation, a new development life cycle paradigm was proposed by Punyabukkana et al. This development life cycle is known as Rapid eLearning Authoring and Development (RELAD) (Punyabukkana et all, 2006). In RELAD, no storyboard is produced. Process would entails joint-user and in-class explained course materials development by which content is segmented and fed into e-learning authoring tool (Parlakkilic, Karsioglu,2013).

Modular Design in rapid e-learning approach is directly connected to Design and Development phases steps. From the modular point of view, learning platforms as a set of independent modules that are built separately from each-other, thus this framework to identify situations, methods, and subjects that can initiate the modular design during the design and development process. The design and development processes are well integrated, and the e-learning frames will be used as the storyboard with live presentation. Modular Design improve the production time by eliminating storyboard and replacing the production model with live-interactivity and real digital assets. The production meet the user expectation since it is joint-user and in-class
explained course materials development. Basically, each module based designed rapid e-learning course can be developed as a framework in figure 2.

![Figure 2: Modular Rapid E-Learning Framework (MORELF)](image)

**DESKTOP VIRTUALIZATION IN EDUCATION**

Before exploring the benefits desktop virtualization, it's important to have a grasp of the technology itself. Virtualization concept for the first time introduced in 1960s describes how different operating systems could coexist on the same mainframe computer. The concept of the virtualization widely has been expanded today. Desktop virtualization takes the efficiencies offered through a centralized processing environment and merges it in a traditional PC (Bruce, 2011).

Virtualization is a technology for hiding the physical characteristics of computing resources to simplify the way in which systems, applications, or end users interact with available resources. Many virtualization technologies exist in the literature. Some of them are; Server Virtualization, Storage Virtualization and Desktop Virtualization.

Server Virtualization is a technology to share single server hardware as multiple servers; these partitioned servers act as individual independent servers to serve the different requests. Storage Virtualization is a technology to provide virtual storage: it is "the abstraction at any layer in the storage software and hardware stack". It provides huge storage, independent of local machine hard disk capacity. So the study material from subject experts can be placed in single place. Desktop Virtualization is a technology to have multiple cores in a single die. It can provide virtual machines with different platforms; these virtual machines give an opportunity to student to get exposure in any platform and any application (Anisetti et al., 2007).

*Institutions* have employed virtual technologies to address advantages associated with the modern technologies in many IT based courses (Miseviciene et al., 2011). There are many studies that have implemented virtualization platforms in the teaching and learning process. Murfy and McClelland (2009) introduced virtual computer laboratory. The virtual computer laboratory provides scalable, high performance computing resources requested through an internet browser and accessed through either a remote desktop connection or secure client.
Dobrilovic and Zeljko (2006) presented the opinion of how virtual network laboratories were used in an operating system course. Lunsford (2010) investigated the use of virtualization in a business-oriented information system security course. The paper focuses on the formulation and implementation of policies for information assurance, desktop security, and the examination of security measures. Results proposed in the paper of Fuertes et al. (2009) focus on the effective usage of virtualization platforms. Galan et al. (2009) analyzed implementation of Computer Network Laboratories for the teaching-learning process. Giguere (2009) demonstrated benchmarked successful completion rates for online academic courses and compared those to off-line course benchmarks. Peng (2008) shares his experience on using virtualization technologies in information technology course.

A recent survey of higher education IT professionals tells that 76 percent of these experts have already identified the solution to their computer lab challenge: virtual desktop delivery. The survey highlights concerns about the maintenance-intensive computer lab and also illuminates the benefits that colleges and universities can expect from the virtual environment (Citrix, 2009). IT Consultant Kınacı (2013) in The Education Volunteers Foundation of Turkey (TEGV), Turkey’s most widespread Non-Governmental Organization operating in the field of Education, assessed traditional thin clients and after investigation some virtualization technologies chosen NComputing’s technology as revolutionizing the desktop virtualization platform. TEGV has future plans to extend the use of this technology to its Educational Parks, Learning Units, and Mobile Learning Environments throughout Turkey. As a result, the increased utilization of Information and Communications Technology (ICT) in the activity centres and extracurricular learning centres will improve the quality of learning for all citizens in Turkey.

Desktop virtualization allows multiple desktop environments to run on a single physical machine. General desktop virtualization consists of a centralized server and client devices without local storage that utilize the centralized server as their processing and data engine. Virtual desktop has three major computing architectures:

- **Shared Desktop/Presentation Virtualization:** A server-based computing architecture that supports shared desktops include Microsoft Remote Desktop Services, Citrix XenApp and nComputing.
- **Virtual Desktop Virtualization (VDI):** A variation of the client/server that allows multiple discrete desktop operating systems to be hosted within virtual machines running on a server.
- **Remote Physical Desktop:** A desktop computing architecture that allows users to access a remote blade dedicated per user work station hosted in a data center (Li, 2011).

Shared desktop is the most cost-effective solution and meets the needs. On the server side, a shared desktop/remote desktop services solution that can support from 20 to 100 students per host computer. On the client side, compatible multi-seat client devices provide user authentication, network/server access, remote display, and peripheral connectivity (Li, 2011). The end users access the virtual desktop from a zero or thin-client machine that has minimal local storage, processing power or software or they may open a virtual window on a traditional PC (Bruce, 2011).

**Challenges and Benefits of Virtualization in Education**

Wide usage of computers has increased student, instructor, and staff access to information and computing resources and this has become a double-edged sword at many facilities. Computer
devices can be found in any area in schools such as mobile laptops that are shared across classrooms; computers in labs, libraries and classes; the office machines used by staff and administrators. The presence of many machines has also become a management challenge for IT staffs. The following issues represent key challenges:

- **Software and hardware maintenance:** Managing individual PCs (maintaining the machines, updating software, dealing with security issues, installing patches, and troubleshooting) has become more than a full-time job for current staffing levels of IT employees and contractors.
- **Student access and support for devices:** Many schools cited goals of having one machine per student and enabling anytime, anywhere student access to tools via their own devices for enhanced learning. Supporting applications on non-school devices and providing a consistent experience for students pose significant resource challenges.
- **Budget constraints:** Aging hardware, upgrading operating system, high costs per machine and software licenses combined with severe, local budget constraints place institutions under pressure (Bruce, 2011).

Despite these challenges, students, teachers, and administrative staff increase or refresh the numbers of machines at their schools, and desktop virtualization offers the following advantages:

- **Security:** Locking down user configuration settings and protect all corporate data in one centralized location.
- **Data protection:** Desktop virtualization enables more efficient and effective protection of this data by moving it from the endpoint to the data center.
- **Disaster Recovery:** Desktop virtualization enables to extend high-availability, disaster recovery and business continuity to the desktop. This provides a greater fault tolerance and reliability while providing higher levels of availability to end users.
- **Optimizations:** The financial benefits of desktop virtualization can include extending endpoint refresh cycles, reducing IT labor requirements via streamlined desktop administration, and mitigating the risk of lost user productivity by enabling more consistent access to applications and data (Clarke, McCarthy, 2011).

**METHOD**

In the study, modular course design and rapid e-learning were used together. The rapid e-learning system has been developed using Moodle (Modular Object-Oriented Dynamic Learning Environment). Every teacher was trained for eight hours per person about using Moodle, and modular rapid e-learning course design and development principles. The instructor of the course has enough computer skills and can design content. For course development, a template was created and used by teachers.

Thereafter all teachers and assistants created course contents according to modular rapid e-learning course design principles and upload directly to e-learning. All students were trained for using Moodle four hours per student.
Participants and Instruments
The sample group was consisted of 120 nursing students of 3rd grade enrolling "The Structure of Human and Nature" in the first semester of the current academic year. During traditional class learning, the students were supported with rapid e-learning method on virtual desktop system in web environment. In the previous academic year 120 nursing students of 3rd grade took "the structure of human and nature" course only with traditional method with the same teacher. The outcomes of both groups were compared.

Students Final Exam
A final exam was conducted at the end of semester. The questions and teachers were the same for both year. For statistical analysis SPSS for Win. Ver. 20.0 (SPSS Inc., Chicago, IL., USA) application was used. For statistical decisions p<0.05 level was accepted as meaningful difference indicator.

Student Opinions
An interview was made with students in order to explore opinions towards the hybrid system.

Modular Rapid E-learning Building Process
The model for rapid e-learning development involves an instructor with the required experience. All teachers in the school have enough skills to design content and other course materials.

Virtual Desktop Building Process
Desktop virtualization system building process is explained with simple steps.

RESULTS
For both groups students’ exam grades comply with the normal distribution and were examined graphically with Shapiro-Wilk test. Descriptive statistics of grades are shown with mean ± standard deviation. For both years students’ grades calculated by using paired samples t test in order to compare results. Number of students in this study was 120 for each year. In previous year students’ average score by traditional method was Figure: 3

![Grade Averages According to training methods](image-url)
69.99 \pm 8.01" but in current year students' average score as shown in Figure 1 increased to 74.50 \pm 7.57 by using rapid e-learning supported traditional method. Because of using rapid e-learning supported traditional method students' grade in next year increased. This increase was due to using rapid e-learning as a supported position and it is determined as 4.51 \pm 11.05 rated 95% in confidence interval. This increase was at least 2.41, at most 6.60. Statistically it is meaningful due to using different training method (t = 4256, p < 0.001).

**Student Opinions for Hybrid System**
In order to get students’ opinions for modular Rapid E-learning an interview was made. We mentioned rapid e-learning course platform as “course platform” in interview.

Student opinions are as follows:

**Access and Using the System Easily**
All of the students said it is easy to access and use the system do not need any training.

**The Performance and Response Time of the Course Platform**
93 students (%78) said that the system is working with average speed and moderate but 27 students (%22) said that they faced with uploading and downloading problems during rush hours.

**Adequacy of Content and Materials in Course Platform**
88 students (%73) said that course materials and course content are enough but need to be developed more interactively and 32 students (%37) said that external resource links should be given.

**Interaction during Learning**
All of the students said that they used email and chat in working hours with their friends but 72 students said that they were not responded by their teachers asynchronously. By looking at the student opinions it was concluded that for system performance it is essential to optimize system by regulating hardware and software according to used applications. Another conclusion is to build more interactive course content and lastly the teachers should answer student questions on time.

**Modular Rapid E-learning Building Process**
All teachers and student have been informed and trained about virtual desktop system and rapid e-learning system. The course platform for rapid e-learning has been Moodle. The course building process is as follows:

- The teacher develops content according to modular rapid e-learning process, reviews and adds instructional value.
- The teacher develops the assessment and ensures that it maps the objectives.
- If the teacher doesn't have enough skills, s/he calls on a consultant for design,
- The teacher uploads the content to the Moodle.
- Teacher updates and revises content and what is necessary.

**Virtual Desktop Building Process**
Desktop virtualization system was set up in three computer laboratories. Three virtual desktop computer labs and three virtual desktop servers were set up each for 40 virtual desktops. Office programs, antivirus programs and operating systems were only set up on virtual desktop server
and also a portion of disk space and memory were dedicated to each student for their virtual
desktops. Desktop virtualization system was set up according to following steps by IT people:

- Datacenter/Server hardware installation,
- Creating Master virtual server,
- Install operating system on master virtual machine,
- Install software, feed subject materials, and other contents on master virtual
machines,
- Clone a backup of master virtual machine,
- Create client virtual machines to provide access,
- Access to the system.

Cost of the Hybrid System
A typical traditional computer lab costs more than $1,000 per seat. This high cost means some
schools and even universities are only able to provide limited technology resources to their
growing student population at a time when technology has become a part of everything for
academic success. The advantages provided with desktop virtualization are as follows:

- Increasing the size of the computer classroom without increasing budget,
- Reduce maintenance and support costs by 75%
- Reduce power and cooling requirements by 90%
- Build more flexible and smaller footprint labs, maximizing classroom space,
- Reduce device theft and loss (Kom, 2012).

When we look at modular rapid e-learning, the key reasons for investing in modular rapid e-
learning is to reduce the cost of e-learning development and speeding up the development. While rapid e-learning may incur some of the same hard costs as traditional e- learning, in
reality its cost base and approach are quite different. The obvious place for cost savings in
rapid e-learning is in the development of materials (Kineo, 2012). Based on our expenses for
the project, hardware, IT support and software cost were reduced by 41% comparing with
traditional e-learning and computing system.

CONCLUSION

In this study desktop virtualization technology and a modular rapid e-learning system was
developed for teaching and learning environment. In a typical e-learning system, a design is
implemented so that it meets a set of requirements at the time of development. Often, after
delivering, the users want to add functionality, or different users will require custom
functionality based on specific needs. In order to accommodate these situations without a
complete re-write, a framework that allows for future additions of modules without breaking
the available module needs to be implemented. Design flexible and scalable system
architecture with modules is a way to publish and maintain a modular rapid e-learning course
easily and effectively.

This hybrid system can be used for quick and urgent needs as a supportive e-learning course.
The teachers can easily construct and upload courses and are eager to use the system. The
students use this hybrid system on demand and it provides them a paperless environment. It
was seen that there is a meaningful increase in average points of students by using rapid e-
learning supported traditional method as at least 2.41, at most 6.60. Statistically the results are
meaningful due to using rapid e-learning supported traditional method. This hybrid system provided a cost saving about % 41 comparing with traditional desktop and e-learning systems.

**Acknowledgements:** I would like to thanks to The Scientific and Technological Research Council of Turkey (Türkiye Bilimsel ve Teknolojik Araştırma Kurumu-TÜBİTAK) for the scholarship granted to me. This study is one of the products of my study as a post doctorate scholar in the University of Missouri-Kansas City in US.

**BIODATA and CONTACT ADDRESSES of the AUTHOR**

Dr. Alaattin PARLAKKILIC works in Medical Informatics Department in Gülhane Military Medical Academy. He received PhD in Computer and Instruction Technology in Ankara University. He teaches health informatics, e-learning, information security, system and network administration courses in Universities. His research focus is in the area of e-learning and health informatics. Currently he is a post doctoral scholar in University of Missouri-Kansas City in USA.

Dr. Alaattin PARLAKKILIC  
Medical Informatics Department,  
Gülhane Military Medical Academy,  
Ankara, TURKEY  
Emails: apkilic@gata.edu.tr, parlakkilica@umkc.edu

**REFERENCES**


Boise State University.(2013).Using a Modular Approach to Course Design ". Retrieved from [https://sites.google.com/a/boisestate.edu/si2013/self-serve-resources/a-primer-on-course-design/using-a-modular-approach-to-course-design](https://sites.google.com/a/boisestate.edu/si2013/self-serve-resources/a-primer-on-course-design/using-a-modular-approach-to-course-design)


DETERMINANTS OF THE USE OF TECHNOLOGICAL INNOVATION IN DISTANCE LEARNING: A Study with Business School Instructors

Edvalda ARAÚJO LEAL
Universidade Federal de Uberlândia, BRAZIL

Alberto LUIZ ALBERTIN
Fundação Getúlio Vargas, BRAZIL

ABSTRACT

This study’s overall purpose is to identify the factors determining the use of technological innovation in Distance Learning (DL), as perceived by instructors of Business Education programs. The theoretical basis for the study is the Innovation Diffusion Theory (IDT).

The study’s sample is made up of 436 instructors; we used a quantitative approach and applied Confirmatory Factor Analysis and multiple regression. We found that not all of the attributes selected for analysis as proposed by IDT showed a direct effect for the use of innovation for the instructors investigated. The identified attributes were: compatibility, which shows how consistent innovation is with their values, practices and needs; relative advantage, indicating an innovation’s perceived improvement from its predecessor; and demonstrated results, according to which instructors understand the tangible results obtained from the use of innovation.

Keywords: Instructors; Diffusion of Innovation Theory; Distance Learning.

INTRODUCTION

The past two decades have seen a massive expansion of the use of technology in the higher education environment, particularly with the development of new Information and Communication Technologies (ICTs) and the advance of the world wide web of computers beginning in 1992. (Kenski, 2009). The adoption and use of technological innovations have enabled the development of new learning alternatives, a paradigm change associated mainly with distance learning (DL) for its status as one of the main boosters of the breakthrough in the education area. (Behar, 2008). Technological progress has brought about significant changes in education. In this context Distance Learning (DL) grows and acquires expressive importance in the Brazilian educational context (MEC/INEP/DEED, 2011). Studies on the adoption of information technology (IT) are widespread in the literature. Particularly at the international level, several studies have tested the characteristics of the acceptance of technological innovation in e-learning, with the purpose of
understanding the impacts of its adoption and use. (Cheng et al., 2011; Hong et al., 2011; Huang et al., 2012; Pituch & Lee, 2006; Sugar et al., 2005; Teo & Noyes, 2011).

One of the main challenges for Learning Institutions (LIs) that have been disseminating by means of DLs is the search for a pedagogical language appropriate to learning mediated by the many media available, which involves reformulating the functions of the "actors" involved, which include education managers, professors, students and monitors, among others.

The increasing adoption of technology in education has been raising many questions about the teaching techniques of educators, particularly in connection with the challenges of using new instruments and with how to develop new technology skills.

Given the above, obtaining a better understanding of the attributes that influence the success or failure of the adoption of technological innovations in DL, has become crucial. Therefore, this study’s problem question is: What factors determine the use of technological innovation in Distance Learning, as perceived by Business Program teachers? This study’s overall goal lies in identifying the factors that determine the use of technological innovation in Distance Learning, as perceived by Business program teachers. The technological innovation this study addresses is the Virtual Learning Environment (VLE) and the paper’s theoretical foundation is the Innovation Diffusion Theory – IDT (Rogers, 1983), expanded by the model proposed by Moore and Benbasat (1991). The authors suggest that a user’s perception of an innovation affects adoption or non-adoption.

Thus, in addition to standing as an important subject for investigation, technological innovation in learning, which is represented here by the identification of factors that determine the use of technology in DL as perceived by teachers in the VLE, is a relevant contribution to the LIs that are currently implementing this learning model, as they are investing in systems and information technology to improve their results and the performance of their instructors and students.

THEORY AND HYPOTHESES

Innovation Diffusion Theory is regarded as one of the most important theories on the process of the adoption, use and acceptance of Technological Innovation. The theory’s main goal is to explain how the process of innovation diffusion and use takes place in organizations, based on individual and group behavior and attitude towards the innovations introduced into the social context in which they exist (Moore & Benbasat, 1991). Studies on Diffusion Theory have spotlighted technological innovations, and particularly those introduced by Information Technologies and Systems. For the purposes of this study, the approach is associated with technological innovation in education. An innovation’s perceived attributes are important to explain its usage rate, which comprehends a five-stage decision-making flow: initial awareness of an innovation; formation of an attitude toward the innovation; decision whether to accept or reject the innovation; implementation of the new idea; and, finally, confirmation of the decision to adopt the innovation (Huff & Mcnaughton, 1991; Rogers, 1983).

Several studies (Agarwal & Prasad 1999; 2000; Davis et al., 1989; Mathieson, 1991; Venkatesh & Davis, 2000; Venkatesh et al., 2003; Lewis, Agarwal & Sambamurth, 2003; Moore & Benbasat,
1991; Compeau, Meister & Higgins, 2007) address technological adoption and innovation, as researchers are interested in understanding the factors associated with the process of accepting a technology in terms of implementation and use in the workplace and for productive tasks, attempting to analyze factors that influence the use or intent of using such technologies. The innovation diffusion theory (Rogers, 1983) is often quoted in studies of IT acceptance and diffusion. Rogers (1983) proposed a theoretical framework that reveals the relationship between perceived innovation and adoption rate. Moore and Benbasat (1991) expanded on the constructs, and the scale they propose is widely disseminated in studies.

An innovation’s perceived attributes, as pointed out by the authors, include: relative advantage, compatibility, ease of use, trialability, image, demonstrable results, visibility, voluntariness, and use of technological innovation (which, for the purposes of this study is the VLE).

According to Moore and Benbasat (1991), an innovation’s perceived characteristics have consistently influenced the adoption and use of innovations, studies show different measures of the predictive power of attributes, and some findings reveal that not all attributes influence adoption, as the differences depend on the innovation and on the period in which are applied. It is therefore advisable not to exclude any attributes from the model (He et al., 2006).

The Relative advantage attribute reflects the degree to which an innovation is perceived as better than its precursor, that is, better than the one it replaces. This can be measured in economic, social prestige, convenience and satisfaction terms for the innovation in question. The individual must perceive the innovation’s (Rogers, 1983). Relative advantage is represented by the rate of benefits expected from the use of an innovation.

Several studies have introduced constructs associated with the acceptance of technological innovation and indicated the positive influence of relative advantage on adoption and use. (Agarwal & Karahanna, 2000; Davis et al., 1989; Plouffe et al., 2001; Venkatesh & Davis, 2000; Venkatesh et al., 2003; Compeau; Meister; Higgins, 2007).

Therefore, in order to analyze its influence of the process of using a technological innovation—the VLE, in the present study —, the paper’s first hypothesis was developed as follows:

Hypothosis 1 (H₁): The attribute Relative advantage has a positive influence on the process of technological innovation/VLE use.

Compatibility is the degree to which the adoption of an innovation is perceived as consistent and coherent with the potential adopters’ existing values, practices, needs and experience. An innovation may be either compatible or incompatible with the social and cultural values of the environment in which it is to be inserted, with previously produced ideas, or with the needs of the individuals in connection with innovation. An idea that is not compatible with a social system’s values and norms will seldom be adopted as easily as a compatible innovation would. (Rogers, 1983; Moore & Benbasat, 1991).

Agarwal and Prasad (1997) and Plouffe et al. (2001) find a positive influence of compatibility on the intent to use a technology. A user that regards an innovation as compatible with his or her
working style exercises direct influence on use intensity (Compeau; Meister; Higgins, 2007). Other studies indicate that compatibility is strongly related with relative advantage. (Karahanna et al., 1999, Moore & Benbasat, 1991). Holak and Lehmann (1990) argue that familiarity with an innovation and the compatibility between its operation and the preferred way of carrying out a certain activity influence the individual’s acceptance of an innovation. Assuming that the compatibility attribute may affect the use of a technological innovation, the paper’s second working hypothesis is:

Hypothesis 2 (H2): The Compatibility attribute positively influences a technological innovation/VLE’s use process.

Roger (1983) referred to the ease of use attribute as Complexity, reflecting the degree to which an innovation is perceived as difficult to understand for the purposes of use by potential adopters. New ideas that are simple to understand and absorb are more quickly adopted by the members of a social system, while those that require developing new knowledge and understandings, and regarded as more complex, are more slowly adopted (Rogers, 1983). Moore and Benbasat (1991) exchanged the complexity attribute as proposed by Rogers (1983) for the ‘Ease of Use’ attribute, in order to determine the level to which an innovation is perceived as easy to use. For the authors, the easier an innovation is to use, the greater the probability of adoption. This study will test the Ease of Use attribute.

In the study developed by Compeau; Meister and Higgins (2007) ease of use did not positively influence intensity of use. According to the authors, their results are not compatible with other studies that find a relationship between ease of use and use intensity mediated by relative advantage.

Davis; Bagozzi and Warshaw (1989) showed that individually perceived ease of use in connection with information systems positively influence use. Based on the foregoing, the study’s third hypothesis as follows:

Hypothesis 3 (H3): The Ease of Use attribute positively influences a technological innovation/VLE’s use process.

The Trialability attribute is defined as the degree to which potential adopters may try an innovation prior to adoption (trialability period). The ability to test an innovation can make it significant to the individual and it will usually be adopted more quickly than innovation that cannot be tried in advance. An innovation that can be tried, and which an individual can test and find out whether or not will operate according to his or her needs as a used involves less uncertainty, as it enables learning by doing (Rogers, 1983; Moore & Benbasat, 1991). Technology adoption difficulties may be supported by professional training, which is regarded as a phase in the adoption process because lacking or insufficient training may create resistance to the technological innovation (Dong et al., 2007). The trialability attribute enables testing the innovation, which may influence the use of a technology. Therefore, it makes sense to analyze trialability as well, leading to the study’s fourth hypothesis:
Hypothesis 4 ($H_4$): The Trialability attribute positively influences a technological innovation/VLE's use process.

Visibility (observability) indicates the degree to which an innovation’s results can be observed by an organization, which is, become visible to potential users. The easier it is for individuals to perceive an innovation’s results, the greater the odds that such individuals will adopt the innovation in question (Rogers, 1983). Therefore, users need to be informed and made aware of and sensitized to the benefits of a given technology. In the communication process, it is crucial for the message to be understood and for the recipient to be able to provide feedback.

According to He et al., (2006) the more visible an innovation’s results, the faster its adoption and implementation will be, that is, an innovation’s observability as perceived by individuals is positively related with the innovation’s adoption index. Within the context of their study, Moore and Benbasat (1991) adapted the original attribute of observability to visibility, which is the term this study will use. Within this context, the visibility attribute provides for the observability of an innovation’s results. Give this, the study’s fifth proposed hypothesis:

Hypothesis 5 ($H_5$): The visibility attribute positively influences a technological innovation/VLE’s use process.

The five characteristics (attributes) of innovation diffusion as proposed by Rogers (1983) and discussed previously provided the basis for Moore and Benbasat (1991), whose goal was to evaluate the various perceptions an individual may have on an innovation’s use characteristics.

In addition to the five characteristics above, Moore and Benbasat (1991) introduced three new attributes: image, voluntariness and results demonstration. An innovation’s perceived characteristics or attributes that the two authors studied are described next.

Imager effects the degree to which using an innovation is perceived as an improvement to an individual’s image or a social system’s status (Moore & Benbasat, 1991).

Rogers (1983) argues that individuals are more likely to adopt innovations when they perceive image improvement. Social and political motivations are factors that influence individual behavior. The user’s distinguished profile, increased prestige and social status directly influence the intensity of the use of a technological innovation (Plouffe et al., 2001). However, Venkatesh and Davis (2000) pointed out that the perceived image positively influences relative advantage and adoption for use.

The Image construct may be significant in an instructor’s behavior toward DL, as, if his or her reference group or LIs favor DL, acceptance may be greater. Therefore, the sixth hypothesis indicates that:

Hypothesis 6 ($H_6$): The Image attribute positively influences a technological innovation/VLE’s adoption/use process.
Joining the constructs observability and communicability, which Rogers (1983) initially identified, became the category Result Demonstrability, indicating the degree to which the results from the use of an innovation are tangible (Moore & Benbasat, 1991). Venkatesh and Davis (2000) observed a direct relationship between demonstrable results and perceived utility. They argued that individuals form more positive perceptions of a system if the relationship between use and performance is easily detected.

In this sense, Holak and Lehmann (1990) offer that the familiarity that emerges from an innovation’s compatibility with its preferred mode of operation makes it easier for an individual to recognize its benefits and communicate it to others in terms of the perceived results of its use. It makes sense, therefore, to evaluate the influence of the Result Demonstrability on the use of technological innovation, providing the grounds for the study’s seventh hypothesis:

**Hypothesis 7 (H₇):** The Result Demonstrability attribute positively influences the process of adoption and use of a technological innovation/VLE.

The Voluntariness attribute, proposed by Moore and Benbasat (1991), is defined as the degree to which the use of an innovation is perceived as voluntary or spontaneous.

Compeau; Meister and Higgins (2007) address the quick insertion of information technology based on innovations in the workplace. The authors argue that facilitating the introduction of IT innovations requires understanding the factors that influence adoption by users and continued-use decisions. Such factors are important for the voluntariness of systems, and even of mandatory ones. Voluntariness is a factor that may prolong an innovation’s continued use. Therefore, this study’s eighth proposed hypothesis is:

**Hypothesis 8 (H₈):** Voluntariness positively influences the process of technological innovation/VLE adoption/use.

This study includes two more variables, mastery of the technology and experience time, in connection with the use of a technological innovation. The variables will be analyzed in terms of their direct effect on the use of the technological innovation.

Inclusion of the mastery of the technology variable is justified in order to recognize the need for IT users to have the knowledge to use the technology. Mastery of the technology reflects the level of IT knowledge and experience, enabling instructors to embrace methodological innovation (Masetto, 2003; Zabalza, 2006; Kenski, 2009, Huertas, 2007). Huertas (2007) emphasizes that restrictions against the use of technology on the part of the teacher may be associated with his or her lack of technical skills. The findings of Gong, Xuand Yu (2004) indicate that self-effectiveness in the use of computers has a strong direct and indirect effect on the intent to use an innovation. The authors further indicate that mastery of the technology may significantly increase user’s perceived ease of use of the technological innovation.

Experience stands as an important artifact to enable the dissemination of a technological innovation in learning environments. In an empirical study of e-learning, Welsh et al. (2003) suggest that prior experience may indicate positive attitudes towards e-learning systems and, as a result, increase intent to use. Therefore, this study’s ninth and tenth hypotheses are:
Hypothesis 9 ($H_9$): Mastery of the technology positively influences the process of technological innovation/VLE adoption/use;

Hypothesis 10 ($H_{10}$): Experience time positively influences the process of technological innovation/VLE adoption/use;

However, the attributes (characteristics) perceived from the use of the technological innovation/VLE have been analyzed based on the perception of five attributes of innovation as proposed by Rogers (1983), the three supplementary attributes found in Moore and Benbasat (1991) and two variables included into the model: mastery of the technology and experience with the VLE.

**METHODOLOGICAL PROCEDURE**

This study is of a quantitative nature. The investigation used the survey strategy to directly interrogate participants by means of a questionnaire.

The study’s target population comprehends teachers active or who have been active in the DL model in Business programs (Administration and Accounting) delivered in Brazil.

The study’s sampling units are teachers who directly play a role in the virtual teaching and learning process, using the VLE, and who deliver or have delivered DL lessons.

The sample was intentional, non-probabilistic and by convenience, and respondent participation was spontaneous. Data gathering involved a field study and resorted to primary data collection by means of a questionnaire. To develop the questionnaire used in the study, in addition to IDT literature review, we analyzed and adapted the instrument developed and tested by Rogers (1983) and supplemented by Moore and Benbasat (1991).

Before sending the questionnaire to the respondents, the data-gathering instrument was qualitatively pre-tested. The test involved sending the questionnaire to ten instructors experienced in the DL model in the business area and using the VLE, as well to five course DL-program coordinators.

Figure: 1 shows the statements by constructs used in the study’s research instrument. It is appropriate to emphasize that, in the model’s validation process (confirmatory factor analysis), certain items have been excluded, as indicated.
<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items (Statements)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative advantage</td>
<td>RA1: Using the VLE enables me to do things faster</td>
</tr>
<tr>
<td></td>
<td>RA2: Using the VLE gives me greater control over my work (e.g.: better interaction with and control of students) ExCFA</td>
</tr>
<tr>
<td></td>
<td>RA3: Using the VLE improves the quality of my work</td>
</tr>
<tr>
<td></td>
<td>RA4: In general using the VLE is not advantageous to my work ExCFA</td>
</tr>
<tr>
<td></td>
<td>RA5: Using the VLE makes it easier for me to do my job</td>
</tr>
<tr>
<td>Compatibility</td>
<td>COMP1: Using the VLE adjusts to my manner of working ExCFA</td>
</tr>
<tr>
<td></td>
<td>COMP2: Using the VLE is compatible with every aspect of my work (e.g.: evaluation, planning, tracking, etc.) ExCFA</td>
</tr>
<tr>
<td></td>
<td>COMP3: Using the VLE is not compatible with my manner of working</td>
</tr>
<tr>
<td></td>
<td>COMP4: Using the VLE is entirely compatible with my current work situation</td>
</tr>
<tr>
<td></td>
<td>COMP5: Using the VLE adjusts well to how I like to work</td>
</tr>
<tr>
<td>Image</td>
<td>IMAG1: Instructors at the LIs (where I work) who use the VLE have a distinctive profile (e.g.: more communicative; attempt to interact....) ExCFA</td>
</tr>
<tr>
<td></td>
<td>IMAG2: Using the VLE is a status symbol at my LIs</td>
</tr>
<tr>
<td></td>
<td>IMAG3: People at my institution who use the VLE have greater prestige than those who do not ExCFA</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>IMAG4: Several coworkers (more than 60%) at the LIs where I work use the VLE</td>
</tr>
<tr>
<td></td>
<td>EU1: Learning how to use the VLE was easy for me ExCFA</td>
</tr>
<tr>
<td></td>
<td>EU2: In general, it is easy to use the VLE</td>
</tr>
<tr>
<td></td>
<td>EU3: It is easy to use the VLE to carry out my tasks</td>
</tr>
<tr>
<td></td>
<td>EU4: My interaction with the VLE is clear and easy to understand</td>
</tr>
<tr>
<td>Result Demonstrability</td>
<td>RD1: The results from using the VLE are evident to me</td>
</tr>
<tr>
<td></td>
<td>RD2: I can tell others about the implications (e.g.: results or benefits) of the use of the VLE</td>
</tr>
<tr>
<td></td>
<td>RD3: I have no difficulty explaining the results of the use of the VLE to others</td>
</tr>
<tr>
<td></td>
<td>DRD4: I have no difficulty explaining why the use of the VLE may or may not provide benefits ExCFA</td>
</tr>
<tr>
<td>Visibility</td>
<td>VIS1: At the LIs where I work, many instructors are known to be using the VLE</td>
</tr>
<tr>
<td></td>
<td>VIS2: Using the VLE is not perceived at the institution where I work</td>
</tr>
<tr>
<td></td>
<td>VIS3: At the LIs where I work, you can connect to the VLE from different locations and on different computers ExCFA</td>
</tr>
<tr>
<td></td>
<td>VIS4: I often see other instructors using the VLE at the institution where I work</td>
</tr>
<tr>
<td>Trialability</td>
<td>TRI1: I had several opportunities to try the VLE ExCFA</td>
</tr>
<tr>
<td></td>
<td>TRI2: Before choosing to use the VLE, I had the opportunity to experience it</td>
</tr>
<tr>
<td></td>
<td>TRI3: I was allowed to use the VLE for testing purposes for time enough to understand its utility</td>
</tr>
<tr>
<td></td>
<td>TRI4: I tried the VLE for a sufficient period of time before adopting it</td>
</tr>
<tr>
<td>Voluntariness</td>
<td>VOL1: Using the VLE is mandatory for DL at the LIs where I work</td>
</tr>
<tr>
<td></td>
<td>VOL2: My superiors to not force me to use the VLE</td>
</tr>
<tr>
<td></td>
<td>VOL3: Although it is useful, using the VLE is not mandatory at the LIs where I work</td>
</tr>
<tr>
<td>Mastery of the technology</td>
<td>MT1: I am highly knowledgeable in and experienced with information technology</td>
</tr>
<tr>
<td></td>
<td>MT2: I have little interest in information technology ExCFA</td>
</tr>
<tr>
<td></td>
<td>MT3: I find it easy to use computers ExCFA</td>
</tr>
<tr>
<td></td>
<td>MT4: I am highly knowledgeable in information technology</td>
</tr>
<tr>
<td></td>
<td>MT5: I am highly experienced with the Internet</td>
</tr>
<tr>
<td>Use of the VLE</td>
<td>USO1: I intend to make more intense use of the VLE in the future</td>
</tr>
<tr>
<td></td>
<td>USO2: I intend to discover new ways of using the VLE for work</td>
</tr>
<tr>
<td></td>
<td>USO3: I intend to exploit the VLE's resources and features to the utmost for work</td>
</tr>
<tr>
<td></td>
<td>USO4: I consider myself an intensive user of the VLE ExCFA</td>
</tr>
</tbody>
</table>

ExcCFA (excluded after Confirmatory Factor Analysis)

Figure: 1

Statements listed by constructs
Sample Description
This study used a non-probabilistic sample of the self-generated type. According to Malhotra et al. (2005), in self-generated sampling, a initial group of interviewees is selected. After completing the questionnaire, they are asked to identify other individuals in the target population. In this technique, also referred to as snowball sampling, the researcher asks for the participants’ help identifying other persons with similar characteristics who meet the study’s requirements, and the sample increases in size like a snowball. The process is repeated and results in a self-generation effect, as each reference is obtained from another.

For this study, we searched the E-mec Platform for the program coordinators’ name, e-mail, Website and telephone information, for LIsoffering DL Administration and Accounting programs. In addition to the E-mec Platform, we visited the LIs’ Websites for information not available from the former. This enabled identification of 145 LIs, of which 52 were contacted by telephone, while the remainders were sent e-mails.

The purpose of the contact by telephone and/or e-mail was to introduce program coordinators to the study’s goals and request the LIs’ participation, in addition to request provision of e-mail listings of instructors who are or have been active in DL Administration and Accounting courses. Where such provision was not possible, we requested that the LI forward the link to the study to them. Most of the referrals were made by forwarding the study’s link, resulting in 439 completed questionnaires, of which 436 were considered valid — the three excluded participants started answering the form, but never entirely completed it.

The final data-collection instrument used in the study was an electronic questionnaire made available over the Internet via the Google Docs platform. The access link was available for 45 days (March 1st-April 16th, 2012). The questionnaire used a 7-point Likert scale (1 being the minimum and 7 the maximum). To complete the questionnaire, respondents were only allowed to advance to the next phase (page) after answering every question on the current page. As a result, there were no missing values.

Characterization of the Respondents
The first part of the survey questionnaire was intended to obtain respondent-characterization data. Most (approximately 70%) of the 436 participating instructors are or have been active in DL Administration; 12% in Accounting; and 18% in both.

As for the instructors’ qualification level, most (46%) have master’s degrees, followed by (26%) doctor’s degrees. In terms of the nature of the LIs where the instructors deliver or have delivered DL lessons, the percentage distribution was well balanced, with 51% Public LIs and 49% Private LIs. As for the occupation of the participating instructors in DL, most (38%) are active on the undergraduate level, followed by post-graduate (22%). The percentages will change (18%), considering the two activities (undergraduate and post-graduate). It has been found that the majority of instructors (83%) are also active in presence learning in addition to DL.
Analysis Strategy for the Data

Two statistical tests have been selected to analyze the data. The former is Confirmatory Factor Analysis, which we will discuss next, and then we used multiple regression to test the study's proposed hypotheses.

To ensure the construct's validity, we evaluated the components proposed by Hair et al., (2009): one-dimensionality, reliability, and convergent and discriminant validity. For the CFA, we resorted to the AMOS 18.0 software and the Maximum Likelihood – ML estimation method. We made some attempts to improve the adjustment indexes by means of three extractions. A few problems were detected, such as low standardized loading values for certain variables.

According to Hair et al. (2009), such occurrences are undesirable, suggesting a possible choice to eliminate problem variables, which we did. Items with standardized factor loadings under .5 and low correlation with other items in the construct were excluded; excluded items are identified with Excl*CFA in Figure: 1.

Adjustment of the Confirmatory Factor Analysis model to the Complete Model 'Attributes of the Use of Technological Innovation' was satisfactory, that is, indicated that the data collected fit. Both absolute (GFI, AGFI) and comparative (IFI, TLI, CFI, RMSEA) adjustment indices displayed good levels, according to authors Kline (2005), Brown (2006) and Hair et. al. (2009).

The measurement model's adjustment indices, after purging, were: Chi-squared( $\chi^2$ ) = 715.8 ; DF = 305.0;  p < 0.000; GFI = 0.895; AGFI = 0.854; CFI = 0.941; RMSEA = 0.056; NFI: 0.902; IFI : 0.941; and TLI: 0.927. We analyzed the indicators found from the fitted model, as follows: convergent validity (Average Variance Extracted: AVE) and the reliability of constructs via Cronbach's Alpha and Composite reliability(CR). Table 1 shows the indicators found:

<table>
<thead>
<tr>
<th>Construct</th>
<th>Cronbach's Alpha</th>
<th>AVE</th>
<th>CC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative advantage (RA)</td>
<td>0.81</td>
<td>0.60</td>
<td>0.81</td>
</tr>
<tr>
<td>Compatibility (COMP)</td>
<td>0.86</td>
<td>0.70</td>
<td>0.87</td>
</tr>
<tr>
<td>Ease of Use (EU)</td>
<td>0.84</td>
<td>0.65</td>
<td>0.85</td>
</tr>
<tr>
<td>Trialability (TRI)</td>
<td>0.81</td>
<td>0.60</td>
<td>0.81</td>
</tr>
<tr>
<td>Visibility (VIS)</td>
<td>0.68</td>
<td>0.56</td>
<td>0.70</td>
</tr>
<tr>
<td>Image (IMAG)</td>
<td>0.80</td>
<td>0.67</td>
<td>0.80</td>
</tr>
<tr>
<td>Voluntariness (VOL)</td>
<td>0.71</td>
<td>0.48</td>
<td>0.72</td>
</tr>
<tr>
<td>Result Demonstrability (RD)</td>
<td>0.73</td>
<td>0.48</td>
<td>0.73</td>
</tr>
<tr>
<td>Mastery of the technology (MT)</td>
<td>0.86</td>
<td>0.69</td>
<td>0.87</td>
</tr>
<tr>
<td>Adoption/Use of Technological Innovation (ADOU)</td>
<td>0.85</td>
<td>0.65</td>
<td>0.85</td>
</tr>
</tbody>
</table>

According to Hair et al. (2009, p.591), "items that are indicators of a specific construct must converge or share a high proportion of common variance, known as convergent validity" (Average Variance Extracted: AVE).
The authors indicate that the standardized loading estimates must be .5 or higher, or preferably .7 or higher, and that average variance extracted metrics must equal or exceed 50%. The reliability of the model's constructs was checked by means of internal consistency analysis (Cronbach's Alpha) and the Composite reliability (CR) of each construct, in order to test whether a single factor consistently underlies the items-set. The results shown in Table: 3 indicate that the indices found with the Cronbach's alpha method show whether the validity of the indicator variables relative to latent variables was accepted and, as a result, they were included in the model. Composite reliability (CR) also displayed a value regarded as appropriate and was validated, as all constructs exceeded .70, determining that the indicator adequately measured the constructs (Fornell & Larcher, 1981; Hair et al., 2009). Another aspect found is discriminant validity, via the procedure recommended by Bagozzi and Philips (1982), and which shows that where the correlations between different constructs are high, this means that the metric does not capture a construct in isolation. For each group, the construct pairs were tested, that is, two models were tested for each pair of constructs. One model was tested correlating the two constructs, and the other left the constructs free (uncorrelated). We then compared the difference between the chi-squared of the two models, that is, one that contemplates total correlation (equal to 1) between the constructs, and another that considers no correlation. The results proved discriminated validity, as the difference between the chi-squared of all models (constructs) indicated statistically significant differences (p < 0.01), where the scales correlation was set at 1.

**ANALYSIS AND DISCUSSION OF THE RESULTS**

We used multiple linear regression to analyze the study's proposed hypotheses. Given the research problem above, the independent variables were set as the perceived attributes of the use of a technological innovation (relative advantage, compatibility, ease of use, Result Demonstrability, trialability, image, visibility, and voluntariness), in addition to the supplementary variables tested in this study—mastery of the technology and experience with the VLE. The dependent variable was set as 'Use of the Technological Innovation - VLE', considered as intent to use.

To apply the multiple regression, we checked the assumptions noted by Hair et al. (2009): standardized residuals analysis, with the purpose of observing whether they behave like random variables with average equal to zero; standardized residuals distribution normality test (Kolmogorov-Smirnov test); and determination of the absence of multicolinearity (Variance Inflation Factor – VIF test), for the multivariate analyses, considering the critical cutoff to be 10 (Hair et al., 2009). To analyze the determinant attributes for the use of a technological innovation, hypotheses H1, H2, H3, H4, H5, H6, H7andH8 were tested using the model, showing the direct effect of the variables on the use of the technological innovation. Table: 2 shows the regression analysis's results.
The standardized regression coefficients indicate how much each construct affects the dependent variable when the variable increases by one unit. Compatibility has the highest regression coefficient ($\beta = 0.414$) with the use variable, that is, when the use variable increases by one unit, the greatest contribution to this change comes from compatibility. Next comes relative advantage, with the second-highest regression coefficient ($\beta = 0.280$), followed by Result Demonstrability, at ($\beta = 0.145$).

We find that the standardized regression coefficients for the trialability and voluntariness variables are negative ($\beta = -0.011$ and $\beta = -0.004$). The values are close to zero, suggesting non-significance of the perceived attributes for use of the technological innovation. One explanation for the case of trialability is the fact that the VLE is used in DL and, in the majority of implementations of this model, instructors do not have the opportunity to try the VLE for trial purposes: the information systems are provided to LIs as ready-made modules. As for voluntariness, it is worth pointing out that the VLE is required for DL and, therefore, instructors must adopt it regardless of whether they are willing or not.
Table: 2 also shows the adjusted $R^2$ (variance determination coefficient) for the dependent variable "use". The adjusted $R^2$ obtained for "use" was 64.7, denoting that 64.7% of the changes in "use" are explained by changes in perceived attributes of the use of VLE. This is in line with Rogers (1983), for whom an innovation’s perceived attributes explain 49%-87% of its adoption rate. Multiple regression results indicate that only the constructs Relative Advantage (RA), Compatibility (COMP) and Result Demonstrability (RD) are significant at 5% ($p<0.05$), that is, positively influence the process of Use of a technological innovation. The "Use of the Technological Innovation" variable only establishes a linear and significant relationship with the variables RA, COMP and RD.

Agarwal and Prasad (1997) also showed that relative advantage and Result Demonstrability are predictors of the future intent to use the technological innovation.

Given the results obtained, $H_1$, $H_2$ and $H_7$ have been supported, that is, the presence of positive influences on the dependent variable (use of the technological information) has been corroborated. Hypotheses $H_3$, $H_4$, $H_5$, $H_6$ and $H_8$ were not supported. The variables ease of use, trialability, visibility, image and voluntariness did not validate the mode, that is, do not directly affect "use". A collection of empirical evidence has been demonstrating the perceived characteristics in the adoption and use of a technological innovation, with results depending on the type of the innovation, the users’ beliefs, and the environment in which the innovation is being implemented.

This study confirmed this aspect (Table: 2) by means of hypotheses $H_1$, $H_2$ and $H_7$, as the results show direct relationships between compatibility, relative advantage and Result Demonstrability and the use of technological innovation.

The results show that the innovation (VLE) is compatible with instructors’ needs and with the social and cultural values of the learning environment in which it is embedded. The relative advantage attribute, which also significantly influences use, indicates the degree to which the innovation is perceived as better than its predecessor, representing the rate of expected benefits from the ‘use of an innovation’ (Rogers, 1983). Compeau; Meister and Higgins (2007) showed that ‘relative advantage’ has the most effect on the intensity f the use of a technological innovation.

Result Demonstrability shows the degree to which an innovation’s results are tangible (Moore & Benbasat, 1991). Studies indicate that the predictive power of attributes varies and that not all attributes influence adoption. The differences depend on the innovation and the period of application (Moore & Benbasat, 1991; HE et al., 2006).

The model proposed by Rogers (1983) and subsequently expanded by Moore and Benbasat (1991) hypothesizes that an innovation’s perceived characteristics directly influence the adoption and use of a technological innovation. However, several studies show that the proposed attributes are not the only ones capable of influencing adoption. We therefore attempted to improve the prediction by including the variables mastery of the technology and experience with the VLE, which may directly affect the use of a technological innovation.
However, in the second regression, the sample was divided into groups, as follows: instructors with greater and lesser mastery of the technology; and instructors with greater and lesser experience with the VLE.

These groups are regarded as predictors in the regression model. As such, the two classes were labeled 0 and 1, that is, we used dummy variables to represent groups of instructors simply by zero and one. We tested hypotheses $H_9$ and $H_{10}$, which concern the direct effect of the variables “mastery of the technology” and “experience with the VLE” on “use” of the technological innovation. Table 3 shows the multiple regression results, including the dummy variables mastery of the technology and experience with the VLE.

Table 3
Multiple Regression Model-Determinant Attributes of the Use of a Technological Innovation (IDT constructs and supplementary variables)

<table>
<thead>
<tr>
<th>Hypotheses/Variables</th>
<th>Beta Coef.</th>
<th>Standard Error</th>
<th>Standardized Beta ($\beta$)</th>
<th>t-value</th>
<th>P value</th>
<th>VIF</th>
<th>Direct Relation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Const.</td>
<td>0.705</td>
<td>0.197</td>
<td>3.579</td>
<td>0.000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$H_1$ RA</td>
<td>0.272</td>
<td>0.046</td>
<td>0.277</td>
<td>5.900</td>
<td>0.000</td>
<td>2.806 Supported</td>
<td></td>
</tr>
<tr>
<td>$H_2$ COMP</td>
<td>0.399</td>
<td>0.049</td>
<td>0.427</td>
<td>8.209</td>
<td>0.000</td>
<td>3.438 Supported</td>
<td></td>
</tr>
<tr>
<td>$H_3$ EU</td>
<td>0.040</td>
<td>0.046</td>
<td>0.038</td>
<td>0.862</td>
<td>0.389</td>
<td>2.429 n.s</td>
<td></td>
</tr>
<tr>
<td>$H_4$ TRI</td>
<td>-</td>
<td>0.022</td>
<td>-0.026</td>
<td>-0.773</td>
<td>0.440</td>
<td>1.392 n.s</td>
<td></td>
</tr>
<tr>
<td>$H_5$ VIS</td>
<td>0.009</td>
<td>0.025</td>
<td>0.012</td>
<td>0.371</td>
<td>0.711</td>
<td>1.351 n.s</td>
<td></td>
</tr>
<tr>
<td>$H_6$ IMAG</td>
<td>0.008</td>
<td>0.024</td>
<td>0.011</td>
<td>0.334</td>
<td>0.738</td>
<td>1.292 n.s</td>
<td></td>
</tr>
<tr>
<td>$H_7$ RD</td>
<td>0.138</td>
<td>0.048</td>
<td>0.129</td>
<td>2.854</td>
<td>0.005</td>
<td>2.579 Supported</td>
<td></td>
</tr>
<tr>
<td>$H_8$ VOL</td>
<td>-</td>
<td>0.021</td>
<td>-0.012</td>
<td>-0.404</td>
<td>0.686</td>
<td>1.209 n.s</td>
<td></td>
</tr>
<tr>
<td>$H_9$ Dom_Tec</td>
<td>0.311</td>
<td>0.084</td>
<td>0.111</td>
<td>3.723</td>
<td>0.000</td>
<td>1.126 Supported</td>
<td></td>
</tr>
<tr>
<td>$H_{10}$ Exp_VLE</td>
<td>0.067</td>
<td>0.077</td>
<td>-0.026</td>
<td>-0.874</td>
<td>0.383</td>
<td>1.113 n.s</td>
<td></td>
</tr>
</tbody>
</table>

N=436 Unadjusted $R^2$=66.5

Note: $P$ values at 5% highlighted in grey; N=number of observations; VIF=VIF (Variance Inflation Factor) Statistic; Sig.(Residual normality)=significance for the Kolmogorov-Smirnov normality test applied to standardized residuals; Sig.(Model): significance of the regression model's F test; n.s (not supported).

The results were not far different from those found in the first test’s multiple regression. The constructs Relative advantage (RA'), Compatibility (COMP) and ‘Result Demonstrability (RD) remained with significant effect at 5% ($p<0.05$), while the variable Mastery of the technology also showed a significant direct effect on a technological innovation’s use process. Mastery of the technology reflects the degree of IT knowledge and experience, enabling instructors in connection with the methodological innovation (Masetto, 2003; Zabalza, 2006; Kenski, 2009; Huertas, 2007).
The construct mastery of the technology, tested in this regression model, positively influences the process of instructor adoption of the technological innovation (VLE).

Compatibility again showed the highest regression coefficient ($\beta = 0.427$) with the “use variable, followed by relative advantage ($\beta = 0.277$), Result Demonstrability ($\beta = 0.129$) and mastery of the technology ($\beta = 0.111$).

Given the results obtained, we find that $H_1$, $H_2$, $H_7$ and $H_9$ are supported, that is positively influence the use of the technological innovation. Hypotheses $H_3$, $H_4$, $H_5$, $H_6$, $H_8$ and $H_{10}$ are not supported, that is, the variables ease of use, trialability, visibility, image, voluntariness and experience with the VLE did not validate the model, or, in other words, do not have a direct effect on Use.

CONCLUSION

The results of the quantitative approach adopted in this study indicate the determinants of the use of a technological innovation introduced by the VLE in DL, as perceived by instructors in business programs (Administration and Accounting). We found that not all of the attributes analyzed, as proposed by IDT, had a direct effect on the use of the innovation for the participating instructors. The identified attributes were: compatibility, which evidences innovation’s consistency with their values, practices and needs; relative advantage, according to which the innovation is perceived as better than its predecessor; and Result Demonstrability, according to which instructors understand the tangible results obtained from using the innovation.

These results suggest that the VLE is well regarded and may be used more intensely when it meets the pedagogical needs of instructors and displays greater utility than other practices. They also indicate that use of the VLE is being communicated among users and that mastery of the technology, represented by IT knowledge, influences the “use of the VLE” by DL instructors. All of the attributes suggested by innovation diffusion theory (IDT) were expected to positively influence the intent to use the innovation (Agarwal & Prasad, 1997). The results were consistent with some empirical studies found in the literature, and show that not all IDT attributes had a direct effect on the intent to use the innovation (Karahanna, Straub & Chervany, 1999; Compeau; Meister & Higgins, 2007; Chen, Yen & Chen, 2009).

Analysis of the mastery of technology variable also showed its direct and significant effect on the process of Use of the technological innovation. The variable represents instructor knowledge of and experience with IT relative to the “use” of the VLE. Based on statistical evidence, the attributes: ‘ease of use’, ‘trialability’, ‘visibility’, ‘image’ and ‘voluntariness’, and the variable ‘experience time’ do not positively affect use of the VLE, as perceived by business program instructors.

These findings run opposite to the theory surrounding the model of perceived attributes in the adoption and use of technological innovation that provided the basis for this study. This may indicate, for example, that for instructors who use or have used the technology (VLE) for Distance Learning (DL), ease of use may not be a relevant factor to explain the intent to use distance-learning platforms. The fact that image was not considered relevant to the use of the VLE may be due to the fact that, for instructors, the VLE stands as an everyday DL tool, that is, it is not
voluntary technology for distance learning. This study’s theoretical contribution relates to application of the model in the education environment, and more specifically in DL, as well as to enriching the literature with a refinement of the constructs concerned with the perceived characteristics of a technological innovation that affect the intensity of adoption and use, presenting variables (scale) to help measure and predict reliable results according to the proposed theoretical precepts. Refinement of the constructs aimed to add theoretical clarity and assist in the appropriate measurement of the proposed scale.

The theoretical model was expanded with the inclusion of variables to better characterize the influence of an innovation’s perceived characteristics, mainly because of the complexity of the existing relationships and of the possible direct effects on the use of the technology.

We acknowledge the study’s limitation, associated with the fact that it is a simple cross-section survey and with the fact that the non-probabilistic sample obtained prevents making inferences and limits generalization of the results or transposition to the overall population. The results, notwithstanding, contribute to new developments and to future studies.

To add to this study, we propose an exploratory qualitative survey with business instructors to explore the perceived characteristics of a technological innovation in the educational environment using qualitative data collection, such as interviews with focus groups. We also suggest exploring the interrelations among perceived attributes of a technological innovation, as influences across constructs may contribute to the development of the theory and have not yet been widely investigated.

**BIODATA and CONTACT ADDRESSES of the AUTHORS**

Edvalda ARAÚJO LEAL received a Master’s degree in Accounting Sciences from Pontifícia Universidade Católica de São Paulo (PUC/SP) and a Doctor’s degree in Management from Fundação Getúlio Vargas/São Paulo. Currently, she is a Tenured Professor at Universidade Federal de Uberlândia (UFU), linked to the Accounting Department, Coordinator of the Group of Teaching and Research in Management and Accounting (also know, in Portuguese, as NEPAC-Núcleo de Ensino e Pesquisa em Administração e Contabilidade), with major interest in researches in technologies applied to education.

Edvalda ARAÚJO LEAL
Universidade Federal de Uberlândia, BRAZIL
Av. João Naves de Ávila, nº 2.121,
Campus Santa Mônica, Bloco 1F Sala 1F215
Uberlândia-MG – CEP: 38.408-144, BRAZIL
Tel: (55) 34-3239-4176 / (55) 34-8869-2748
Email: edvalda@facic.ufu.br
Alberto LUIZ ALBERTIN received a Master's degree in Management from Universidade de São Paulo and a Doctor's degree in Management from Universidade de São Paulo. Currently, he is a Full Professor at Fundação Getúlio Vargas (FGV-EAESP), Coordinator of the Applied Information Technology Center (also known, in Portuguese, as CIA - Centro de Tecnologia de Informação Aplicada) and Academic Coordinator of Executive Education of FGV-EAESP, besides being leader of the group Management, Analysis and TI from Conselho Nacional de Desenvolvimento Científico e Tecnológico.

Alberto LUIZ ALBERTIN
Fundação Getúlio Vargas, BRAZIL
Avenida 9 de Julho, 2.029,
Bela Vista, São Paulo – SP - CEP: 01313-902
Tel.: (55) 11- 3799-7777
Email: albertin@fgv.br

REFERENCES


USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN INDIA’S FIRST OPEN UNIVERSITY: Experience and Perceptions of Learners and Learner Support Providers

Dr. P. SATYANARAYANA
Indira Gandhi National Open University
Hyderabad, INDIA

Prof. Dr. Emmanuel DK MEDURI
Teegala Krishna Reddy Engineering College
Hyderabad, INDIA

ABSTRACT

Dr. B.R. Ambedkar Open University (BRAOU), the first distance teaching university in India, was a great educational event. It started a new chapter in the history of India’s distance higher education. The general objects these research studies are:

- to identify the information and communication technologies used in open distance education system in general and in BRAOU in particular,
- to find out the process of planning and management of the technologies for distance teaching of BRAOU,
- to assess the impact of the technologies on the distance learning of BRAOU students, and
- to make suggestions, on the basis of the study, for effective and efficient management of technology in BRAOU.

This study adopted descriptive method of research, which is widely used in educational research. Experiences, opinions and perceptions of 510 undergraduates students, 184 postgraduates, 110 academic counselors and 52 study center Heads are collected through separate questioners. Important results of survey are briefly stated here.

Keywords: Distance education, information and communication technologies, selection of media and management.

INTRODUCTION

In 1982 the establishment of Dr. B. R. Ambedkar Open University (BRAOU), the first distance teaching university in India, was a great educational event. It heralded a new era in India’s higher education. It set in a new educational trend in adult education. It started a new chapter in the history of India’s distance higher education. It paved the way for founding of 13 other Open Universities in India.
The Expert Committee on the Establishment of BRAOU strongly suggested the use of multimedia for instructional purpose. The Expert Committee recommended TV and Radio broadcasts as well as audio-video programmes to be used as an integral part of the instruction ‘to enrich support, illuminate demonstrate or otherwise strengthen the learning experiences of courses’. Following the Expert Committee Report, the University designed and evolved a multimedia instructional system comprising:

- Course units – these are specially structured course books which from the core of the teaching material.
- TV, Radio and Teleconferencing programmes – these are normally relatively less important supplement to the course units, although they form part of the university’s teaching.
- Programmes on audio tapes – these are either broadcast on AIR or independently produced for presentation at study centers.
- Programmes on video tapes – these are specially developed for presentation at the study centers for students, academic counselors and coordinators.
- Face-to-face tutorial sessions at study centers.
- Counseling services to students by the coordinators, academic counselors and the academic heads of host institutions of study centers.
- Course assignments as an instrument of teaching and continuous assessment.
- Project works.
- Practical experiences for science courses at select study centers and Headquarters.
- Term end examinations

BRAOU is fortunate to get time on AIR for broadcasting its programmes almost from the beginning of the offer of academic programmes on four days a week (Monday, Wednesday, Thursday and Friday), six 30 minutes slots (7:15-7:45 Hours and 22:30-23:00 Hours) on Hyderabad – “B” station with short-wave support for Statewide coverage. All the programmes broadcasted on radio are also put on audio tapes and are made available at the Study Centers for the benefit of students and counsellors. Those who miss radio broadcasts would go to the Study Centers and hear the programmes.

Besides the broadcasting programmes, a number of additional audio programmes are also produced on cassettes and are made available at the Study Centers. The University could not get any slot on Doordarshan for many years. Without waiting for the time for telecasts, the University produced video programmes and their tapes are made available at all Study Centers for the benefit of students and academic counsellors. Telecasts began in 1999 from Monday to Friday between 5:30 a.m., and 6:00 a.m., through public television (Doordarshan).

Later, telecasts began on ‘Mana TV’ (State specific Educational Network) from Monday to Friday between 8:30 a.m., and 9:30 a.m., with repetition between 4:30 p.m., and 5:30 p.m. Teleconferencing also began on Sundays between 2:00 p.m., and 3:00 p.m., on Doordarshan also later on ‘Mana TV’.

BRAOU established its Audi-Visual Production and Research Centre (AVPRC) in 1986 as part of the Material Production Directorate. The Centre became a separate unit headed by a Director in 1993, with the following major objectives:
- to produce audio and video educational programmes.
- to organize transmission of educational programmes over radio and television.
- to conduct training and academic programmes in communication.
- to undertake research in the field of educational technology as applied to distance education.

Programme-Wise and Year-Wise Production of Radio, Audio and Video Lessons Produced by AVPRC

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Arts</th>
<th>Social Sciences</th>
<th>Science</th>
<th>Commerce</th>
<th>General</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R A V</td>
<td>R A V</td>
<td>R A V</td>
<td>R A V</td>
<td>R A V</td>
<td>R A V</td>
</tr>
<tr>
<td>1983-84</td>
<td>61 - 03</td>
<td>32 -</td>
<td>34 -</td>
<td>- - -</td>
<td>- - -</td>
<td>127 - 03</td>
</tr>
<tr>
<td>1984-85</td>
<td>53 - 07</td>
<td>85 - 14</td>
<td>11 -</td>
<td>58 - 08</td>
<td>03 - 32</td>
<td>03 - 22</td>
</tr>
<tr>
<td>1985-86</td>
<td>99 - 11</td>
<td>03 -</td>
<td>72 - 03</td>
<td>20 - 119</td>
<td>06 - 09</td>
<td>72 - 04</td>
</tr>
<tr>
<td>1986-87</td>
<td>54 - 27</td>
<td>04 -</td>
<td>36 - 15</td>
<td>09 - 63</td>
<td>08 - 06</td>
<td>68 - 04</td>
</tr>
<tr>
<td>1987-88</td>
<td>33 - 17</td>
<td>04 -</td>
<td>46 - 23</td>
<td>01 - 26</td>
<td>09 - 03</td>
<td>24 - 06</td>
</tr>
<tr>
<td>1988-89</td>
<td>09 - 13</td>
<td>04 -</td>
<td>18 - 15</td>
<td>04 - 17</td>
<td>02 - 09</td>
<td>13 - 01</td>
</tr>
<tr>
<td>1989-90</td>
<td>- - 06</td>
<td>02 -</td>
<td>20 - 07</td>
<td>02 - 09</td>
<td>01 - 03</td>
<td>08 - 02</td>
</tr>
<tr>
<td>1990-91</td>
<td>09 - 04</td>
<td>- 14 - 01</td>
<td>03 - 02</td>
<td>- 04 - 03</td>
<td>- - 04</td>
<td>29 - 08</td>
</tr>
<tr>
<td>1991-92</td>
<td>10 - 04</td>
<td>- 06 - 03</td>
<td>- - 01</td>
<td>- - 06</td>
<td>06 - 22</td>
<td>04 - 10</td>
</tr>
<tr>
<td>1992-93</td>
<td>10 - -</td>
<td>- - 07</td>
<td>01 - 02</td>
<td>01 - -</td>
<td>13 - 09</td>
<td>25 - 18</td>
</tr>
<tr>
<td>1993-94</td>
<td>08 - 05</td>
<td>- 46 - 07</td>
<td>38 - 12</td>
<td>52 - -</td>
<td>- - 18</td>
<td>144 - 42</td>
</tr>
<tr>
<td>1994-95</td>
<td>- - 04</td>
<td>- - 05</td>
<td>- - 09</td>
<td>- - -</td>
<td>- - 18</td>
<td>- -</td>
</tr>
<tr>
<td>1995-96</td>
<td>03 - -</td>
<td>03 - 01</td>
<td>- 04 -</td>
<td>- 02</td>
<td>01 - -</td>
<td>- - 12</td>
</tr>
<tr>
<td>1996-97</td>
<td>14 - -</td>
<td>15 - 07</td>
<td>- 21 -</td>
<td>- 16 -</td>
<td>- - 66</td>
<td>07 -</td>
</tr>
<tr>
<td>1997-98</td>
<td>03 - 07</td>
<td>- 54 - 01</td>
<td>06 - 08</td>
<td>- 03</td>
<td>06 - -</td>
<td>- 03</td>
</tr>
<tr>
<td>1998-99</td>
<td>04 - 01</td>
<td>- 34 - 01</td>
<td>- 05 -</td>
<td>- 08 -</td>
<td>- - 51</td>
<td>02 -</td>
</tr>
<tr>
<td>1999-00</td>
<td>06 - 20</td>
<td>- 09 - 34</td>
<td>02 - 32</td>
<td>- 11 -</td>
<td>- 03</td>
<td>17 - 100</td>
</tr>
<tr>
<td>2000-01</td>
<td>20 - -</td>
<td>01 - -</td>
<td>- 02</td>
<td>09 - 05</td>
<td>- 04 -</td>
<td>- 29 -</td>
</tr>
<tr>
<td>2001-02</td>
<td>09 - 09</td>
<td>21 - -</td>
<td>24 - 09</td>
<td>- 16</td>
<td>11 - 16</td>
<td>- 07</td>
</tr>
<tr>
<td>2002-03</td>
<td>09 - -</td>
<td>20 - 45</td>
<td>- 34</td>
<td>12 - 27</td>
<td>22 - 29</td>
<td>19 - 01</td>
</tr>
<tr>
<td>2003-04</td>
<td>15 - -</td>
<td>22 - 29</td>
<td>- 15</td>
<td>09 - 12</td>
<td>07 - 10</td>
<td>01 - 02</td>
</tr>
<tr>
<td>2004-05</td>
<td>27 - -</td>
<td>17 - 31</td>
<td>- 24</td>
<td>16 - 29</td>
<td>19 - 17</td>
<td>- 01</td>
</tr>
<tr>
<td>2005-06</td>
<td>05 - -</td>
<td>33 - 32</td>
<td>- 46</td>
<td>18 - 29</td>
<td>03 - 34</td>
<td>- 06</td>
</tr>
<tr>
<td>2006-07</td>
<td>10 - 16</td>
<td>- 17</td>
<td>33 - 10</td>
<td>- 08</td>
<td>08 - 22</td>
<td>- - 45</td>
</tr>
</tbody>
</table>

Total 471 83 177 669 88 285 495 34 197 376 39 160 51 - 62 2062 244 881

R - Radio Lessons; A - Audio Lessons; V - Video Lessons
Production of Tele Lessons from 1999 to December 2007 by AVPRC

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>English (FC)</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>English (UG)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>English (PG)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Telugu (FC)</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Telugu (PG)</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Hindi (FC)</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Hindi (PG)</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Urdu (FC)</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Urdu (PG)</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Media Writing in Telugu (PGD)</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>21</td>
<td>20</td>
<td>15</td>
<td>14</td>
<td>27</td>
<td>24</td>
<td>28</td>
<td>10</td>
<td>167</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Commerce</td>
<td>2</td>
<td>12</td>
<td>13</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td>13</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Management</td>
<td>2</td>
<td>9</td>
<td>23</td>
<td>13</td>
<td>8</td>
<td>4</td>
<td>10</td>
<td>22</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>21</td>
<td>36</td>
<td>14</td>
<td>11</td>
<td>12</td>
<td>23</td>
<td>34</td>
<td>6</td>
<td>161</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Science &amp; Technology (FC)</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Chemistry</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Chemistry (DS)</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Physics</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Botany</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Zoology</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Mathematics (UG)</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Mathematics (PG)</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Geology</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>27</td>
<td>19</td>
<td>19</td>
<td>12</td>
<td>23</td>
<td>31</td>
<td>20</td>
<td>3</td>
<td>171</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Social Science (FC)</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Economics (UG)</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Economics (PG)</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>History (UG)</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>History (PG)</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Political Science (UG)</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Political Science (PG)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

41
<table>
<thead>
<tr>
<th>Year</th>
<th>Public Administration (UG)</th>
<th>Public Administration (PG)</th>
<th>Sociology (UG)</th>
<th>Sociology (PG)</th>
<th>Library Science (BLSc)</th>
<th>Library Science (MLISc)</th>
<th>Public Relations (BPR)</th>
<th>Human Rights (PGD)</th>
<th>Women Studies (PGD)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>2000</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>34</td>
</tr>
<tr>
<td>2001</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td>2002</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>2003</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>2004</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>2005</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>2006</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>2007</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>13</td>
<td>10</td>
<td>4</td>
<td>4</td>
<td>131</td>
</tr>
</tbody>
</table>

Faculty-wise Teleconferencing Programmes organized by AVPRC through DD-Saptagiri from 05-12-1999 to 26-08-2007 and Mana TV (Ku-band) from 26-08-2002 to 30-04-2006

<table>
<thead>
<tr>
<th>S. No</th>
<th>Subject</th>
<th>No. of Programmes through DD-Saptagiri</th>
<th>No. of Programmes through Mana TV (Ku-band)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Economics</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>History</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Political Science</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>Public Administration</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Sociology</td>
<td>13</td>
<td>04</td>
</tr>
<tr>
<td>6</td>
<td>Social Science (FC)</td>
<td>09</td>
<td>06</td>
</tr>
<tr>
<td>7</td>
<td>Public Relations</td>
<td>10</td>
<td>09</td>
</tr>
<tr>
<td>8</td>
<td>Library Science</td>
<td>19</td>
<td>27</td>
</tr>
<tr>
<td>9</td>
<td>Human Rights</td>
<td>03</td>
<td>01</td>
</tr>
<tr>
<td>10</td>
<td>Women Studies</td>
<td>00</td>
<td>01</td>
</tr>
<tr>
<td>Sub-Total</td>
<td></td>
<td>111</td>
<td>95</td>
</tr>
<tr>
<td>1</td>
<td>Faculty of Social Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Telugu</td>
<td>20</td>
<td>09</td>
</tr>
<tr>
<td>2</td>
<td>English</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>Hindi</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>Urdu</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Media Writing in Telugu</td>
<td>03</td>
<td>04</td>
</tr>
<tr>
<td>Sub-Total</td>
<td></td>
<td>69</td>
<td>51</td>
</tr>
<tr>
<td>1</td>
<td>General Programmes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Student support services/Trainings</td>
<td>82</td>
<td>100</td>
</tr>
<tr>
<td>S. No</td>
<td>Subject</td>
<td>No. of Programmes through DD-Saptagiri</td>
<td>No. of programmes through Mana TV (Ku-band)</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------</td>
<td>---------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Chemistry</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>Physics</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>Botany</td>
<td>09</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>Zoology</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>Mathematics</td>
<td>07</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td>Geology</td>
<td>07</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Science &amp; Technology (FC)</td>
<td>13</td>
<td>08</td>
</tr>
<tr>
<td>8</td>
<td>General Sciences</td>
<td>02</td>
<td>00</td>
</tr>
<tr>
<td>9</td>
<td>Information Technology (FC)</td>
<td>01</td>
<td>00</td>
</tr>
<tr>
<td>10</td>
<td>Certificate in Computers</td>
<td>01</td>
<td>00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>76</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>Faculty of Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Commerce</td>
<td>32</td>
<td>33</td>
</tr>
<tr>
<td>2</td>
<td>Management</td>
<td>29</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>Hotel Management</td>
<td>02</td>
<td>00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>63</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>325</td>
<td>406</td>
</tr>
</tbody>
</table>

**USE OF TECHNOLOGY BY BRAOU**

**1. Radio Lessons**

<table>
<thead>
<tr>
<th>Station</th>
<th>Timings (Spot)</th>
<th>Schedules (Slot)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyderabad B</td>
<td>07.15 am – 07.45 am</td>
<td>Monday, Wednesday, Friday</td>
</tr>
<tr>
<td>Hyderabad B</td>
<td>10.30 pm – 11.00 pm</td>
<td>Monday, Thursday, Friday</td>
</tr>
</tbody>
</table>

**2. Radio Phone-in-Programmes**

<table>
<thead>
<tr>
<th>Station</th>
<th>Timings (Spot)</th>
<th>Schedules (Slot)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyderabad</td>
<td>4.00 pm – 5.00 pm</td>
<td>Every 4th Sunday</td>
</tr>
</tbody>
</table>

**3. Tele lessons**

<table>
<thead>
<tr>
<th>Channel</th>
<th>Time</th>
<th>Programme/Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD Saptagiri</td>
<td>05.30 am – 06.00 am</td>
<td>Monday, Tuesday, Wednesday,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thursday, Friday</td>
</tr>
<tr>
<td>MANA TV</td>
<td>09.30 am – 10.30 am</td>
<td>Monday, Tuesday, Wednesday,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thursday, Friday</td>
</tr>
<tr>
<td>MANA TV (Repeat)</td>
<td>04.00 pm – 05.00 pm</td>
<td>Monday, Tuesday, Wednesday,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thursday, Friday</td>
</tr>
</tbody>
</table>

**4. Teleconferences**

<table>
<thead>
<tr>
<th>Channel</th>
<th>Time</th>
<th>Programme/Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD Saptagiri</td>
<td>02.00 pm – 03.00 pm</td>
<td>Every Sunday</td>
</tr>
<tr>
<td>MANA TV</td>
<td>10.00 am – 11.00 am</td>
<td>Every Sunday</td>
</tr>
<tr>
<td></td>
<td>11.15 am – 12.15 pm</td>
<td>Every Sunday</td>
</tr>
<tr>
<td></td>
<td>12.30 pm – 01.30 pm</td>
<td>Every Sunday</td>
</tr>
</tbody>
</table>
WHY THIS STUDY?

The survey of literature on the role of technology in BRAOU reveals that comprehensive and in-depth research has not yet been conducted. This survey highlights the wide gap in the research literature on the role of technology in BRAOU. Institutional research is totally absent on the subject.

Many of the technologies used in BRAOU are not studied by internal faculty members, Audio Visual Production and Research Centre staff or by others with the support from the promotional organizations in distance education such as DEC, COL, AAOU, UGC, etc. An attempt is made by the authors to study the role of technologies in BRAOU with particular reference to radio lessons, radio phone-in-programmes, audio programmes on cassettes, tele-lessons, teleconference and video programmes on cassettes. How these technologies are managed for distance teaching and learning is the main thrust of the study. This study aims at partly filling the gap in research literature on the role of multiple media/technologies in BRAOU, existing over 25 years.

OBJECTIVES

The general objects these research studies are:

- to identify the information and communication technologies used in open distance education system in general and in BRAOU in particular,
- to find out the process of planning and management of the technologies for distance teaching of BRAOU,
- to assess the impact of the technologies on the distance learning of BRAOU students, and
- to make suggestions, on the basis of the study, for effective and efficient management of technology in BRAOU.

The specific objectives are:

- to identify the technologies utilized for instruction and administration purposes of BRAOU,
- to highlight the merits and demerits of different technologies in distance teaching and learning processes,
- to study the process of planning, designing and production of audio and video technologies in BRAOU.
- to study the pattern of use of technologies by learners of BRAOU,
- to study the experiences, opinions and perceptions of academic staff, student support providers and academic counselors of BRAOU on the production and use of different communication technologies by students of BRAOU,
- to examine the organizational requirements for proposed effective operation of the educational media production and for meaningful use of educational media by students of BRAOU,
- to describe the bases for the selection of media and for the combination of media in BRAOU,
- to offer suggestions on the basis of the findings of the study, for effective and efficient use of educational communication technologies or media for distance teaching and learning of BRAOU.
RESEARCH METHODOLOGY

This study adopted descriptive method of research, which is widely used in educational research.

This method helps to explain the phenomena in terms of conditions that exist, opinions that are held by students and teachers, processes that are in operation, effects that are evident and trends that are developing.

Through descriptive survey, experiences, opinions, perceptions and suggestions for the improvement of the use of technologies are obtained from Students, Academic Staff, Academic Counselors and Study Center Heads. The student sample covered 184 postgraduate students, 510 undergraduate students, 33 Academic Staff, 110 Academic Counselors and 52 Study Centre Heads as shown below. Different structured questionnaires, partly open and partly closed, are used for the all the four categories of respondents.

<table>
<thead>
<tr>
<th>Region</th>
<th>No. of Study Centres</th>
<th>No. of Students</th>
<th>No of Academic Counsellors</th>
<th>No. of Study Centre Heads</th>
<th>No. of Academic Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Twin Cities</td>
<td>6</td>
<td>260</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II Telangana</td>
<td>4</td>
<td>133</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III Rayalseema</td>
<td>4</td>
<td>158</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV Costal Andhra</td>
<td>4</td>
<td>143</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>694</td>
<td>110</td>
<td>52</td>
<td>33</td>
</tr>
</tbody>
</table>

SUMMARY OF SURVEY RESULTS

Experiences, opinions and perceptions of 510 undergraduates students, 184 postgraduates, 110 academic counselors and 52 study center Heads are collected through separate questioners. Here important results of survey are briefly summarized. This summary serves as an index to the significant survey results.

Students’ Perception of Differences between Regular Face-to-Face Study and Distance Study

Majority of students do not take interest to clearly understand the difference between conventional and distance modes of study. Only a small number of students could perceive the role of non-print communication technologies in distance education and their absence in regular full time face-to-face campus based education. 18% of UG student respondents and 29% of PG student respondents stated ‘non-print technology such as radio lessons, television lessons, audio and video cassettes are provided to distance students’ as the difference between regular and distance education. One major difference identified by almost all the student respondents is the ‘non-requirement of attendance at class rooms’.

Students’ Satisfaction with the Printed Course Materials Supplied by the University

Students are by and large are happy with the printed course materials supplied to them by the University. For half of PG students and two thirds of UG students, printed course materials are self-instructional. For one third of PG students and a small number of UG students, the printed materials are not self-instructional form. Several features of non-self instructional nature of print materials are mentioned by those who said that printed materials are not self-instructional.
Non-Utilization of Non-Print technologies by Students

Bulk of students used only print technology. 451 students of 510 sampled UG students, and 165 students out of 184 PG students used print technology in their learning. Surprisingly, no student uses any non-print technology in the study.

Reasons for non-utilization of non-print media stated by students, academic staff, academic counselors and study center Heads are mostly the same.

The main reasons include:

- Self-sufficiency of print materials in studies. Contents of radio and television programmes are already in the printed materials.
- Non-compulsory nature of electronic media in studies.
- Exclusion of radio and television programmes for examination purpose
- Lack of electronic educational media habit among students.
- Limited coverage of course topics in radio and television programmes.
- Lack of advance information on media programmes to students.
- Disinterest of academic counselors, study center Heads in motivating students towards the use of electronic media.
- Lack of equipment and facilities at study centers for radio and television programmes
- Regular college and university students do not use radio and television programmes.

Non use of Handbooks for Academic Counsellors and Managers of Study Centers

Handbooks for Academic Counsellors and Managers of study centres are not followed by most of the academic counsellors and study centre Heads.

Students’ Limited Awareness of Media Programmes

Awareness of radio broadcasts telecasts, radio phone-in-programmes, teleconferences among students is very limited. Most of the students are not aware of the multiple media based instructional system of the University.

The limited number students who are aware of media programmed do not use them due to;

- lack of time,
- non-availability of programme schedules,
- self-sufficiency of printed materials,
- non-availability electronic gadgets, and
- non-suitability of programme timings.

Limited Impact of MANA TV

For viewing MANA TV programmes, special reception facilities are needed. Most of the study centres do not have such facilities. Thus, literally MANA TV programmes have impact on students. Moreover, MANA TV repeats programmes which are already telecast by Doordarshan.

Non-Functioning of Certain AV Equipment Provided by Study Centers

In the early years of the University, audio and video cassettes and play equipment for them were provided. Later, they became defective and non cared for. No new equipment is substituted. Thus most of study centers are left with no equipment.
Formats of Television Programmes
Television programmes are mostly in lecture format, which are not of interest to students.

Absence of Scientific Bases for Decision Making on Media Components of Courses
There seems to be no scientific basis for selection of electronic media components of courses. No true course team approach is followed resulting in adhocism.

Limited Manpower of AVPRC
AVPRC has limited manpower (Production Staff) and do not go for outdoor shooting.

Lack of Interaction between Academic Staff and Production Staff of the University
Continuous and meaningful interaction between academic staff and production staff is lacking. Academics go by their own ideas and do not appreciate the well-established principles of media production.

No Feedback from Students on Their Media Use
No feedback on the quality and use of electronic media is obtained from students. Feedback helps in setting things right.

Lack of Training on Course Preparation
Academic staff who design non-print media mostly lack training in the role of technology in distance teaching.

Not Enough Financial Resources for AVPRC
Besides limited human resources, a limited financial resource for AVPRC tells on the quantity and quality of media production. Efforts are not made increase the financial resources of AVPRC.

Lack of Equipment and Facilities at Study Centers for Radio and Television Programmes
The survey revealed the absence of appropriate equipment and facilities in most of the study centers. Experiences and opinions of students, academic counsellors and study center Heads on this aspect are mostly similar.

Suggestions for Effective and Efficient Use of Technology.
Suggestions from students, academic staff, academic counsellors and study center Heads, for effective and efficient management of technology in the University include:

- Induction meetings for new students at study centers on the multiple media based teaching-learning of the Open University.
- Highlighting the usefulness of media programmes for students by academic counsellors and study center staff.
- Transforming all radio and television programmes into cassettes/tapes/discs and placing them at major study centers.
- Providing the necessary equipment and facilities at most of the study centers for radio and television programmes.
- Proper training for academic counsellors, on integrating counseling sessions with electronic media contents.
- Special sessions at study centers on Sundays and other days for recorded radio and television programmes.
- Getting feedback from students and counselors and evaluating it for bettering the system.
- Making available IGNOU and other Open Universities’ media products at major study centers for the use of study by students.
NON-UTILIZATION OF ELECTRONIC MEDIA IN BRAOU

On the issue of non-utilization of electronic media by students experiences and opinions are collected from a sample of students, academic staff members, academic counsellors and study center Heads. Students gave 10 reasons, academic staff members gave 14 reasons and academic counsellors gave 7 reasons. Study center Heads gave reasons similar to those of counsellors.

The significant common reasons indicated by all the four categories are the following:

- Printed course materials supplied by the University are self-sufficient and self-directing for student study.
- Contents of electronic media programmes are already in the printed course materials.
- Electronic media programmes are not made compulsory for students by the University. Examinations do not include questions on media programmes.
- Media programmes cover very few aspects of very few course subjects.
- Student’s regular colleges and Universities do not use electronic media. Then why for distance students?
- Media programme schedules are not available in advance to students.
- Counseling sessions are held at study centers on Sundays. Some media programmes are also on Sundays. Due to the clash, students cannot use media programmes.
- Most of the academic counselors and study center Heads do not take interest in motivating students towards the use of non-print media.
- Many 1st year UG students develop drop out tendency and are not bothered about print and non-print media.
- Broadcast/telecast timings are not suitable to students.
- Most of the study centers do not have proper equipment and facilities for presentation of audio and video programmes on cassettes.
- MANA TV reception facilities are very limited in view of their technical non-availability.
- Most of the students do not have educational media habit.
- Most of the non-print media programmes are simple lectures and lack visuals and hence do not create appeal.
- All radio and television broadcasts are not available at study centers on cassettes and tapes. Hence, even a small number of interested students cannot have access to media programmes.

The University should seriously consider the responses of the students, counselors, and study center Heads and academics of the University. The University should take critical view of the experiences, opinions and perceptions of all the players in the field.

SUGGESTIONS FOR EFFECTIVE AND EFFICIENT USE OF TECHNOLOGY

While assessing the role of technology in its academic and administration operations, the University should consider the various suggestions made by academic staff, academic counselors’ and study center Heads. Common suggestions of significance and relevance
offered by the key managers of the University are following:

- Induction meetings for newly admitted students every year should be held at study centers for orienting students on the useful of technology for student learning
- Student Handbooks for all course should include advantages of print and non-print technologies to students in their learning
- Academic counselors and study center Heads should motivate the students towards the use of non-print electronic media programmes
- All radio broadcasts and television broadcasts of the University should be put on cassettes/tapes/CDs/DVDs, and be made available to students at study centers
- Maximum number of study center should be equipped with the gadgets and services necessary for presentation of electronic media programmes. In view of the increasing role of technology in distance education, the following equipment needed to be placed at maximum number of study centers of the University:

<table>
<thead>
<tr>
<th>Telephone</th>
<th>TV set with cable connection</th>
<th>Scanner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone with STD facility</td>
<td>TV with DTH</td>
<td>Audio cassettes</td>
</tr>
<tr>
<td>Mobile Phone</td>
<td>TV with MANA TV reception facility</td>
<td>Video cassettes</td>
</tr>
<tr>
<td>Radio</td>
<td>VCP/VCD/DVD player</td>
<td>Fax Machine</td>
</tr>
<tr>
<td>Tape recorder</td>
<td>Computer with Internet facility</td>
<td>Xerox Machine</td>
</tr>
<tr>
<td>Radio cum tape recorder</td>
<td>COMBO Drive</td>
<td>Overhead/LCD Projector</td>
</tr>
<tr>
<td>TV set</td>
<td></td>
<td>IPod</td>
</tr>
</tbody>
</table>

- On Sundays and other days, study center should conduct additional sessions only for presentation of audio and video programmes
- Media production facilities at the University headquarters should increase in terms of technical personnel and modern equipment
- Interactive between academics, production staff, student support planners should be more and continuous
- Rational decision making on media components of courses should occur.
- Coordination between AIR, Doordarshan and University on the role of media should occur.
- Training in media planning and production for academics, production staff should be periodically organized with the help of EMPC, AIR, Doordarshan, MANA TV
- University should appoint a high level technical committee with media specialists and representatives of Akashvani and Doordarshan to study the University’s management of multiple media based distance education system and be benefited by its suggestions.
BIODATA and CONTACT ADDRESSES of the AUTHORS

Dr. P. SATYANARAYANA was a consultant to Educational Consultants India Limited for IGNOU Project. After the establishment of IGNOU he was with it as Joint Director and later as Regional Director. His works include Distance Education: Different Dimensions, Open and Distance Education Research, Indian Open University System, etc. He participated in several national and international workshops and seminars conducted by UGC, ICDE, AAOU, UNESCO etc.,

Dr. P. SATYANARAYANA
Former Regional Director
Indira Gandhi National Open University
C-10/1, Kakatiya Nagar, Habsiguda,
Hyderabad 500 007, INDIA
Email: satyanarayana1938@rediffmail.com

Emmanuel DK MEDURI, Ph.D is a Professor of Management at Teegala Krishna Reddy Engineering College, Hyderabad. He represents Global Universities in Distance Education, Rome in India. He specialized in management of ICT in distance education. He presented papers at national and international conferences organized by FACCI, AIMA, IDEA, AIOU, and ICDE. He also worked as Consultant to Prof. G. Ram Reddy Research Academy in Distance Education, Dr. B.R. Ambedkar Open University. His works include E-Learning Wave in India, Technology Mediated Distance Education.

Dr. Emmanuel DK MEDURI, Ph.D.
Prof. of Mgt., Dept. of MBA
Teegala Krishna Reddy Engineering College
Med Bowli, Meerpet, Hyderabad 500 097 INDIA
Mobile: 91 33 29 29 91
Email: emanphd@gmail.com

REFERENCES


Satyanarayana, P and Emmanuel DK (2007): Use of ICTs in Distance Education. In Emerging Trends in the Use of ICTs. Hyderabad: MGNIRSA.

Venkaiah, V. (2005). Educational Media in Dr. BRAOU with special reference to Teleconferencing. In Educational Media in Asia: Perspectives on Distance Education. Vancouver: COL.
THE ATTITUDE SCALE TOWARDS DISTANCE NURSING EDUCATION (astDNE)

Lecturer Dr. Belgin BOZ YUKSEKDAG
Anadolu University
College of Open Education
Eskisehir, TURKEY

Assoc. Prof. Dr. Gul UNSAL BARLAS
Marmara University,
Faculty of Health Sciences,
Istanbul, TURKEY

ABSTRACT

In this study, a measurement is seen as an instrument to measure the attitudes of the nurses towards the distance nursing education was developed. The study population consist of nurses who working in two hospitals of the ministry of health and two special hospitals in Istanbul. The sample of the study consisted of 194 nurses who agreed to participate in this study. The scale total cronbach alpha coefficient was found .94, test-retest reliability coefficient .89. The correlations of each item with total point were between .49 and .69. In factor analysis done with varimax rotation for construct validity, whose eigenvalue is over 1, explaining 65.02 % of total variability, 5 factors consisting of 25 items was obtained the scale. These factors are called "Interaction", "Learning Styles", "Support Services", "Interaction Tools" and "Content Presentation". Consequently, findings show that The Attitude Scale towards Distance Nursing Education (astDNE) is a valid and reliable instrument.

Keywords: The attitude scale, distance nursing education, astDNE.

INTRODUCTION

Because of the increase in health problems in society, the emergence of the disease and new treatment options, the working nurses in hospitals have to update their knowledge and skills (Atack and Rankin, 2002; Piko, 2007). The goal of distance nursing education to students who can not attend formal education is to provide a learning experience equivalent to formal education (White, 2006). Distance education programs provide to access to nurses from their personal computers to course materials in any time of day. In this way, barriers and costs associated with travel are eliminated (Holly, Legg, Mueller and Adelman, 2008). On the otherhand, distance education offers alternative solutions that their information updating as well as a high level of education to nurses (Shea, 2008; Della-Vecchia, 2010). Moving from a student-centered approach, attitudes of the target audience is an important element in the development of distance nursing education programs. However; the attitudes of nurses towards distance nursing education are unknown in Turkey.
The purpose of this study is to develop the attitude scale towards the distance nursing education. In this study, the attitude was defined as the positive and negative opinions that based on past educational experiences of nurses about distance nursing education.

AIM and METHOD of the RESEARCH

The study was carried out to develop the attitude scale towards the distance nursing education. The study population consist of nurses who working in two hospitals of the ministry of health and two special hospitals in Istanbul. However; one of the special hospitals did not want to join to this research. So, it was left out of the research population. The total study population consisted of 385 nurses. The sample of the study consisted of 194 nurses who agreed to participate in this study.

Research Hypothesis

\[ H_1 = \text{the Attitude Scale towards Distance Nursing Education is a reliable and valid tool to measure the attitude levels of nurses towards distance nursing education.} \]

Data Collection Tools and Data Collection

Research data were collected by the researcher with The Attitude Scale towards Distance Nursing Education. The scale was administered to 194 psychiatric nurses in September 2011.

Evaluation of Data

In data analysis, SPSS version 17 was used. The data were analyzed under two headings:

- Development of the Attitude Scale towards Distance Nursing Education
- The attitudes of psychiatry nurses towards the distance nursing education.

However, in this study, only the development stages of astDNE were given.

FINDINGS

The development stages of astDNE

Creation of Items and the Opinions of Experts

Attitudes of the target audience in the creation of distance education programs are an important element to consider.

According to literature, the studies towards distance nursing education have been found to be insufficient in Turkey. Especially, there are no studies towards distance psychiatric nursing education. On the other hand, a measuring tool is absent for determining attitudes of psychiatric nurses towards distance nursing education. For this purpose, while creating scale, firstly related to distance nursing education and distance education literature has been scanned. Attitude scales were revised. A total of 60 scale items were written. These items were presented to experts to ensure content validity. Experts were asked their opinions on expressive style, content, relevance to the subject area of items. According to experts, some items were removed. The final version of the scale consisted of 55 items.

Implementation of Draft Version of the Scale

Pre-tests should be tried on a small group, which is not included in the sample. The small group should have similar features with examples (Tezbasaran, 1996; Karaca, 2004).
The draft scale was implemented to 32 nurses working in Eskisehir who had similar characteristics with the nurses in the sample.

The nurses were asked their opinions towards understandability of the questions, answering time, and applicability of the form. The nurses noted that items were understandable, and the answering time was enough. Then it was passed into the implementation phase of the study. In September 2011, 55-items draft scale was implemented to 194 psychiatry nurses who had working in Istanbul.

**Stage of the Construct Validity**
Factor analysis was used to examine the construct validity. In this study, explanatory factor analysis was used to determine the unknown attitudes of psychiatric nurses towards the distance nursing education (Kan, 2007). Before explanatory factor analysis, the data set should be examined for suitability for factor analysis (Akbulut, 2010; Büyüköztürk, 2011). For the purpose, sample size and the method of determining factors were analyzed (Field, 2005; Büyüköztürk, 2011). For the sample size, it was analyzed Kaiser-Meyer-Olkin and Bartlett’s test (Table: 1).

<table>
<thead>
<tr>
<th>Table: 1</th>
<th>Kaiser-Meyer-Olkin and Bartlett’s test</th>
</tr>
</thead>
<tbody>
<tr>
<td>KMO</td>
<td>.913</td>
</tr>
<tr>
<td>Bartlett Testi</td>
<td>X²</td>
</tr>
<tr>
<td></td>
<td>Sd</td>
</tr>
<tr>
<td></td>
<td>P</td>
</tr>
</tbody>
</table>

In this study, Kaiser Meyer Olkin (KMO) value were found 0.913, Bartlett's test 2798.76 (p<0.05). According to results, the sample size was sufficient and the data was suitable for factor analysis. As to the method of determining factors, this method was used to describe the relationship between variables with the best and the least number of factors. There are many factors determining method. The most common methods is the principal component analysis. Apart from this, there are three methods for determining the number of factors. The first method is called the Kaiser criteria. The factors with eigenvalues 1 and above were taken to the scale. Another method is Catell's scree test. Each of eigenvalue was shown in a graph. According to the breaking point of continuity was decided the number of factors of the scale (figure: 1).
According to line graph, it was showed a breaking point in 5th factor. After this point, a decrease was observed. According to these results, it was decided that the scale can be limited to the five-factor (Figure: 1).

In the factor analysis, it explained the variance of the first factor alone is around 0.30 and the explained variance and the eigenvalues of the following factors declined sharply, then it indicates that the scale has a single-factor structure (Table: 2).

Table: 2
The ratios eigenvalues and explained variance of the sub-scales

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Eigenvalue</th>
<th>explained variance %</th>
<th>Cumulated variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Subscale</td>
<td>10.13</td>
<td>40.52</td>
<td>40.52</td>
</tr>
<tr>
<td>2. Subscale</td>
<td>1.88</td>
<td>7.53</td>
<td>48.06</td>
</tr>
<tr>
<td>3. Subscale</td>
<td>1.61</td>
<td>6.43</td>
<td>54.49</td>
</tr>
<tr>
<td>4. Subscale</td>
<td>1.48</td>
<td>5.92</td>
<td>60.41</td>
</tr>
<tr>
<td>5. Subscale</td>
<td>1.15</td>
<td>4.62</td>
<td>65.02</td>
</tr>
</tbody>
</table>

According to table 2, the eigenvalue of the first factor is 10.13, the explained variance of first factor is 40.52. Eigen value of the second factor is 1.88, the explained variance of second factor 7.53. Eigen value of the third factor is 1.61, the explained variance of third factor is 6.43.

Eigen value of the fourth factor is 1.48, the explained variance of fourth factor is 5.92. Eigen value of the fifth factor is 1.15, the explained variance of fifth factor is 4.62. The total variance of the scale was 65.02%. The higher the variance ratio, the stronger is the factor structure of the scale (Gorsuch, 1974; Lee and Comrey, 1979). In social sciences, 40%-60% are considered ideal variance ratios (Büyüköztürk, 2011). According to the results, the obtained variance ratio, is said to be sufficient or in the ideal level (Table 2).

Another method used in the selecting of items is factor load value. It explains relationship between items and subscales. Factor load value is 0.45 or higher than 0.45 is a good measure.
for the item selection (Büyüköztürk, 2011). In this study, the least load value was 0.45. Based on these criteria, Principal Component Analysis applied to the 55-item. Items with low variance and factor load less than forty-five percent were removed from the scale.

These items were the 1st, 5th, 6th, 8th, 11th, 12th, 22nd, 25th, 28th and 36th. So, it was remained 45 items on the scale. Varimax rotation was applied to interpret easier. The 2nd, 3rd, 7th, 13th, 15th, 21th, 23th, 24th, 32th, 33th, 37th, 38th, 39th, 41th, 43th, 44th, 45th, 46th, 47th and 55th items with high-factor load value were removed from the scale.

So, the scale has become to a 6 factors and 25-item scale. The number of factors was limited to 5 factors because the last factor had two items. At the end, it was obtained a 5 factor and 25-item scale. Item-Total Correlations, Principal Components and Factor Analysis Results in the Load Values of this scale were presented in table: 3.

Table: 3
Item-Total Correlations, Principal Components and Factor Analysis Results in the Load Values

<table>
<thead>
<tr>
<th>Sequence No</th>
<th>Item No</th>
<th>Item-Total Correlations</th>
<th>Communality</th>
<th>Factor-1 Load Value (Before rotation)</th>
<th>Factor-1</th>
<th>Factor-2</th>
<th>Factor-3</th>
<th>Factor-4</th>
<th>Factor-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>M-04</td>
<td>.46</td>
<td>.58</td>
<td>.50</td>
<td>.07</td>
<td>.29</td>
<td>.07</td>
<td>.16</td>
<td>.69</td>
</tr>
<tr>
<td>2.</td>
<td>M-09</td>
<td>.53</td>
<td>.57</td>
<td>.57</td>
<td>.20</td>
<td>.38</td>
<td>.62</td>
<td>.02</td>
<td>-.02</td>
</tr>
<tr>
<td>3.</td>
<td>M-10</td>
<td>.46</td>
<td>.59</td>
<td>.51</td>
<td>.37</td>
<td>.25</td>
<td>.61</td>
<td>-.08</td>
<td>-.13</td>
</tr>
<tr>
<td>4.</td>
<td>M-14</td>
<td>.56</td>
<td>.55</td>
<td>.60</td>
<td>.32</td>
<td>.64</td>
<td>.12</td>
<td>.16</td>
<td>.00</td>
</tr>
<tr>
<td>5.</td>
<td>M-16</td>
<td>.60</td>
<td>.62</td>
<td>.64</td>
<td>.09</td>
<td>.67</td>
<td>.12</td>
<td>.32</td>
<td>.21</td>
</tr>
<tr>
<td>6.</td>
<td>M-17</td>
<td>.56</td>
<td>.71</td>
<td>.61</td>
<td>-.01</td>
<td>.76</td>
<td>.30</td>
<td>.10</td>
<td>.18</td>
</tr>
<tr>
<td>7.</td>
<td>M-18</td>
<td>.57</td>
<td>.66</td>
<td>.61</td>
<td>.12</td>
<td>.76</td>
<td>.11</td>
<td>.17</td>
<td>.16</td>
</tr>
<tr>
<td>8.</td>
<td>M-19</td>
<td>.63</td>
<td>.67</td>
<td>.66</td>
<td>.21</td>
<td>.72</td>
<td>.10</td>
<td>.16</td>
<td>.27</td>
</tr>
<tr>
<td>9.</td>
<td>M-20</td>
<td>.66</td>
<td>.59</td>
<td>.70</td>
<td>.37</td>
<td>.60</td>
<td>.21</td>
<td>.21</td>
<td>.09</td>
</tr>
<tr>
<td>10.</td>
<td>M-26</td>
<td>.54</td>
<td>.62</td>
<td>.57</td>
<td>.24</td>
<td>.23</td>
<td>-.01</td>
<td>.71</td>
<td>.08</td>
</tr>
<tr>
<td>11.</td>
<td>M-27</td>
<td>.54</td>
<td>.65</td>
<td>.60</td>
<td>.19</td>
<td>-.01</td>
<td>.67</td>
<td>.22</td>
<td>.34</td>
</tr>
<tr>
<td>12.</td>
<td>M-29</td>
<td>.66</td>
<td>.72</td>
<td>.69</td>
<td>.24</td>
<td>.24</td>
<td>.19</td>
<td>.74</td>
<td>.14</td>
</tr>
<tr>
<td>13.</td>
<td>M-30</td>
<td>.62</td>
<td>.66</td>
<td>.66</td>
<td>.19</td>
<td>.22</td>
<td>.28</td>
<td>.70</td>
<td>-.08</td>
</tr>
<tr>
<td>14.</td>
<td>M-31</td>
<td>.69</td>
<td>.69</td>
<td>.73</td>
<td>.20</td>
<td>.19</td>
<td>.59</td>
<td>.49</td>
<td>.17</td>
</tr>
<tr>
<td>15.</td>
<td>M-34</td>
<td>.69</td>
<td>.72</td>
<td>.74</td>
<td>.14</td>
<td>.27</td>
<td>.62</td>
<td>.46</td>
<td>.17</td>
</tr>
<tr>
<td>16.</td>
<td>M-35</td>
<td>.49</td>
<td>.57</td>
<td>.53</td>
<td>.22</td>
<td>.10</td>
<td>.06</td>
<td>.70</td>
<td>.13</td>
</tr>
<tr>
<td>17.</td>
<td>M-40</td>
<td>.63</td>
<td>.79</td>
<td>.68</td>
<td>.15</td>
<td>.15</td>
<td>.75</td>
<td>.16</td>
<td>.40</td>
</tr>
<tr>
<td>18.</td>
<td>M-42</td>
<td>.60</td>
<td>.68</td>
<td>.65</td>
<td>.21</td>
<td>.14</td>
<td>.36</td>
<td>.23</td>
<td>.66</td>
</tr>
<tr>
<td>19.</td>
<td>M-48</td>
<td>.63</td>
<td>.69</td>
<td>.67</td>
<td>.37</td>
<td>.36</td>
<td>.20</td>
<td>.04</td>
<td>.61</td>
</tr>
<tr>
<td>20.</td>
<td>M-49</td>
<td>.66</td>
<td>.65</td>
<td>.70</td>
<td>.69</td>
<td>.18</td>
<td>.21</td>
<td>.09</td>
<td>.05</td>
</tr>
<tr>
<td>21.</td>
<td>M-50</td>
<td>.63</td>
<td>.66</td>
<td>.67</td>
<td>.73</td>
<td>.19</td>
<td>.12</td>
<td>.18</td>
<td>.22</td>
</tr>
<tr>
<td>22.</td>
<td>M-51</td>
<td>.49</td>
<td>.48</td>
<td>.53</td>
<td>.64</td>
<td>.10</td>
<td>.18</td>
<td>.17</td>
<td>-.00</td>
</tr>
<tr>
<td>23.</td>
<td>M-52</td>
<td>.61</td>
<td>.74</td>
<td>.65</td>
<td>.68</td>
<td>.25</td>
<td>-.08</td>
<td>.17</td>
<td>.42</td>
</tr>
<tr>
<td>24.</td>
<td>M-53</td>
<td>.65</td>
<td>.70</td>
<td>.69</td>
<td>.72</td>
<td>.14</td>
<td>.32</td>
<td>.24</td>
<td>.02</td>
</tr>
<tr>
<td>25.</td>
<td>M-54</td>
<td>.65</td>
<td>.72</td>
<td>.68</td>
<td>.77</td>
<td>.11</td>
<td>.15</td>
<td>.25</td>
<td>.20</td>
</tr>
</tbody>
</table>
According to the table 3, the load factor values of items in the first sub-scale was .64-.77, in the second sub-scale was between .60-.76; in the third sub-scale was .59-.75, in the fourth sub-scale was .70-.74 and in the fifth sub-scale between found .61-.69.

This findings indicated that the scale composed of items which were highly correlated with each other, that it also measures attitudes towards distance nursing education, and has a strong factor structure of the scale.

The sub-scales of astDNE was called considering the meaning of attitude expressions (table 4). The first sub-scale was called "interaction", the second one was named "learning styles", the third one was named "support services", the forth one was named "interaction tools", and the fifth one was called "content presentation".

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Items No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interaction</td>
<td>49, 50, 51, 52, 53, 54</td>
</tr>
<tr>
<td>2. Learning styles</td>
<td>14, 16, 17, 18, 19, 20</td>
</tr>
<tr>
<td>3. Support services</td>
<td>9, 10, 27, 31, 34, 40</td>
</tr>
<tr>
<td>4. Interaction tools</td>
<td>26, 29, 30, 35</td>
</tr>
<tr>
<td>5. Content Presentation</td>
<td>4, 42, 48</td>
</tr>
</tbody>
</table>

According to Table: 4, the 1st, 2nd and 3th subscale contain six items. The fourth subscale contains four items, and the fifth subscale contains three items.

**The Reliability Stage of astDNE**

In determining of the reliability of the measurement tool were used techniques such as calculation of coefficient of internal consistence (Cronbach Alpha), item-total correlations and test-retest methods.

In this study, Cronbach Alpha of the draft scale was found 0.92.

This value indicates that the draft scale was reliable. Another method to measure reliability is the item-total correlation.

Item-total correlation illustrates the relationship between the scores obtained from items and item total correlation. In selecting of the items, item-total correlation coefficient was based on criteria that the value is above 0.20 (Tavşancı and Keser, 2002; Büyüköztürk, 2011).

The item-total correlation coefficient of each item on the scale was found to be over 0.20. This finding shows 55-items have distinctiveness. Another method of testing reliability is test-retest reliability.

After four weeks the scale was applied again and test re-test correlation coefficient was found to be 0.89.
This result shows that in terms of time the scale is a consistent scale. The reliability findings of astDNE were given in table 5 and table 6 below.

**Table: 5**

<table>
<thead>
<tr>
<th>The Subscales</th>
<th>Cronbach Alfa (%)</th>
<th>Item-Total Correlation(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction</td>
<td>.88</td>
<td>.56-.75</td>
</tr>
<tr>
<td>Learning Styles</td>
<td>.87</td>
<td>.59-.73</td>
</tr>
<tr>
<td>Support Services</td>
<td>.85</td>
<td>.51-.75</td>
</tr>
<tr>
<td>Interaction Tools</td>
<td>.82</td>
<td>.59-.72</td>
</tr>
<tr>
<td>Content Presentation</td>
<td>.75</td>
<td>.53-.61</td>
</tr>
<tr>
<td>Total of Scale</td>
<td>.94</td>
<td>.46-.69</td>
</tr>
</tbody>
</table>

According to table 5, the scale total cronbach alpha coefficient was found .94. Item total correlation was between .46-.69.

**Table: 6**

<table>
<thead>
<tr>
<th>Scale Mean If Item Deleted</th>
<th>Scale Variance If Item deleted</th>
<th>Corrected Item total Correlation</th>
<th>Cronbach's Alpha If Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>46.93</td>
<td>184.13</td>
<td>0.46</td>
</tr>
<tr>
<td>9</td>
<td>46.87</td>
<td>181.93</td>
<td>0.53</td>
</tr>
<tr>
<td>10</td>
<td>46.57</td>
<td>181.62</td>
<td>0.45</td>
</tr>
<tr>
<td>14</td>
<td>46.61</td>
<td>178.53</td>
<td>0.56</td>
</tr>
<tr>
<td>16</td>
<td>46.65</td>
<td>178.61</td>
<td>0.59</td>
</tr>
<tr>
<td>17</td>
<td>46.81</td>
<td>180.96</td>
<td>0.56</td>
</tr>
<tr>
<td>18</td>
<td>46.89</td>
<td>182.25</td>
<td>0.57</td>
</tr>
<tr>
<td>19</td>
<td>46.65</td>
<td>179.63</td>
<td>0.62</td>
</tr>
<tr>
<td>20</td>
<td>46.47</td>
<td>175.71</td>
<td>0.65</td>
</tr>
<tr>
<td>26</td>
<td>46.46</td>
<td>179.31</td>
<td>0.53</td>
</tr>
<tr>
<td>27</td>
<td>47.06</td>
<td>182.43</td>
<td>0.54</td>
</tr>
<tr>
<td>29</td>
<td>46.64</td>
<td>178.33</td>
<td>0.65</td>
</tr>
<tr>
<td>30</td>
<td>46.52</td>
<td>177.77</td>
<td>0.62</td>
</tr>
<tr>
<td>31</td>
<td>46.85</td>
<td>180.04</td>
<td>0.68</td>
</tr>
<tr>
<td>34</td>
<td>46.84</td>
<td>179.33</td>
<td>0.69</td>
</tr>
<tr>
<td>35</td>
<td>46.27</td>
<td>178.02</td>
<td>0.49</td>
</tr>
<tr>
<td>40</td>
<td>46.97</td>
<td>180.37</td>
<td>0.63</td>
</tr>
<tr>
<td>42</td>
<td>46.80</td>
<td>180.79</td>
<td>0.60</td>
</tr>
<tr>
<td>48</td>
<td>46.81</td>
<td>180.57</td>
<td>0.63</td>
</tr>
<tr>
<td>49</td>
<td>46.69</td>
<td>178.66</td>
<td>0.65</td>
</tr>
<tr>
<td>50</td>
<td>46.52</td>
<td>178.64</td>
<td>0.63</td>
</tr>
<tr>
<td>51</td>
<td>46.36</td>
<td>182.26</td>
<td>0.49</td>
</tr>
<tr>
<td>52</td>
<td>46.52</td>
<td>177.69</td>
<td>0.61</td>
</tr>
<tr>
<td>53</td>
<td>46.75</td>
<td>178.52</td>
<td>0.65</td>
</tr>
<tr>
<td>54</td>
<td>46.71</td>
<td>178.48</td>
<td>0.64</td>
</tr>
</tbody>
</table>
According to the table 6, Cronbach’s Alpha value did not decrease when item was deleted. So, the reliability of the astDNE did not decline.

The corrected item-total correlation was found between .45 and .69.

If item-total correlation is positive and high, that means that items measure similar behavior, and shows that the scale has a high internal consistency.

These high rates pointed out those 25-items have distinctiveness.

**Test-retest Reliability**
The test-retest reliability is applied twice to the same group (Ozbek, 2010; Büyükoztürk, 2011).

The correlation between two results indicates the reliability of the scale. The tests were applied to 33 nurses. The second test was performed after four weeks to the same persons (Table 7).

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Sd</th>
<th>*R</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-test</td>
<td>183.8788</td>
<td>19.67352</td>
<td>.885</td>
<td>.000</td>
</tr>
<tr>
<td>Second-test</td>
<td>179.6364</td>
<td>17.87949</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* R= Pearson’s correlation test

According to table 7, the correlation between the two applications was .885. This finding showed that the two application scores were similar. In other words, in terms of time the scale was consistent.

**RESULTS**

Consequently, findings showed that The Attitude Scale Towards Distance Nursing Education (astDNE) is a valid and reliable instrument. The research findings supported the hypothesis 1.

**BIODATA and CONTACT ADDRESSES of AUTHORS**

Belgin BOZ YUKSEKDAG has been working at Anadolu University College of Open Education Testing & Research Center as a lecturer doctor. She graduated from the School of Nursing of Hacettepe University in 1990. She earned her MS degree from the Graduate School of Istanbul University (Health Sciences Department), Internal Medicine Nursing in 1995, and also the MA degree from the Graduate School of Anadolu University (Distance Education Department), in 2008. She earned her PhD degree from the Graduate School of Marmara University (Health Sciences Department), Psychiatry Nursing, in 2013.

Belgin BOZ YUKSEKDAG  
Anadolu University Testing Research Department  
Yunus Emre Campus, 26470 Eskisehir TURKEY  
Tel: 0 (222) 3350580-2713  
Mobile: 0 554 514 0122  
Email: bboz@anadolu.edu.tr
Gül UNSAL BARLAS is an associate professor in department of psychiatric nursing at the Faculty of Health Sciences of Marmara University. She graduated from the School of Nursing of Florence Nightingale in 1983. She earned her MS degree from the Graduate School of Marmara University (Health Sciences Department) in 1998. She earned her PhD degree from the Graduate School of Marmara University (Health Sciences Department), Psychiatry Nursing, in 2004.

Gül UNSAL BARLAS  
Marmara University, the Faculty of Health Sciences  
Tel: 0 (216)3302070-1149  
Mobile: 0 533 243 6882  
Email: gunsal@marmara.edu.tr

REFERENCES


REVOLUTION IN COMMUNICATION TECHNOLOGIES:  
Impact on Distance Education

M. RAJESH  
Regional Director,  
IGNOU Regional Centre, Cochin, INDIA

ABSTRACT

Information and Communication Technologies have transformed the way the world lives and thinks. Education, especially, Distance Education is no different. While the technologies per se are an important factor, the social milieus in which these technologies are implemented are equally important. Technological convergence in the Indian context surely has to account for “Old Generation Technologies” on their platform as much as new technologies. The vibrant interface between social and technological issues in the Educational field is an important area of discourse. The current paper discusses these and many more issues in ample detail.

Keywords: Communication Technology, Technology and Distance Education in India, Convergence of technologies.

"The virtue of a computer in the classroom is that it requires a user, not a watcher.”  
-Diane Ravitch

INTRODUCTION

Diane Ravitch’s interesting quote perhaps sums up the essence of education in the 21st century. Technologies have to come to rule and even dictate the terms on which pedagogic discourse is undertaken the world over. Despite the seemingly over-whelming nature of technological intrusion into academic discourse, the many questions that remain to be answered are – whether there has been a revolution or has it been an evolution? If it is indeed a revolution as many would like us to believe, how has it impacted the ways in which we teach, study or transact academically? Further, has it been a systemic revolution? Do technologies impede the development of traditional competencies in teaching and learning? Are all technologies value neutral? Finally, perhaps most important one is – can technologies replace the teacher?

Such questions are often asked at the cross roads of major technological changes. The present era seems to project one such scenario. New educational technologies are constantly being unveiled and older ones are constantly modified or updated.
PAST STUDIES

A number of studies conducted in the past by scholars namely, Dziuban, (2002); Navarro and Shoemaker, (2000), Hilgenberg and Tolone, (2000); Keegan, (2000), Smith, Ferguson, and Caris (2003) and Mason (2000) reveal the following facets (Gaudelli, 2006):

- There exists a higher level of student satisfaction in web-based distance learning than through face-to-face learning
- Matched or exceed achievement of distance learning students when compared to face-to-face situations
- Increased engagement in a-synchronous discussions, which would motivate learners to continue in the programme
- Even in subjects like Mathematics, the effectiveness of ICT based learning and the levels of involvement of learners were found to be far higher than that of Face to Face Learning

However, ICT based learning pedagogy is not without its vibrant critics. Postman states that technology integrated learning is a form of edutainment which threatens to unravel our social fabric. Clark states that the ICT based modality of instruction does not translate into a significant difference in student achievement. Russell (2002) based on his study of an extensive database of 355 citations to educational articles over the past century that document no significant difference in student achievement when distance learning is compared to traditional modes (Gaudelli, 2006).

It can clearly be seen that there are few major studies on how technologies have converged to create a more democratic learning space. The current study is an effort in the direction of addressing this vital issue.

THEORETICAL UNDERPINNINGS ON USE OF NEW TECHNOLOGIES

Firstly, we shall see what "Emerging Technologies" or new technologies are. Miller, Green and Putland define Emerging Technologies as:

"A technology is still emerging if it is not yet a must have. For example, a few years ago, E-Mail was an optional technology. Infact, it was limited in its effectiveness as a communications tool when only some people in an organization have regular access to it. Today, it is a must have, must use technology for people in most organizations. In this sense, a technology can be a standard expectation in the commercial or business world, while still being considered as “emerging” in the educational sector” (Veletsianos, 2010).

Some of the major theoretical strands that go behind the adoption of new technologies are as given below:

The Constructivist Approach

Constructivist theories derive their popularity from the writings of Jean Piaget, Dewey and Mead. Though there are a large number of theories that signify constructivism, they all share a common strand, which is that individuals of all kinds construct knowledge based on their understanding of their backgrounds and proclivities. Constructivism also claims that learning takes place when the tasks those are being done hold meaning for the learners and are
contextual in nature (Veletsianos, 2010). These techniques require problem focus and elaborate techniques of enquiry (Veletsianos, 2010).

**Complexity Theory**
The Complexity theory involves the study of living systems and focuses on how a living organism adapts to changing living environments. In the effort to survive in the changing external setting, the organism, modifies the external setting and in the process creates complex yet stable systems (Veletsianos, 2010). The said theory attempts to predict phase transitions that provide for growth, change or learning. This theory imagines learning contexts (class rooms, online learning etc) as entities themselves.

**Net-Aware Theories**
The Net-Aware theories look at three distinct affordances as far as teaching-learning processes is concerned (Veletsianos, 2010):

- The capacity for powerful yet Low Cost Communication, which encourages epistemic engagement in teaching-learning processes. Net-based technologies provides avenues for collaborative, informal and life-long learning
- Net based technologies create a mechanism whereby we move from a position of information and content scarcity to one of sheer abundance.
- Internet provides active agents that compile and present relevant information according to one’s needs. The search –Engine is one such manifestation.

**Heutagogy**
Hase and Kenyon coined the term, “Heutagogy” to signify self directed learning that dispenses with the need for the teacher that is characteristic of pedagogy and andragogy (Veletsianos, 2010). The authors predict that the future of learning will be a movement away from competency building to capacity building. It is also a movement away from prescriptive contents to exploration of issues that affect the students’ life (Veletsianos, 2010).

**Activity Theory**
The Activity Theory states clearly that all human activity is oriented towards goal attainment and that this process is mediated by tools- either mediated or physical. (Kirkwood, 2005). Training of learners through activities is a sure way of inculcating the requisite and desired skills. The selected technologies should be such that they aid and promote the desired learning outcomes.

The choice of technology is integrally linked to the level of understanding that is sought to be achieved. Learning typically goes through four distinct stages. The first level is characterized by information assimilation and reproduction.

Traditionally, such learning has been associated with learning by rot and therefore reinforcement of memory is an important aspect in this scheme. To cater to such requirements, technologies that promote maximum information flow, seem most suitable. The notable examples of such technologies are Peer to Peer (P2P) technologies, virtual class rooms, podcasts and so on.

The second stage of learning is synonymous with practical learning in which the theoretical learning is converted into functional understanding by hands-on training. The most relevant technologies in this scenario relate to web-based as well as practical computer models.
The third stage is one of reflective learning or in other words, applying the knowledge acquired in different practical scenarios. In this stage technologies like web based workbooks would be real assets.

The fourth stage is that of Analysis by the learners. At this stage, skills of a higher order need to be inculcated into the learners.

As a natural corollary of what is stated above, it can be easily perceived that the most intensive and attention catching technologies need to be brought into the pedagogic framework in the initial stages of curricular transaction and more functional technologies can be utilized.

NEW TECHNOLOGIES IN FOCUS

In this section we shall focus on some of the new technologies or emerging technologies relevant to the field of Education and Distance Education in particular. The underlying philosophy behind Technology Enabled Pedagogic method is that knowledge is created through engagement, dialogue and interactivity. In this scheme, knowledge is subjective and methods of learning are focused on interaction, participation and dialogue. Students are also active and initiative taking (Anderson, 2010).

Personal Learning Networks

Personal Learning Networks (PLNs) provide learning platforms that suit particular learning needs of the learner community. The most well known among these PLNs are WebCT/Blackboard, Moodle, Ning and wiki. Let us analyze the comparative merits and demerits of these mechanisms.

WebCT/Blackboard

WebCT is an online proprietary Virtual Learning Environment that is licensed to colleges and other institutions mainly for the purpose of E-Learning.

It was initially developed by Murray Goldberg. WebCT is an important technological innovation in the sense that, it was the world’s first and most widely used E-Learning Platform. At the height of its popularity, it catered to the needs of more than 10million students in more than 80 countries. It is seen that WebCT works well with students who have prior acquaintance with online learning.

The major drawback of the system is that it is a proprietary system that cannot be modified without the vendor’s permission. Further, the LMS favours Directed Learning compared to Constructive Learning and is also costly in terms of license fees (Veletsianos, 2010). The over reliance of the LMS on Java, its use of multiple browsers and need for inactivating pop-up blockers are regarded as some of its other major drawbacks.

Moodle

Moodle is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a free web application that educators can use to create effective online learning sites (MoodleTrust). The major advantage of Moodle is that it can scale up its size to meet the personalized requirements of thousands of learners across the globe. Further, the Moodle comes in as a handy tool for “blended Learning”, that is to augment class-room teaching. Further, collaborative communities can also be easily built around the Moodle (MoodleTrust). From an educationist’s point of view the greatest benefit of
Moodle is that it encourages a “constructivist”, “instructive” and “social constructionist” approach with its wide range of tools (Veletsianos, 2010). Above all Moodle affords modification and has a strong community support (Veletsianos, 2010).

Ning
Ning is an online platform for people and organizations to create custom social networks. It was launched in 2005. Ning was co-founded by Marc Andreessen and Gina Bianchini. It enables users to launch their own community networks on any specific desired issue area. It can easily integrate with a Facebook or Twitter account. Ning, at its inception was “free software” with provisions for altering its code according to user needs. However, the major drawback of Ning is its lack of wiki type features and awkwardness in using core content materials (Veletsianos, 2010). Overtime, Ning has been affected by problems related to hosting third party content. However, the fact remains that Ning remains a very popular social networking site, though not exclusively for educational purposes.

Wiki
One of the advantages of most Wikis is that they are free and at the same time provide substantial technical support. A case in view is www.wikispaces.com. Collaborative wiki models are also popular. Such collaborative models enable student edit options, digital pedagogies, mobile learning, podcasting, screen casting and so on. Wikis normally enable users to utilize multiple media and are therefore attractive to the learners.

A-View
India’s own A-View is another techno-tool that can be converted into an effective PLN. A-VIEW, developed by Amrita University, is part of Talk to a Teacher program led by IIT Bombay and funded by NME-ICT, MHRD. Approximately 20000 colleges in Indian shall soon be linked to the A-View Distance Learning platform (Amrita-Virtual-Interactive-E-Learning-world, 2013). The technology provides a number of innovative facilities to the teachers as well as the learners. These include, Interactive chat board, Digital White Board, 2D, 3D and video sharing, Desktop and Application Sharing, Library and Quizzes and Polls. The most attractive aspect of this facility is that it has almost all applications those are present in commercial applications while being a free service. The negative aspect of this technology is that it still needs to be perfected. The platform invariably fails to function in low band width conditions. Such conditions obtain at most places in India.

Wiz-IQ
Wiz IQ is a major online virtual learning platform that has caught the imagination of many educators.

The advantage of the platform is that it can be used without any installation and works on any operating system. The platform affords keyboard shortcuts in the Virtual Classroom, and switch between multiple tabs of the online whiteboard (IQ, 2013). Further, the educator may invite any number of attendees, from just one student for one-on-one tutoring, to 1000 people, who want to attend the online session (IQ, 2013). Another impressive feature of this platform is that “white board” linked tools such as mathematical tools, language tools, group objects, drawing tools etc are built into it. Online videos and customized audio can be integrated into the system. Like A-View, this mechanism also supports Quizzes and polls. The only drawback of the system is that it is a paid service beyond the initial limit.
There is however a number of challenges as far as implementation of Personalized Learning Platforms are concerned. The first and foremost among these involves the integration of the existing Learning Management Systems (LMS) of the host institutions with that of PLEs.

Many of the institutions have their own LMS in place based on traditional technologies (Veletsianos, 2010). These may not integrate fully and easily into the PLEs. The second aspect involves the technical expertise required to manage and run a PLE. Since most PLEs run on a number of varied platforms and the applications may also not be of a uniform type, the technical expertise required to run the platform could be immense.

**Web 2.0**

Web2.0 of second generation applications on the World Wide Web is a set of innovative technologies that are smarter and leaner than those found on Web 1.0. The most important applications in Web2.0 are those associated with sharing of content among users. Collectively, these applications are known as Social Software and include but are not limited to Web logs, Really Simple Syndication (RSS), podcasts, Peer to Peer and other Social Book Marking Facilities (Veletsianos, 2010). Jenkin states that Web2.0 technologies enable immersive, participatory, socially involved and multi-modal experiences (Veletsianos, 2010). Such technologies can address the concerns raised by Distance Educationists such as Rose and Meyer, who rightly pointed out that the barriers to education are not always inherent in individuals but often have to do with learners’ interaction with inflexible educational materials (Veletsianos, 2010). Further, Boyd states that Web 2.0 technology affords three affordances for Distance Education: Support for conversational interaction, support for social feedback and support for social interaction and feedback (Veletsianos, 2010).

One of the most important applications of the Web 2.0 technology is Social Networking. Facebook is the most reputed and used Social Networking site. Though not a primary teaching based application, the Facebook can be effectively used to supplement learning practices. In Distance Education, the primary issue affecting learners is that of isolation and alienation. Facebook can be used as an effective mechanism for transacting guided-didactic scheme of education. Similar is the case with applications like Twitter.

However, one of the most path breaking developments in the field of Web 2.0 is the integration of internet applications with mobile platforms.

A good number of educational institutions use mobile apps to impart high quality education. One of the cases in view is the KO-SU virtual class for mobile learners. It gives a number of features those are compatible with most smart phones with a provision for various value added services. It supports various exercises those can be added to the classes. The major drawback is that its free service supports only one class a month. Beyond this limit, a user fee is charged.

In a nutshell, the success in integrating state of the art ICT to the existing pedagogic structures depends on the following important aspects:

- Discovering the appropriate ICT tools those are easily accessible to both the teachers and learners. Such tools should be an obvious improvement of the existing state of technologies. Such technologies should also broaden the horizon of understanding related to the subject area.
- Integration of ICT involves effective technology leadership. Effective technology leadership ensures that the technology is integrated at the correct point with...
limited fuss. The “how” and “when” factors are of paramount importance while dealing with integration of ICTs

- To harness the full scope of ICT, the aspect of specializing appropriate technologies assumes importance. The maxim, “too many cooks spoil the broth” holds good. Today, a large number of complementary technologies exist in the market. Experimenting with all of them or many of them is often not a very good idea due to the time constraint as well as the technical complexities involved. A case in view is that of A-view and Wiz-IQ. Both are similar platforms, but using both of them for the same purpose is not often a very good idea. At the same time, there are instances that require integration of technologies of diverse hues, an aspect we shall dwell in some detail under the discussion on “convergence of technologies”.

- The use of technologies also hinge upon the question of the end use of these technologies. Higher cognitive applications need technologies those are different from those required for introductory applications. The role of an effective administrator is to find an effective solution to this vital issue in technology pedagogy.

GLOBALIZATION OF EDUCATION AND ISSUES RELATED TO EDUCATIONAL TECHNOLOGIES

The process of infusion of Educational technology has been greatly aided by globalization in the educational field. GATS had a profound impact on the process of globalization of education.

The major provisions of GATS are presented in the paragraphs that follow. The traditional definition of Services terms it as an economic output that gets consumed as soon as it is produced, while there is a divergence in the time period between which a good is produced and consumed. For the same reason, trade in services requires a mix of cross-border transactions and local establishment rules (Wooton, 2000).

Again, consequent to this fact, GATS emphasizes both cross border barriers and barriers to local establishments without explicit preference to either, while the General Agreement on Trade and Tariffs (GATT) gives explicit preference to barriers at the borders like tariffs, Quota etc. GATS bring under its purview, any service in any sector, except those provided in exercise of Governmental Authority (GATS-Article13 (B)).

However, the text goes on to say that any service provided on a commercial basis or in competition with one or more service providers will also is under its ambit. This provision has major implications for the education sector. The major modes of supply under GATS as applicable to Distance education are presented below:

**MODE1**
It covers the aspect of Cross- Border Trade; this covers all those activities in which a producer exports a service from its own territory to a consumer in a foreign country. For example, an educational Institution in India provides an on-line educational programme to students in another country.

**MODE2**
It pertains to consumption abroad. This takes care of all those cases where a consumer goes abroad to obtain a service. For example if a patient goes abroad for treatment or a student
from one country visiting a foreign country to obtain a degree, it is a case of a service consumed abroad.

MODE3
It covers within its ambit the aspect of commercial presence. This implies that a service provider from one country sets up business subsidiary or branches in another country. For example, if IGNOU establishes its branches in foreign countries, it indicates the commercial presence of IGNOU in that country.

MODE4
It deals with the Movement of Natural Persons. In this case a member of the service-providing firm goes to the domestic territory of another country to provide a service there. Such movements are only for a short period of time. For example, a Distance Learning institute of India sends its administrative officer to Dubai to manage the affairs of its branch there for a period of Five years. GATS enjoin upon its members certain obligations that can be grouped under two categories:

- General Obligations and
- Specific obligations

The General obligations are those that apply to all the service sectors irrespective of whether a country has made commitments on them or not. These can be noted as follows:

**Most Favoured Nations Treatment (MFN)**
GATS stipulate the acceptance of Most Favoured Nations Status (MFN) in the case of services too. The MFN status stipulates that any commercial advantage provided to one of the signatories on a particular product must be provided to all other signatories who export a like product to the country.

For Example, if Government of India permits Alama Iqbal Open University (Pakistan) to run its programmes in India, the same facility must also be extended to Singapore National University if the latter requests the Government of India for the same.

**Obligations Related To Rule Framing and Implementation**
GATS enjoin its members to internationally notify/publish changes in laws, rules and regulations that have a bearing on international trade in services. Similarly, any regulation that the members frame to deal with business relations between service providers, especially those dealing with Foreign Service providers must be based on objective criteria and must be applied equally to all service providers ( "GATS Primer", 2001). Further, "Paragraph 4 of Article VI of the GATS calls upon the Council for Trade in Services to develop new disciplines to ensure that non-discriminatory measures relating to qualification requirements and procedures, technical standards and licensing requirements do not constitute unnecessary barriers to trade. As part of the implementation of this provision, the Services Council established the Working Party on Professional Services (WPPS) with the mandate to develop such disciplines in the area of professional services and designated the sector of accountancy as a priority” (ITD, 2004).

**Rules related to the working of Monopolies**
The GATS signatories should ensure that working of monopolies for providing services should not in any way violate the working of the country’s MFN obligations (Friends of Earth, 2001).
On the other hand Specific Obligations apply only to those service sectors in which a country has made commitments. They are

- **Market Access Obligations**: As regards the market access obligations of member nations, GATS is very categorical in its approach. It states the following
  
  "When a member undertakes a commitment it must indicate for each mode of supply what limitations, if any, it maintains on market access. Article XVI: 2 of the GATS list six categories of restrictions, which may not be adopted or maintained unless they are specified in the schedule. All scheduled limitations on market access therefore must fall into one of these categories. They comprise of four types of quantitative restrictions as well as limitations on foreign equity participation and on the types of legal entity permitted." (ITD, 2004) ([www.itd.org/eol/e/wto06_27.htm#note2](www.itd.org/eol/e/wto06_27.htm#note2))

- **National Treatment Obligation**: GATS in its National Treatment obligation "under Article XVII requires members to accord to services and service suppliers of any member treatment no less favourable than that it accords to services and service suppliers of national origin" (ITD, 2004) ([www.itd.org/eol/e/wto06_27.htm#note2](www.itd.org/eol/e/wto06_27.htm#note2))

Notwithstanding anything that has been mentioned above, the GATS framework like GATT provides for certain explicit exceptions to GATS obligations. These exceptions have been provided under three heads: Temporary Exceptions, General Exceptions and Security Exceptions.

- **Temporary Exceptions** to GATS provisions have been provided under Article XII, which provides for appropriate measures to safeguard precarious Balance of Payment positions (BOP) of nations.

- **General Exceptions** to GATS provisions are provided under Article XIV to

  - Protect public morals and to maintain public order. Public order is defined as "situations where a genuine and sufficiently serious threat is posed to one of the fundamental interests of society" (ITD, 2004) ([www.itd.org/eol/e/wto06_25.htm#note2](www.itd.org/eol/e/wto06_25.htm#note2))

  - Protect human, animal, plant life or health

Security Exceptions to GATS obligations states “a member is allowed to take any action which it considers necessary for the protection of its essential security interests or in pursuance of its obligations under the United Nations Charter for the maintenance of international peace and security. Members are not required to furnish any information the disclosure of which would be contrary to their essential security interests” (ITD, 2004) ([www.itd.org/eol/e/wto06_25.htm#note2](www.itd.org/eol/e/wto06_25.htm#note2)).

For purposes of classification of educational services, GATS accepts the following break-up of types of educational services based on UN’s CPC classification.
Table 1: Education Services in the GATS Scheduling Guidelines and CPC

<table>
<thead>
<tr>
<th>Sectoral Classification List</th>
<th>Relevant CPC No.</th>
<th>Definition/coverage in provisional CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. EDUCATIONAL SERVICES</td>
<td>921</td>
<td>Preschool education services: Pre-primary school education services. Such education services are usually provided by nursery schools, kindergartens, or special sections attached to primary schools, and aim primarily to introduce very young children to anticipated school-type environment. Exclusion: Child day-care services are classified in subclass 93321. Other primary education services: Other primary school education services at the first level. Such education services are intended to give the students a basic education in diverse subjects, and are characterized by a relatively low specialization level. Exclusion: Services related to the provision of literacy programmes for adults are classified in subclass 92400 (Adult education services n.e.c.). General secondary education services: General school education services at the second level, first stage. Such education services consist of education that continues the basic programmes taught at the primary education level, but usually on a more subject-oriented pattern and with some beginning specialization. Higher secondary education services: General school education services at the second level, second stage. Such education services consist of general education programmes covering a wide variety of subjects involving more specialization than at the first stage. The programmes intend to qualify students either for technical or vocational education or for university entrance without any special subject prerequisite. Technical and vocational secondary education services: Technical and vocational education services below the university level. Such education services consist of programmes emphasizing subject-matter specialization and instruction in both theoretical and practical skills. They usually apply to specific professions. Technical and vocational secondary school-type education services for handicapped students: Technical and vocational secondary school-type</td>
</tr>
<tr>
<td>Sectoral Classification List</td>
<td>Relevant CPC No.</td>
<td>Definition/coverage in provisional CPC</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Education services specially designed to meet the possibilities and needs of handicapped students below the university level.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post-secondary, technical and vocational education services: Post-secondary, sub-degree technical and vocational education services. Such education services consist of a great variety of subject-matter programmes. They emphasize teaching of practical skills, but also involve substantial theoretical background instruction.</td>
</tr>
<tr>
<td>C. Higher education services</td>
<td>923</td>
<td>Other higher education services: Education services leading to a university degree or equivalent. Such education services are provided by universities or specialized professional schools. The programmes not only emphasize theoretical instruction, but also research training aiming to prepare students for participation in original work.</td>
</tr>
<tr>
<td>D. Adult education</td>
<td></td>
<td>Adult education services n.e.c: Education services for adults who are not in the regular school and university stem. Such education services may be provided in day or evening classes by schools or by special institutions for adult education. Included are education services through radio or television broadcasting or by correspondence. The programmes may cover both general and vocational subjects. Services related to literacy programmes for adults are also included. <strong>Exclusion</strong>: Higher education services provided within the regular education system are classified in subclass 92310 (Post-secondary technical and vocational education services) or 92390 (Other higher education services).</td>
</tr>
<tr>
<td>E. Other education services</td>
<td>929</td>
<td>Other education services: Education services at the first and second levels in specific subject matters not elsewhere classified, and all other education services that are not definable by level. <strong>Exclusions</strong>: Education services primarily concerned with recreational matters are classified in class 9641 (Sporting services). Education services provided by governess or tutors employed by private households are classified in subclass 98000 (Private households with employed persons).</td>
</tr>
</tbody>
</table>

**Source**: United Nations, Provisional Central Product Classification, 1991.
It is very clear from the foregoing discussion that GATS has a major bearing on the nature of liberalization of global education. However the maximum impact is to be seen in the field of Distance Education. Let us explore the issues related to technological implementation as far as liberalization in the field of education is concerned. Let us take the case of Cross Border Trade. This field is totally technology intensive. The latest example of Cross Border Trade linked Technologies is the MASSIVE OPEN ONLINE COURSEWARE (MOOC). MOOC is now touted as the low cost alternative to expensive higher education provided by traditional universities. MOOCs provide not only a wide range of choices to the student community but also give them the comfort of doing these courses at the conveniences of their homes or work place. Further, students have the benefit of a large number of reputed universities coming together to provide high quality education. One does not need to go beyond “COURSERA” to understand this. Indians are not avoiding these global phenomena. Of the 2.9 million registered users of MOOC, 2, 50,000 are from India. These numbers are sure to grow, given the fact that the relevant population in the age-group 15-34 is set to grow from 430 million in 2011 to 464 million in 2021. It seems for the time being that the future of Distance and Online Learning lies in MOOC.

CONVERGENCE OF TECHNOLOGIES

If we look at the CPC classification, it is clear that Distance Education falls under the category of Adult Education. The following passage needs to be noted:

“Included are education services through radio or television broadcasting or by correspondence. The programmes may cover both general and vocational subjects. Services related to literacy programmes for adults are also included”.

The classification presumes the use of a wide range of technologies for imparting adult education. Such technologies are therefore an integral part of the process of liberalizing Adult Education.

However, for technology infusion on a large scale in the field of education, a significant commercial ethos has to be infused. The flow chart presented below can be quite instructive: However, the biggest challenge emerges in the case of Die-Hard Traditionalists or Late Adaptors. Most of them are not only technology averse but also not keenly intent upon adopting
or experimenting with technologies of any hue. Even among the “Teachers” we can easily find such persons.

As depicted in the chart of Retail Association of India (RAI), the days of reliance on a single technology is long over. In times of liberalization convergence of technologies is the key. Distance education can succeed only with the infusion of a large number of technologies.

However, the issue of convergence of technologies in Distance Education is a pretty vexed one. Let us understand the graph given below. Learners fall under various categories. Some of the learners, especially from the younger age groups adopt new technologies with far greater ease that those from higher age brackets. However, irrespective of their age, the ones accepting and adopting new technology at the earliest are the ones denoted as “Innovators” in the graph given below.

<Diagram of Learners adopting new technologies>

Learners innovating with new technologies adopt technology based learning strategies at the earliest. For them, pure technology based learning strategies would be apt. A large numbers of complementary Learning Technologies can be implemented for their benefit on a single platform. Therefore convergence of technologies is most fruitfully obtained in such cases. The Second category is titled, “Late Majority”.

Most learners fall under this category. A vast majority of the learners take time to identify the technologies most appropriate for them to be integrated into a single platform. Convergence of appropriate technologies is difficult but surely not impossible in this case.

However, the biggest challenge emerges in the case of Die-Hard Traditionalists or Late Adaptors. Most of them are not only technology averse but also not keenly intent upon adopting or experimenting with technologies of any hue. Even among the “Teachers” we can easily find such persons.

Convergence of technologies should take care of the following aspects (NCERT, March, 2006):
recognition of the diversity of learners’ needs, in the context of teaching and learning
recognition of not only the immediate needs but also the future needs
designing and implementing teaching-learning systems that could realize identified goals
Developing a range of support systems and training, creating the enabling systemic condition and materials, delivering them to the educational system, and training teachers and students to use them
Research into existing and new techniques, strategies and technologies for solving problems of education while enabling a judicious and appropriate application of technology.
Encourage Gamifying- that is using games like computer programmes for learning purposes (SVForum, 2011)
Broaden core subjects using technological inputs (SVForum, 2011)
Have measurable improvements for each student, especially un-performing students (Convergence of technology & education: Using technology effectively in learning, 2011)

Past experience aimed at effecting convergence of technologies presents a mixed bag. It is seen very clearly that an equipment based approach seldom works. The experience of the SITE initiative shows that unless technology is adequately aided by effective intervention by teachers, equipped with programme notes or textual materials—the success of the intervention cannot be assured (NCERT, March, 2006).

Further, technologies should also enable the depiction of facets that could not be shown in a normal class room. It also needs to be noted that post programme research also has to support production teams, something that has not happened in India till date.

According to eminent pedagogy exert Scott P. Simkins, as far as technological innovations is concerned, it is not pedagogy itself that mattered, but how pedagogic innovation is used by taking into account the specific environment in which it is adopted (George, 2014). There was a need for individual faculty members to take these innovations and make them their own. He however emphasises the role of thoughtful innovation and discussion about how to make the best use of the new technologies on offer (George, 2014). In his experience, student interactive practices greatly improve learning in a variety of disciplines. In this scheme, he emphasises the role of Just in Time Teaching (JiTT) and Flipping the Class room methods (George, 2014). JiTT strategy is an internationally structured teaching and learning method that makes use of student responses to web-based questions that covered upcoming course materials.

The advantage of this mechanism is that it encouraged better preparation for course meetings and provided prompt feed back to students (George, 2014). Flipping the class room enables students to get maximum hands on experience and thereby it provided meaningful learning to them. Convergence of technologies is perhaps the most appropriate mechanism to achieve the objectives of JiTT and Flipping the Class room.

SOCIO-CULTURAL FACTORS RELEVANT FOR THE CONVERGENCE OF TECHNOLOGIES

The growth of any communication technology in a society and hence its applicability for Education depends to a very great extent on the degree to which policy makers recognize the importance of ICTs in promoting a knowledge based society. Many Developing Countries like
India have realized the importance of giving a boost to New Information and Communication Technologies for the general betterment of the society. The Information Technology Act 2000 passed by the Indian Parliament is a step in the right direction. Many Countries have bestowed tax incentives on Communication technology based industries. Some Countries that have paid relatively scarce attention to the area of information technology are lagging behind in the field of spreading education using the latest technology. The failure of Distance Education in many African Countries can be attributed to this. Not only are policies important but also their implementation deserves greater attention. The road to failure is often paved with good intentions. Many structural factors make the implementation of technology a daunting task. At the planning stage the enormity of such factors are often not recognized.

The perceptions and attitudes of a political system greatly affect the acceptance and growth of technology in any society. The same holds true for all the ICTs relevant to Distance Education. A political system conscious of the payoffs of ICT for the enhancement of the educational profile of a country will frame appropriate policies for the adoption and dissemination of ICT throughout the length and breadth of the country. As A. W. Bates states while talking about his criteria of Media Selection, Novelty of an ICT should be the least important criteria that should guide the political society in deciding upon the ICT that should be selected. Rather than being guided by the fashion of the day, ICT should always be selected in accordance with its end result that is the extent to which it can bring about positive pedagogic outcomes.

In Education, cost is an important factor that guides the adoption and growth of Communication Technology in a country. Developing Countries often lack the initial allocation as well as matching funds to make feasible investments in ICTs. Many countries often acquire costly technology without making provisions for building sufficient infrastructure to run them. Most Developing countries are constrained by resource scarcities. Even where the importance of ICTs is recognized, allocation for the development of these is at best paltry. Due to this, many developing countries are forced to depend on mostly traditional means of communication. These are limited in their efficiency. The Developing countries are vitally dependent on substantial foreign assistance to ensure the development of ICTs. Often it is found that it is very difficult to invite the attention of donors on ICTs. These countries are perennially short of Foreign Exchange for acquiring latest technologies. Most of the Developing Countries are undergoing Structural Adjustment Programmes under the auspices of the IMF.

Cost-efficiency of an ICT is another major factor that is important that determines its growth. Developing countries have to ensure that such a technology is adopted that is easily accessible to the target group and also fulfills all the functions that are expected of it. Such a scenario essentially implies that a costly technology need not always be the best technology. However, it is often seen that Developing Countries often invest in the latest technologies without considering whether the target audience is effectively reached or whether the target audience is interested in the technology.

Language is one of the major factors that hinder the easy assimilation of ICTs by many developing countries. This hinders transfer of technology. The radio and TV programmes, computer software and the printed texts are produced in different countries bearing different cultural backgrounds. As such, such tools may fail to impress students of another country. For example, a zoology text can safely give the example of a koala in Australia, but the same cannot be replicated in India. With regard to cultural patterns there are two groups of policy makers. Policy makers can be Pro-implementation or Anti- implementation. It is precisely the
Cultural moorings of a society that makes people either in favor of implementing technology or to reject it.

Japanese have over the years built up a reputation of being quick to adapt and implement new technology. This can be linked to the way in which a new culture of receptivity to new ideas was built up after centuries of stagnation when Commodore Perry forced the Japanese to open up their society.

Again, in recent times it has been seen that the culture of classroom teaching and learning has been so strongly built into the psyche of the teaching community that they often exhibit resistance in the way of implementing technological change that forces a change in the role of the teacher from being a store house of all learning to a manager of the teaching-learning process. Very often, technology becomes the determining factor in the growth of ICT in any society. One would be justified in applying the Bates criteria for media selection as an appropriate parameter for selecting appropriate technology for educational purposes.

Bates states that the following are the major criterions that have to be taken into consideration while selecting appropriate media for Educational purposes

A - ACCESS TO THE MEDIA
C - COST OF THE PROPOSED MEDIA
T - TEACHING FUNCTIONS OF THE MEDIA IN RELATION TO LEARNING GOALS
I - INTERACTIVENESS AND USER-FRIENDLINESS
O - ORGANISATIONAL ISSUES
N - NOVELTY OF THE MEDIA
S - SPEED WITH WHICH CHANGE CAN BE BROUGHT ABOUT IN THE MEDIA

(IGNOU, 2001).

With regard to the acceptance of a particular technology, the factors such as access, cost, teaching functions, instructiveness and user-friendliness, organizational issues and speed afforded to change are important issues.

In the case of Media selection, Bates regards Novelty of a media as the least important criterion on which a particular media should be selected or rejected. However, in the case of many third world countries, it is novelty of a media that attracts the attention of policy makers.

For example, in the late 70s and 80s, the novelty of TV as a medium influenced the UGC to initiate the Country-Wide Class room programme for the benefit of the college students. However much care was not taken to ensure whether, the programme could generate enough interest in the student community to make the programme a success. Moreover, at the time of its initiation, access to TV sets was also a major problem. Even today the tele density in India stands at a low 80 per 1000. The end result was that UGC's CWC generated a utilization rate of less than 10%.

Apart from the factors mentioned above, once a technology is selected, there are certain other factors that need the concern of policy makers. Handling of New technology needs care and technical proficiency. For this training is an important aspect. Many developing countries lack enough personnel to train manpower in new technology. Moreover, constant retraining of manpower to acquaint them with changing technology is also important. These often act as constraints before the smooth growth of ICT.
Maintenance of equipment also needs sufficient care. Frequent snags may render equipments unusable. Maintenance as a function also needs sufficiently trained staff, high quality spare parts and machine friendly attitude from the users.

**A STUDY ON PERCEPTION OF TEACHERS ON CONVERGENCE OF TECHNOLOGIES**

In order to further understand the practical issues related to Convergence of technologies, a short questionnaire was administered by the researcher to teachers at various levels teaching across the state of Kerala.

The sample size of the study was 30.

The demographic detail of the participants of the survey is given below:

**Gender-based Distribution**
The gender-wise distribution of the data of the study is given in the following table:

<table>
<thead>
<tr>
<th>Table: 1 Gender based distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Male Respondents</td>
</tr>
<tr>
<td>14</td>
</tr>
</tbody>
</table>

It is clear from the table given above that 54% of the respondents were females and the rest 46% of the respondents were males.

**Qualification-based Distribution**
The Qualification-based distribution of the data of the study is given in the following table:

<table>
<thead>
<tr>
<th>Table: 2 Qualification Based distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents with a Doctoral Qualification</td>
</tr>
<tr>
<td>03</td>
</tr>
</tbody>
</table>

Of the respondents only 10% held a PhD qualification, while 64% of the respondents held a Masters Degree, while 26% held only a Bachelors qualification.
Type of Institution in which Employed

Table: 3

<table>
<thead>
<tr>
<th>Type of Institution in which Employed</th>
<th>Government</th>
<th>Semi Government</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
<td>04</td>
<td>06</td>
</tr>
</tbody>
</table>

It is clear from the table that 67% of those who participated in the survey were teachers working in government institutions, while 13% represented Semi-Government institutions and the rest 20% represented Private Education institutions.

Experience in Years

Table: 4

<table>
<thead>
<tr>
<th>Experience in years</th>
<th>0-10</th>
<th>10-20</th>
<th>20-30</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>07</td>
<td>14</td>
<td>09</td>
</tr>
</tbody>
</table>

The table under reference that the respondents were well experienced in the various institutions they were representing. 47% of the respondents had experience ranging between 10 and 20 years, while 30% had experience ranging from 20 to 30 years and the rest (23%) had experience ranging upto 10 years.

Level up to which Taught

Table: 5

<table>
<thead>
<tr>
<th>Level up to which taught</th>
<th>Under Graduate</th>
<th>Post Graduate</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

From the forgoing table it is clear that 53% of the respondents taught at the under-graduate level, 13% at the Post Graduate Level and 34% of the respondents did not indicate the levels at which they taught.

Disciplines of the Teachers

Table 6 : Disciplines of the teachers

<table>
<thead>
<tr>
<th>Disciplines of the teachers</th>
<th>Management</th>
<th>Arts</th>
<th>Science</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>02</td>
<td>13</td>
<td>02</td>
<td>13</td>
</tr>
</tbody>
</table>

The discipline-wise distribution of teachers shows that 43% of the respondents were from the Arts faculty, 43% from the Education faculty, and 7% from Management and Science Faculty each. The issue specific response of the respondents is given the tables presented below:
**Essentials of Technology Management**

The various parameters under this head were requested to be graded by the respondents on a scale of “1” to “5”, the former being the most important and the latter being the least important.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>“1”</th>
<th>“2”</th>
<th>“3”</th>
<th>“4”</th>
<th>“5”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hands on skills in operating technologies and equipment</td>
<td>14</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Creativity and Ability to innovate</td>
<td>14</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Experience in Technology Adaptation and Project Management</td>
<td>10</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Adaptation to new technical and Creative Environment</td>
<td>13</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Team Spirit and Man Management Skills</td>
<td>14</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Good Language Skills esp. in English Language</td>
<td>10</td>
<td>11</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Government or Policy Support</td>
<td>15</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Attitude of the Mgt towards technological assimilation &amp; implementation</td>
<td>13</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

The respondents were asked to provide responses on issues those were closely related to Convergence of Technologies. The initial battery of questions was aimed at finding out the parameters, which in the opinion of the respondents contributed to efficient technology management. A large number of the respondents stated that hands on skills in operating technologies and equipment ranked highest in the scale of importance as an essential element of technology management (47%), while a moderate number (20%) felt it to be of medium importance. The pie chart given below is illustrative of this fact.

From the survey it is clear that Creativity and Ability to innovate is of primary importance in Technology Management (48% of the respondents graded it in “scale 1”). Only 6.7% of the respondents graded it as being of least importance, while a moderate number (20%) felt it to be of medium importance.
Experience in Technology Adaptation and Project Management is an important area of Technology Management as gleaned from the survey results. 75% of the respondents together opted for “1” and “2” on the scale provided.

Qualitative research across the world has proved that Adaptation to new technical and Creative Environment is a basic factor in ensuring sound technology management. The current survey corroborates this view. As much as 45% of the respondents graded it on scale “1”.
As is of common experience, working in a team is the sine-qua-non of every successful endeavor. To create a vibrant team, man management skills are of utmost importance. This attested by the results presented below, which shows that 48% of the respondents regard “Team Spirit and Man Management Skills” as of primary importance.

This should be seen in the light of the fact that 21% of the respondents also rated this parameter on the 2nd scale of importance.

Most modern educational technology runs on platforms that utilize English language. 72% of the respondents feel that “Good Language skills especially in English Language” (combined score for scale “1” and “2”) is an essential factor in managing modern educational technology.
Governmental support has been revealed as an important aspect in the educational technology management. 56% of the respondents fell that this parameter is of primary importance. This could also be due to the reason that the flow of governmental financial support also critically hinges upon its policy framework.

No matter, how attractive the technology is, the attitude of the host management is an essential factor in implementing and assimilating new educational technology.
More than 66% of the participants in this survey feel the same way (scores on scale “1” & scale “2”).

### Individual Technologies Most Relevant for developing a Digital Learning Platform

Among the large number of technologies that can be integrated into a digital learning platform, a shrewd decision maker has to select the most appropriate ones. This issue was put before the respondents who returned the results those can be viewed in the table that follows.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>&quot;1&quot;</th>
<th>&quot;2&quot;</th>
<th>&quot;3&quot;</th>
<th>&quot;4&quot;</th>
<th>&quot;5&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land line Telephone</td>
<td>14</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Radio-Transmission</td>
<td>9</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Television</td>
<td>14</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Web-Conferencing</td>
<td>16</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>On-Line Chat Board</td>
<td>10</td>
<td>9</td>
<td>5</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Group-Mailing</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Online Workbook</td>
<td>11</td>
<td>5</td>
<td>9</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Online Whiteboard</td>
<td>15</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>PDA</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2-D Model Projector</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3-D Model Projector</td>
<td>14</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Video and Audio Player</td>
<td>14</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

The graph presented below shows intra group variation in choices of the respondents.
It is clear from the chart that scale “1” preference is the highest for the technologies- Land line telephone, TV, Web-Conferencing, On-line white boards, 3-D Model projectors and video and audio players. The line–diagram given below further elucidates the preferences.

It is thus clear that technological convergence in the Indian context surely has to account for “Old Generation Technologies” on their platform as much as new technologies. While, Web-Conferencing, On-line white boards, 3-D Model projectors and video and audio players can be integrated into a synchronous or asynchronous digital platform, the importance of integrating older technologies such as Land line telephone and TV into such a platform has been emphasized by this study.
**Most Appropriate Combination of Technologies**

Our respondents were requested to scale the most appropriate combination of educational technologies for convergence on a single platform. The table below gives the data obtained from the respondents.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>&quot;1&quot;</th>
<th>&quot;2&quot;</th>
<th>&quot;3&quot;</th>
<th>&quot;4&quot;</th>
<th>&quot;5&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landline Telephone, Radio and TV</td>
<td>15</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Web Conferencing, Online Workbook, Online Chat board, Online White Board, PDA and 3D Model Projector</td>
<td>11</td>
<td>12</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Web Conferencing, Online Workbook, Online Chat board, Online White Board, PDA, 3D Model Projector and Group mailing Facility</td>
<td>17</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

The results given in the table above are depicted in the line graph given below and are quite illustrative.

The preference of the teaching community for the technologies those need to be integrated into a technology based learning platform is very clear. Based on the Scale “1” and Scale “2” preference of the respondents, it is clear that they have expressed their opinion in favour of the combination, “Web Conferencing plus Online Workbook plus Online Chat board plus Online White Board plus PDA plus 3D Model Projector plus Group mailing Facility” for their vision of an ideal technology based educational platform.

**CONCLUSION**

In conclusion, one might be justified in stating that Convergence of technologies requires a high degree of planning for its success. While the technologies per se are an important factor, the social milieus in which these technologies are implemented are equally important.

The short study initiated by the author also makes it substantially clear that the teachers have a very clear perception on the convergence of technologies. Only when all relevant factors are
taken into consideration, would there be an optimum technological platform that caters to
diverse needs and would act as a solution to various constraints faced by the learner.

BIODATA and CONTACT ADDRESS of the AUTHOR

M. RAJESH is working as Regional Director at IGNOU Regional Centre, Cochin. He holds a Masters degree in International Relations and a doctorate on the topic, “Indian Distance Education in the era of GATS”. He is an external PhD evaluator and guide in some of the reputed universities in India. He has been nominated to many committees within and outside IGNOU. He frequently delivers talks on various academic issues on electronic media.

M. RAJESH
Regional Director,
IGNOU Regional Centre, Cochin, INDIA
Phone: +91-9497721366
Email: rajesh_cawes@yahoo.com

REFERENCES


IGNOU. (2001). Media In Distance Education. Delhi: IGNOU.


Veletsianos, G. (2010). *Emerging Technologies in Distance Education*. Canada: Athabasca University.

EXPLORING THE ROLE OF DISTRIBUTED LEARNING IN DISTANCE EDUCATION AT ALLAMA IQBAL OPEN UNIVERSITY: Academic Challenges at Postgraduate Level

Qadir BUKHSH
Assistant Professor
Department of Educational Training
The Islamia University of Bahawalpur, PAKISTAN

Dr. Muhammad Ajmal CHAUDHARY
Assistant Professor/ Chairman
Department of Distance, Non-Formal and Continuing Education
Allama Iqbal Open University Islamabad, PAKISTAN

ABSTRACT

Distributed learning is derived from the concept of distributed resources. Different institutions around the globe connected through network and the learners are diverse, located in the different cultures and communities. Distributed learning provides global standards of quality to all learners through synchronous and asynchronous communications and provides the opportunity of flexible and independent learning with equity, low cost educational services and has become the first choice of the dispersed learners around the globe. The present study was undertaken to investigate the challenges faced by the Faculty Members of Department of Business Administration and Computer Science at Allama Iqbal Open University Islamabad Pakistan. 25 Faculty Members were taken as sample of the study from both Departments (100% Sampling). The study was qualitative in nature and interview was the data collection tool. Data was analyzed by thematic analysis technique. The major challenges faced by the Faculty Members were as: bandwidth, synchronous learning activities, irregularity of the learners, feedback on individual work, designing and managing the learning activities, quality issues and training to use the network for teaching learning activities.

Keywords: Distributed learning, Faculty challenges, Allama Iqbal Open University, web-based learning, flexible learning, network learning

INTRODUCTION

Distributed Learning is synonymously used with open learning, distance learning, flexible learning, individualized learning, blended learning, web-based learning, network learning, off campus learning and online/ e-learning but the key feature of the term is the diversity of the resources, students, campuses and multi-location teaching around the globe. The development of the modern communication technology and internet has enabled explosive growth and changed the perspectives of educational opportunities and practices. The electronic education has supported all forms of the education particularly the novel world of learning is opening the gates through the web-based distributed learning. Distributed education models are emerging...
as new technologies, tools and research findings become available in higher education. Different methodologies emerged as the result of growth of network education in distributed learning. New patterns of E-pedagogy and E-assessment which have progressively become more pervasive elements at higher education level emerged as web-based distributed learning has become more widespread to facilitate all levels of the population (Barik. N & Karforma. S. D, 2012; Dutta. K. A et. al, 2011; Verdu. E. et. al, 2012) The concept of the distributed learning comes from the distributed resources. It is an instructional model that allows teachers, students and the content to be located in non-centralized different locations.

In this instructional model the instruction occur independent of the time and the place. The distributed learning may be implemented according the need; it can be used to create a virtual classroom with the use of technology or with the combination of the traditional distance learning course (Ciftci. S et. al, 2010). Distributed learning is associated with information technologies, computers, web-based learning and virtual learning and use of modern communication tools and techniques to facilitate learner and effective outcome of the process.

It is an instructional model that involves the use of information technologies to facilitate the remote access. It is known as the computer mediated instruction which uses the video and audio conferencing, satellite broadcasting, web-based multimedia formats and specially designed techniques and methodologies (Cornell University Library, 2013).

(Mahfouth.A ,2012; Barik.N&Karforma.S.D, 2012; Ahmad. I &Bokhari. U. M, 2013) argued Using the modern communication tools and techniques, the distributed learning has become the most used and popular technique to address the spread clientele. Distributed learning provides the opportunity to create the new community of the universities around the globe sharing best practices and the pedagogical innovations by using the interactive e-learning technologies locating in the different parts of the world. The dramatic changes in higher education are associated with the distributed learning innovative techniques and methodologies. The internet meets the growing demand of interactive communication, advance study material and all the modern resources for the effective learning. Due to the advance technology the communications become very fast and these fast communications can be applied to the field of education for convenience and for faster services.

Universities are using and promoting the distributed learning approaches for staff development, technical training and other teaching learning activities. There is verity of the ways to execute the distributed learning; it is consistent in that it always accommodates the separation of geographical location for part or all of the instruction. It always focus learner to learner and instructor to learner communications for the successful educational process. There exist a verity in the delivery model of the distributed learning; it includes web-based instructions, streaming of video conferencing, audio conferencing, electronic resources and satellite broadcasts (Kaewkiriya, 2013).

The main purpose of designing distributed learning system is to speed up the learning as compared to the non-distributed system. The use of synchronous and asynchronous learning gain popularity in the delivery of the content at higher education level. In the last decade, the development of the electronic devices like smart phones, iPods, tablets, net books etc and internet has changed the delivery mechanism of instructional process. The synchronous learning is the live interaction and requires pre-organization of the time table. The media used in synchronous learning is video conferencing, instructional television, live streaming and live chat. Asynchronous learning or network learning is also an effective model in distributed
learning, the media included is email, voice mail, audio and video recordings. In asynchronous learning participants can access to the course material with their own schedule and the time available to them. Learners can download the material according to their capacity and need and complete their assignments by using the asynchronous model (Mshvidobadze.T & Gogeladze.T, 2012; Xenos.M et.al, 2009).

According to (Baker.J.D & Zuvela.D, 2013; Liu.Z.G, 2012; Valle.D.R & Duffy.M.T, 2009) Distributed learning technologies are widely used to cater the needs of the scattered students in different localities as their learning needs are addressed by the use of the technology.

The key feature of the distributed learning is flexibility which uses the special design, methodologies, technologies, instructional techniques, tools, communication methodologies and arrangements.

Many students are attracted to the distributed learning because of the freedom and the flexibility in managing their learning activities.

They have the freedom of the decision making about their studies.

The schedule, time and place all have flexibility in distributed learning.

Students have access to educational opportunities, connectivity and flexibility to promote their learning in the flexible environment of the distributed learning environment.

The freedom of the choice of the courses is another attraction to the learners as they may select the courses according to the time available to them, cost of the courses and the capacity of the learners in the relevant area of the course.

OBJECTIVES OF THE STUDY

Following were the objectives of the study:

- To explore the potential role of distributed learning in Distance Education
- To investigate the challenges faced by the Faculty in distributed learning at Allama Iqbal Open University
- To suggest initiatives to solve the challenges and problems faced by Faculty in distributed learning at Allama Iqbal Open University

RESEARCH METHODOLOGY

The study was qualitative in nature. Data was collected through a semi structured interview schedules from respective Faculty Members of the Department of Business Administration and Computer Sciences at Allama Iqbal Open University Islamabad, Pakistan.

All (25) Faculty Members of the Department of Business Administration and Computer sciences involved in distributed teaching learning in the programmes of MBA (Col) and PGD online programmes were taken as sample respectively of Allama Iqbal Open University Islamabad, Pakistan (100% sampling)
DATA ANALYSIS

NVivo10 was used for the qualitative thematic data analysis of the interviews of the Faculty Members of the Department of the Business Administration and Computer Science at Allama Iqbal Open University.

The thematic data analysis of the interviews of the Faculty Members is given:

Graph 1 explains that there were twenty five faculty members participated in this study. 64% Faculty Members participated from Department of Business Administration, 36% were from Department of Computer Sciences were interviewed at Allama Iqbal Open University.

**Graph 1**
Departmental Profile of Faculty

<table>
<thead>
<tr>
<th>Department</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration</td>
<td>64%</td>
</tr>
<tr>
<td>Computer Sciences</td>
<td>36%</td>
</tr>
</tbody>
</table>

Q 1: What hurdles do you face due to the organizational policies in teaching learning activities in online teaching?

Graph 2 points out that majority (64%) of respondents commented that they faced no hurdles due to the organizational policies for distributed learning at Allama Iqbal Open University. 44% of the respondents mentioned that AIOU pay low remunerations for online delivery of the lectures. 40% of the respondents indicated that the organizational policies were facilitating and 32% said that organizational policies were supporting. Only 28% of the respondents gave opinion that they faced hurdles due to organizational policies for distributed learning in both Departments of Computer Sciences and Business Administration respectively at AIOU.
Q 2: Do you think that your teaching is affected due to bandwidth of internet?
Graph 3 shows that significant majority (96%) of respondents reported that bandwidth is a challenge for them at institution level and significant majority (88%) faced challenge in video sharing for distributed learning at Allama Iqbal Open University. Majority (80%) of the respondents viewed that bandwidth was the biggest challenge at user end level and majority (64%) suggested that they faced challenges of remote access due to low bandwidth of internet. Only 52% of the respondents informed that they encountered net failure due to low bandwidth of internet for distributed learning at AIOU.

Q 3: What challenges you face to implement synchronous and asynchronous teaching learning activities at your network?
Graph 4 indicates that significant majority (96%) of respondents commented that synchronous and asynchronous teaching learning activities need improvement and (88%) said that synchronous teaching learning activities was challenge for them no challenge for asynchronous teaching learning activities for distributed learning at Allama Iqbal Open University. 76% of the respondents faced the video sharing challenge and 60% of the
respondents suggested that distributed learning required virtual learning environment to implement distributed learning at AIOU.

Graph 4
Percentage of the respondents on synchronous and asynchronous teaching learning activities at network

Q 4: Do you face technology challenges in teaching learning through distributed learning?
Graph 5 highlights that significant majority (84%) of respondents mentioned that technological challenges existed for distributed learning at Allama Iqbal Open University and 72% of the respondents viewed that technical skills were required at the user end. 68% of the respondents explained that there existed usability challenge at the user end and 64% indicated that computer skill was required both at institution and user end level. 48% of the respondents presented that training of the students is required to overcome the technological challenges to implement the distributed learning at AIOU.

Graph 5
Percentage of the respondents on technology challenges
Q5. What challenges you face in instructional delivery in online teaching?
Graph 6 presents that majority (76%) of respondents reported the irregularity of the students, they logged on and logged off suddenly and (72%) of the respondents commented that students need training to use the network. 68% of the respondents viewed that effective online delivery need more organization of the lecture and 56% indicated that delivery of lecture in distributed learning need more preparation. 52% of the respondents explained that focused approach is needed for distributed learning on the network at AIOU.

Q 6: Which type of problems do you face in online assessment and feedback to your students?
Graph 7 imparts that 68% of respondents revealed that provision of the feedback on individual work is a challenge and 64% agreed that provision of feedback was a challenge and students submitted copied work. 56% of the respondents reported that students’ submission was not on time and only 36% of the respondents said the online assessment and feedback to the students in distributed learning at AIOU was not challenge for them.
Q 7: What challenges do you face due to pedagogical issues in online delivery?
Graph 8 argues that majority 68% of respondents commented that designing of the lecture and materials were challenges and 52% respondents informed that file sharing was challenge. 44% of the respondents said that designing project work was challenge and only 36% of the respondents explained that use of white board was a one of the challenge in distributed learning at AIOU.

![Graph 8](image)

Q 8: Are you satisfied with the teaching learning environment of distributed learning in your institution?
Graph 8 mentioned that significant majority (100%) of respondents commented that energy failure was one of the key challenge and (96%) of the respondents indicated that teaching learning environment need improvement at Allama Iqbal Open University. Majority (88%) viewed that bandwidth was a challenge. 68% of the respondents said that video sharing was a challenge and only 44% of the respondents informed that virtual environment was required for distributed learning at AIOU.

![Graph 9](image)
Q 9: Do you think that security issues are major challenges in your institution through online teaching?

Graph 9 points out that significant majority (100%) of respondents commented that there was no challenge of security as there was no e-exam and (84%) of the respondents explained that institution provided privacy to the data of the students in distributed learning at AIOU.

Graph 10
Percentage of the respondents on security issues

Q 10: To what extent are you satisfied with the quality of online learning programme at your institution?

Graph 10 insists that significant majority (92%) of respondents said that more bandwidth is required and (84%) of the respondents indicated that there was need to improve the quality for distributed learning at AIOU. Majority of the respondents (80%) reported that e-exam was needed for quality education in distributed learning and 68% of the respondents viewed that video interaction was required for effective distributed learning at AIOU.

Graph 11
Percentage of the respondents on quality of online learning programme
Q 11: Do you think that faculty involved in distributed learning at AIOU needs training to use the network for effective learning?

Graph 11 points out that 60% of respondents commented that training required to use the communication tools effectively and 52% informed that continuously training required as the technology is changing rapidly. 44% of the respondents indicated that there required ICT training required and only 36% viewed that pedagogical training was required for distributed learning at AIOU.

CONCLUSIONS

Organizational polices are in the favor, facilitating and supportive to implementation of the distributed learning. Tutors in the distributed learning environment are effectively utilizing the network facilities as sufficient information are provided on the network. The tutors function properly in the distributed learning setting and the learning environment support learning engagement and motivation to successful completion of the learning process. The distributed learning network supports all the tutors’ academic activities and all kinds of asynchronous communications like blogging, wikis, mailing list, audio and video recorded tutorials and discussion forums to support the learning of the distant learners. Distributed learning network supports tutor to provide feedback and all collaborative activities.

Tutors face challenges to the synchronous learning activities like video conferencing and face-to-face feedback and whiteboard sharing due to the low bandwidth of the internet and the issue of the bandwidth is more significant. The distributed learning environment face issues in network management, network failure and difficulty in the remote access. These managerial and network issues create hurdles to the group interaction.

RECOMMENDATIONS

- The bandwidth may be increased at institutional level and standard of minimum bandwidth required to access the synchronous and asynchronous instructional activities may be conveyed to the remote users for effective outcome of the system in distributed learning.
➢ The network may be effectively managed to facilitate the instructional activities in distributed learning
➢ The quality of the distributed learning programmes may be enhanced by focusing the different aspects like infrastructure, communication tools and techniques, e-exam, collaborative communication facilities, interactive climate and academic support to learners
➢ The comprehensive system of the feedback from faculty to the individual learners may be established to facilitate the divers learner in distributed learning
➢ Continuous training of the faculty to design develops, organize and present the content keeping in view the convenience and mental engagement of the learners in the diverse climate of the distributed learning

BIODATA AND CONTACT ADDRESSES OF AUTHORS

Qadir BUKHSH (1974\01\11) has been serving as Assistant Professor in the Department of Educational Training, The Islama University of Bahawalpur, Pakistan and joined this institution back in 2006. He has the work experience as a Community Mobilizer, Secondary School Teacher, Head Master and tutor of distance education in Allama Iqbal Open University Islamabad, Pakistan. He got couple of research trainings under the collaboration of Islamia University of Bahawalpur, SES Germany and IRA, USA. His areas of interest are distance education and literacy.

Qadir BUKHSH
Department of Educational Training, Faculty of Education
The Islamia University of Bahawalpur, Pakistan
Tel: 0092629255068
Email: qadir.bukhsh@iub.edu.pk or qadir_iub@yahoo.com

Muhammad Ajmal CHAUDHARY, PhD has been serving as Assistant Professor and Chairman Department of Distance, Non-Formal and Continuing Education at Allma Iqbal Open University Islamabad, Pakistan. He got master degree in education in from Indira Gandhi National Open University, New Delhi, India and PhD from National University of Modern Languages Islamabad, Pakistan. He joined Allama Iqbal Open University in 2007. He participated in more than fifteen professional development trainings organized by Allama Iqbal Open University with the collaboration of international and national academic organizations. He is HEC approved supervisor for PhD.

Dr. Muhammad Ajmal Chaudhary
Chairman Department of Distance, Non-Formal and Continuing Education
Faculty of Education Allama Iqbal Open University Islamabad, Pakistan
Phone: 0092519057707
Email: ch ajmal2003@Yahoo.com or drajmal@aiou.edu.pk
REFERENCES


STUDENTS' NAVIGATIONAL PATTERN AND PERFORMANCE IN AN E-LEARNING ENVIRONMENT: A Case from UP Open University, Philippines

Ricardo T. BAGARINAO
Faculty of Education
University of the Philippines Open University
Los Baños, Laguna, PHILIPPINES

ABSTRACT

The study analyzed the navigational patterns of learners in an online course in Science, Technology, and Society using movement ecological concept. The course site consists of five important pages, namely: home page, resource page, user page, forum page, forum discussion page, and forum add post page. About 11,413 logged data were mined and analyzed for the learners’ mean number of visits (NOV) in each page. The computed mean NOV was correlated with the learners’ performance, which was measured through their final grades.

Results indicate that learners had visited more frequently the pages that contained information they need to accomplish the course requirements: home page (mean NOV=87.38); resource page (mean NOV=40.33); and discussion forum page (mean NOV=56.29). Those who had visited the resource page were more likely to visit the discussion forum page, participate in the on-going discussion, and/or create a new thread of discussion. These patterns show that learners seek information that is necessary in their learning transactions. The patterns of navigation however did not show a significant relationship with learners’ performance (p>0.05). Other factors may have contributed to their performance, and they must be identified as well to create a virtual environment that can maximize the learners’ learning experience.

Keywords: Navigational pattern analysis, science, technology and society, navigation behaviour, UP Open University, movement ecology, open and distance e-learning

INTRODUCTION

Living organisms exhibit specific movement in certain environment. Crist et al. (1992) cited several studies that indicate a relationship between animal movement patterns and some ecological functions such as foraging (Smith, 1974; Bond, 1980; Pyke, 1984); space use in home ranges (Siniff & Jessen, 1969; Swihart, Slade, and Bergstrom, 1988); population distribution over space (Levin, 1974); dispersion (Okubo, 1980; Stamps, Buechner, & Krishnan, 1987); and interactions (Murdie & Hassell, 1973; Banks, Kareiva, & Murphy, 1987). Animal movement is directed by certain factors such as availability of food, vegetation, social factors, or changes in habitat landscapes (Crist et al., 1992). The differences in physiology, vagility, size, and life history characteristics have also been observed to influence movement patterns.
E-learners can metaphorically be considered as ‘organisms’ in a virtual learning environment. Their navigational behaviour can be construed as movement directed by some factors to enable them to achieve the learning goals. The course site consists of several pages that contain the basic resources for the learning process. Though there is a significant difference between students in a virtual environment and organisms in the real environment, they have a common goal, i.e. to be successful in their transactions given a set of environmental conditions.

To do this, both organisms and e-learners should devise strategies that can help them achieve this goal. Movement pattern is only one of these strategies. Though this scenario is an “open” system among organisms, it is a “closed” system among online learners, in a sense that every action they perform is related to the learning process, and with a set of previously established goals (Carbo, Mor, and Minguillon, 2005). In addition, it can be inferred that different students follow different navigational patterns, but these patterns are limited to a few, mostly because of course structure, and temporal and technological restrictions (Carbo, Mor, & Minguillon, 2005).

The analysis of the navigational patterns of students in an online course is useful in instructional design, management, and even in scaffolding learning processes of students. Neuhauser (2002) considered such scientific procedure as crucial for effective online learning, and argued the necessity to better observe and monitor online activities of students and their patterns of navigation. Also, Carbo, Mor, and Minguillon (2005) indicates that tracking users’ behavior in a virtual environment can create possibilities for producing and organizing better the contents. The knowledge extracted from the navigational behaviour of e-learners can be utilized to develop contextualized or personalized e-learning processes. Because e-learning transactions are ‘closed’ (Carbo, Mor, & Minguillon, 2005), navigational patterns can be formulated and validated by means of logged data analysis tools. The capability of Moodle to log navigational data by users can help facilitate the data collection of this study. The University of the Philippines Open University’s learning management system, i.e. myportal, is powered by Moodle, and can be a good tool in analyzing online behaviour of students.

The study retrieved the logged data from the myportal, and analyzed them to answer the following questions:

- How many times do students visit a particular page vis-à-vis their number of visits of the course site?
- Which page do students visit more frequently?
- Do the navigational patterns affect their performance?

In general, the study aimed to determine whether or not the navigational patterns of the students affect their performance in an online course. Specifically, however, the study sought to:

- calculate the students’ mean number of visits per page
- identify the most frequently visited page/s
- correlate frequency of visits with students’ performance
METHODOLOGY

The Course Site
A site of an online undergraduate Science, Technology and Society (STS) course was used in the study. The site consists of five pages, namely, homepage, users’ page, forum page, forum discussion page, resources page, and forum add post page. These pages contain different information and serve different purposes.

As a student logged on to the site, s/he landed on the homepage, which contains course announcements and links to other pages. Users’ page contains the names of the students enrolled in the course site; forum page contains the list of forums/fora that each student may participate in; forum discussion page contains students’ posts and replies to posts; resources page contains the various resources such as course guide, modules, and supplementary learning materials of the course; and forum add post page is where the student creates another thread of discussion.

Students Logged Data
The UP Open University myportal, which is powered by Moodle, is the current learning platform of the course. It has the ability to log students’ visit data. A typical logged data in the myportal consists of the IP address of the student, students’ complete name, date and time of access, entry and exit pages, actions taken while being logged on the course site, and pages visited. All logged data were entered into an excel data processing environment where descriptive statistics such as frequencies, means, and percentages were computed.

About 11,413 logged data from 42 students (i.e. 54% of the total number of students) in STS were analyzed in the study.

Measuring Performance
Students’ performance was computed through two faculty-in-charge-made written examinations, one at the middle of the term and the other one at the end of the term. The examinations had been used alternately for several terms in this class. The midterm examination covered the first two units of the learning material while the final examination covered the remaining two units of the material.

Each examination consists of multiple choice and essay type questions with a total score of 100 points. Students’ scores were transmutated to the University’s grading system where 1.0 is the highest and 5.0 is failure. The scale is 0.25, and thus, 1.0 is followed by 1.25, 1.5, and so on. Students who dropped from the course or got an extended grade (EXT) were not included in the analysis.

A grade of EXT means that the student fails to submit at least one requirement of the course.

Data Analysis
Descriptive statistics measurement such as frequency, total, means, standard deviation, and percentages, minimum, and maximum were computed. Correlation analysis between the number of visits and students’ performance was done. Data were visualized as graphs and tables.
RESULTS AND DISCUSSION

Number of Visits
Table 1 summarizes the computed number of visits of the students from the logged data of 42 students.

Table: 1
Descriptive statistics summary (n = 42)

<table>
<thead>
<tr>
<th>Page</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>home page</td>
<td>25</td>
<td>236</td>
<td>47.41</td>
</tr>
<tr>
<td>resource page</td>
<td>12</td>
<td>122</td>
<td>25.59</td>
</tr>
<tr>
<td>user page</td>
<td>0</td>
<td>41</td>
<td>11.26</td>
</tr>
<tr>
<td>forum page</td>
<td>0</td>
<td>143</td>
<td>25.85</td>
</tr>
<tr>
<td>forum discussion page</td>
<td>13</td>
<td>228</td>
<td>38.10</td>
</tr>
<tr>
<td>forum add post</td>
<td>0</td>
<td>13</td>
<td>2.92</td>
</tr>
</tbody>
</table>

As indicated in Table 1, students had visited the course site for about 236 times throughout the term. There were students who had neither visited the forum add post page nor the user add forum pages. On the average however, each student had visited the home page for more than 80 times, resource page for 40 times, user page for 13 times, forum page for 32 times, forum discussion page for 56 times, and forum add post page for 5 times (Figure: 1).

Interestingly, students are more likely to visit those pages that contain information about the subject matter. This is indicated by the high mean number of visits of the pages that contain the learning materials (resource page), students’ post on certain topics for discussion (forum discussion page), and announcements (home page). This pattern can be attributed to the information seeking behaviour of the students. The decision to navigate more frequently to these pages may have been influenced by students’ decision to gather and source information for their assignment, learning activity, and tests. Kakai et al. (2004) in Ajiboye and Tella (2007) observed that students will actively or purposefully seek information as a result of the need to complete course assignment, prepare for discussion, or prepare for taking examinations. Just like the movement of organisms in natural environment, learners’ movement is directed towards the pages that contain the resources they need to have a successful learning outcome.
Generally, students visit the page that contains the information they need in performing their academic tasks. According to Chikonzo and Aina (2006) in Onuoha and Awoniyi (2011), students sought information that are important in accomplishing their assignments, and studying for examinations. In fact, they observed that these were the primary tasks for which the students required information (Onuoha & Awoniyi, 2011). In the context of this study, resources page contain the academic information that the students need in engaging in the learning process. The academic information posted in this page includes the course learning materials, supplementary reading materials, and course guide that provide the information on the scope and coverage of the course, schedule of activities, learning outcomes, course requirements, grading system, and assessment tools.

Though individual students may have different reasons for using this page (Onuoha & Awoniyi, 2011), it is clear that they need information to achieve certain learning goals of the course. Dennen, Darabi, and Smith (2007) reported that some of the materials the students wish to see in an online course are information about the course expectations, assignments, and objectives. And this information should be made available even before the start of the class (Conrad, 2002 in Dennen, Darabi, & Smith, 2007).

In addition, the higher computed mean number of visits for resource page and forum discussion page shows the interactions that usually take place in e-learning. Several studies (e.g. Burton & Goldsmith, 2002; Moore, 1989 in Bouhnik and Marcus, 2005; Sims & Bovard, 2004) indicated that interaction is an important part of online learners' learning process. Moore (1989) as cited in Bouhnik and Marcus (2005) identifies three kinds of interaction in distance education:

- interaction with content,
- interaction with the instructor, and
- interaction with classmates.

These interactions were reported to affect learning in online courses. Thus, online course sites should contain functional interaction-related tools that could facilitate students’ interaction. Bouhnik and Marcus (2005) had reported that learning to use these interaction-related tools can significantly influence the success of learning and satisfaction of e-learners in an online course.

**Interactions between Course Pages**

Figure: 2 shows how students’ navigational behaviour affects their patterns of movement from one page to another.
As indicated in Figure 2, students’ decision to participate in the discussion and add a thread of discussion is influenced by their visit to the resource page. It means that students who have previously visited the resource page are more likely to participate in the discussion and/or create another thread of discussion. This is obvious because students’ level of knowledge enhances or increases their level of confidence in participating in any discussion. The resource page provides the students with the sources of knowledge that they can share with their peers. According to Stein, Wanstreet, and Glazer (2010), knowledge sharing is common among online learners, and may facilitate knowledge building. “Knowledge building goes beyond sharing of thoughts and moves toward new collective thoughts that can emerge only in a community committed to pushing the basis of existing knowledge and learning ideas for others to expand further” (Stein, Wanstreet, & Glazer, 2010). McConnell (2006) in Stein, Wanstreet, and Glazer (2010) had indicated that participation and engagement in discussion may produce a collective understanding of an issue, phenomenon, or situation. The thoughts that emerge are new to the learners, and may be superior to their previous understandings (McConnell, 2006).

Number of Visits and Performance

The correlation analysis between the patterns of navigation and the performance of students showed a slight inverse relationship between these two variables (Table 2). It means that students who have visited the resource page and participated in the discussion in the course site are more likely to get a better grade. The inverse relationship could be attributed to the inverse grading system of the University where lower numbers are considered higher grades.
Table: 2
Correlation analysis between number of visits and students’ performance

<table>
<thead>
<tr>
<th></th>
<th>forum add post</th>
<th>performance</th>
<th>forums discussion page</th>
<th>forum page</th>
<th>home page</th>
<th>resource page</th>
<th>user page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>.235</td>
<td>.493**</td>
<td>.369*</td>
<td>.491**</td>
<td>.461*</td>
<td>.046</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.134</td>
<td>.001</td>
<td>.016</td>
<td>.001</td>
<td>.001</td>
<td>.775</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>performance</td>
<td>-.235</td>
<td>1</td>
<td>-.248</td>
<td>-.118</td>
<td>-.222</td>
<td>-.201</td>
<td>-.037</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.134</td>
<td>.113</td>
<td>.457</td>
<td>.157</td>
<td>.201</td>
<td>.817</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>forums discussion page</td>
<td>.493**</td>
<td>-.248</td>
<td>1</td>
<td>.565**</td>
<td>.492**</td>
<td>.477**</td>
<td>.384**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.001</td>
<td>.113</td>
<td>.000</td>
<td>.001</td>
<td>.001</td>
<td>.018</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>forum page</td>
<td>.369*</td>
<td>-.118</td>
<td>.565**</td>
<td>1</td>
<td>.374*</td>
<td>.446**</td>
<td>.443**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.016</td>
<td>.457</td>
<td>.000</td>
<td>.015</td>
<td>.003</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>home page</td>
<td>.491**</td>
<td>-.222</td>
<td>.492**</td>
<td>.374*</td>
<td>1</td>
<td>.351**</td>
<td>.385**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.001</td>
<td>.157</td>
<td>.001</td>
<td>.015</td>
<td>.023</td>
<td>.012</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>resource page</td>
<td>.481**</td>
<td>-.201</td>
<td>.477**</td>
<td>.446*</td>
<td>.351*</td>
<td>1</td>
<td>.275*</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.001</td>
<td>.201</td>
<td>.001</td>
<td>.003</td>
<td>.023</td>
<td>.078</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>user page</td>
<td>.046</td>
<td>-.037</td>
<td>.384*</td>
<td>.443**</td>
<td>.385*</td>
<td>.275</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.775</td>
<td>.817</td>
<td>.018</td>
<td>.003</td>
<td>.012</td>
<td>.078</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
</tr>
</tbody>
</table>

** - Correlation is significant at the 0.01 level (2-tailed).
* - Correlation is significant at the 0.05 level (2-tailed).

In general, students who were able to get the information needed in completing their academic tasks perform better in the course though the relationship is not significant at $p = 0.05$.

This result coincides with the study of Hung and Zhang (2008) where they observed that increasing frequency of accessing the course materials and/or discussion forum pages led to a better academic performance.

The result is important in building “a predictive model with data collected in the first week of the semester, and then able to identify the frequency of online discussion as a very important factor for improving learning outcomes” (Hung & Zhang, 2008).

The data may then be utilized by the faculty-in-charge to adjust the management of the course or facilitation of the learning process.

CONCLUSION

Students showed diverse patterns of online navigation. In general, students accessed the page that contains the information necessary to accomplish their academic tasks and participate in online interactions.

In the study, three pages were visited more frequently by the students than the other pages.

Computed mean number of visits showed that students are more likely to visit the home page, resource page, and forum discussion page.

Results also indicate that students who have visited the resource page are more likely to visit the forum discussion page and create another thread of discussion.
However, correlation analysis between these patterns and performance of the students indicate a non-significant influence of the patterns though there is a slight inverse relationship between the two variables.

The results highlight the need to design online courses in a manner where information needed by students to accomplish their academic tasks should be readily accessible.

Once properly designed, the course site may allow active participation of students in any online discussion.

As suggested by the result of the study, and existing related studies, active participation in discussion forums and frequent access to courses materials may be utilized to predict learning outcomes.

BIODATA and CONTACT ADDRESS of the AUTHOR

Dr. Ricardo T. BAGARINAO is an associate professor at the Faculty of Education, University of the Philippines Open University, Philippines. Currently, he is teaching science, biology, and environmental science courses. His research interest is on the use or application of ecological concepts in environmental management, landscape analysis, and distance education.

Ricardo T. BAGARINAO  
Faculty of Education  
University of the Philippines Open University  
Los Baños, Laguna, 4031 PHILIPPINES  
Tel: (+6349) 536-6001 local 100  
Fax: (+6349) 536-0106  
Email: ricardo.bagarinao@upou.edu.ph

REFERENCES


Neuhauser, C. (2002), Learning Style and Effectiveness of Online and Face-to-Face Instruction. *American Journal of Distance Education* 16(2), 99-113.


VALUE EDUCATION THROUGH DISTANCE LEARNING: 
Opinions of Students who already Completed Value Education

Assoc. Prof. Dr. Handan DEVECI
Anadolu University, Educational Faculty
Eskisehir, TURKEY

ABSTRACT

Individuals in a society should be systematically trained on value education so that they can appreciate values such as love, respect, tolerance, and honesty. Employment of value training approaches within Anadolu University Open and Distance Learning System will make it possible to educate many people on values. The purpose of this research is to determine the opinions of university students about providing value education through distance learning system. This study has been completed via use of semi-structured interview technique based on qualitative research approach. The participants are registered students studying at Social Studies Teacher Training Program, Faculty of Education, Anadolu University during the fall term of 2013-2014 academic years. Based on the selection criteria, 15 students who had already completed value education course and who were familiar with Anadolu University’s open and distance learning system partook in the study. Research data was analyzed through content analysis. Participating students believe that value education is a necessary component of social life and that students within distance learning system should be provided with value education. Furthermore, participants stated that value education could be integrated into distance learning. Based on the findings, it is possible to conclude that offering value education to students through distance learning system may significantly contribute to social life as it facilitates maintaining social order and raising effective citizens.

Keywords: Value, value education, distance learning

INTRODUCTION

Recently, there has been a crucial increase in acts of violence, distrust, and bad habits, lack of love and respect, and intolerance throughout the whole world and in our country. Decrease of humane values within social structure poses a serious threat for future generations; therefore, relevant precautions should immediately be taken so that education systems can achieve their goals of raising effective and responsible citizens (Deveci and Ay, 2009). Value education should be systematically administered through elaborate plans in order to establish a society in which individuals have gained various values.
It would not be wrong to state that individuals without values such as love, respect, tolerance, mercy, honesty, and sedulity would more probably display destructive and negative behaviors and more easily be involved in acts damaging for a society. Thus, it seems more important for students in an education system to gain values rather than to accomplish high academic success. Known as modern sources of value education, Dewey and Whitehead emphasized that education was expected to grow “whole persons” and that it had to be useful/functional as early as the beginning of 20th century (Shea, 2003). Kirschenbaum (1995) underlined that the nature of value education entailed helping people and other beings. As for Kirschenbaum, the primary goal of value education is to make each individual lead a better and happier life; and the second goal is to contribute to the welfare of the society. Value education helps the young to pursue a decent life by aiding them to gain values (Akbas, 2008).

Being a significant domain in need of education to develop and mature (Doganay, 2009), values have different conceptual definitions. Turkish Language Association (2009) defines the concept of value as “an abstract criterion to appraise the importance of something, what something is worth, and preciousness”. Value is an abstract unit of measure to appraise concrete or abstract concepts; it is a word to describe the status and significance of animate and inanimate entities, events, and phenomena (Koknel, 2007). Values are standards, beliefs and moral principles accepted by and individual or a social group (Collins English Dictionary, 1991). Briefly, a value is a choice determining how one perceives life and what his/her goals are, affecting the decisions, reflecting the beliefs, and shaping the principles (Baloglu and Balgamis, 2005).

On the other hand, value education can be explained as teaching values to students by teachers or other adults, administering various relevant activities accordingly, and conducting research in order to impose the meanings of basic values on students’ minds. Value education is attained at home, school, several other institutions, and everywhere directly within life as a process. What value education includes as themes are character and moral development, religious training, spiritual improvement, citizenship training, personal, social, and cultural development (Deveci, Gultekin and Bayir, 2009; Wikipedia, 2009).

During the 18th National Education Council, it was underlined that value education should be actively incorporated within every level of formal and non-formal education and that necessary regulations should be enacted in order to effectively employ mass media streams to raise public awareness about value education (MNE, 2010). Distance learning is a crucial channel offering the opportunity to use mass media devices and its new technologies for education. Various educational problems are tackled through use of distance learning in many parts of the world. The first contemporary distance-learning model to have been used in Turkey is Anadolu University distance education system. This system has been helping those wishing to have a vocation and those others hoping to improve their educational backgrounds (Demiray, 2010).

Literature review shows that there are several approaches in value education (Sunal and Haas, 2002; Superka et.al, 1976). Following are general guidelines as to how these approaches can be employed within distance learning.
**Inculcation**
This approach aims to instill and internalize certain values in students and to change the values of students so that they can more nearly reflect certain desired values (Cengelci, 2010). Activities targeting value education can be conducted across several courses within distance learning. For instance, some short stories can be placed in coursebooks in order to guide the students, and animations of these stories can be incorporated within TV programs. This approach facilitates value education through participation into various activities within the scope of Community Service Course included in the curriculum of distance learning.

**Clarification**
This approach makes the individual aware of his/her emotions, beliefs, values, strengths and weaknesses, helps him/her own the honor of life. This one investigates the ways how students state their value choices, how they evaluate them, and how they use the values in their daily lives (Akbas, 2008). Within this approach, it may be possible to enclose several problem-solving activities into the coursebooks or courses conducted through video-conference method so as to make students think about their own solutions. Related dramas can be broadcasted via TV or radio programs in order to help students with their decision making skills. Similarly, several pages on values can be spread among inside the course books. These pages on values may include a problem situation, a two-to-three paragraph text, a part of a movie, or a painting.

**Moral Development**
Moral dilemmas can be questioned through group discussions to be held in e-learning courses with the aim of supporting moral development of students within distance learning system. Anchored by a teacher, these moral discussions offer students the chance to verbalize what they think about the dilemma and to defend their standpoint.

**Analysis**
The aim of this approach is to help students employ scientific research and thinking process to be able to solve problems they face concerning the values (Doganay, 2009). Problem cases about values can be derived based on the life of an important person, and these can be provided to the students via books, television, and other e-learning opportunities within distance learning. Since this approach depends on the questions posed by the teacher about the case study, it is perfectly appropriate for educating adults.

**Character Training**
Character training is defined as the process to help students understand basic ethical concepts, bond with these concepts, and change their behaviors in accordance with these values (Cengelci, 2010). Within this approach, it may be possible to conduct e-meetings, make use of cooperative learning activities, design tasks to improve consciousness, and teach conflict management via utilizing the learning tools of distance education.

Value approaches above can be applied by associating them with relevant units and topics in several courses within distance education. Literature on value education points that a majority of the works focus on primary education, and that these works generally cover subjects such as teachers’ and students’ opinions concerning the value education, instructional programs and coursebooks, and the effectiveness of approaches employed in value education (Akbas, 2009; Balcı, 2010)
There are few studies where value education and distance learning are examined together. However, as stated by Sivaswaroop (2009) citing Johnson (1991), distance learning should not only strive to teach skills and information, but also values.

This study has been designed to draw attention on value education within distance learning and to determine the opinions of students who are already aware of value education since they completed a related course about the necessity of value education within distance learning system. Anadolu University Open and Distance Education System plays a major role in tackling educational problems in Turkey with its one million seven hundred and fifty thousand students and more than one and a half million graduates.

Along with meeting the demand for higher education in our country, this system also trains personnel for national education, health sector, religious studies, agriculture, police, military police, navy, army, and air force (Anadolu University, 2014). The number of individuals having value education will dramatically increase through use of various approaches to equip them with values targeting physical, intellectual, moral, esthetic socio-economic, and political aspects of personality (Quisumbing and Leo, 2005) within Anadolu University Open and Distance Education System. Directly or indirectly inclusion of value education into the system following this study is expected to contribute significantly to social order and a society composed of effective citizens.

Purpose of the Study
The aim of this research is to determine the opinions of university students who completed value education course and who are familiar with the distance learning system of Anadolu University about providing value education through distance learning system. Accordingly, answers for the following questions have been sought:

What do university students think about;

- the necessity of value education for a society?
- the necessity of providing value education to students within distance education system?
- the value education process for the students within distance education system?
- the social benefits of providing value education to students within distance education system?

Limitations
The findings of this study are limited with the opinions of sophomore and senior students who took the elective course on value education and who study Social Studies Teacher Training Program at Faculty of Education, Anadolu University during 2013-2014 academic year.

METHOD
Aiming to determine what university students think about offering value education within distance learning system, this study has been completed through semi-structured interview technique based on qualitative research approach.
Participants
This research has been conducted with students studying Social Studies Teacher Training Program at Faculty of Education, Anadolu University during the fall term of 2013-2014 academic years.

Totally, 15 teacher candidates who already took the value education course participated in the study. Since being aware of value education and having scientific knowledge on it was deemed important, basic selection criteria were to have completed ‘Value Education Course’ and to be familiar with distance learning system of Anadolu University. Because the only course on value education is included in the curriculum of Social Studies Teacher Training Program at Anadolu University, the research has been conducted within this course in this program.

Criteria sampling, one of the purposeful sampling methods, has been used in the study, and voluntary students who took the Value Education Course participated in this research. Of all the participants, 12 are sophomores, 3 are seniors, and 10 are females and 5 are males. Of all the subjects interviewed for the research, 2 are students at both Faculty of Education and Open Education Faculty, and one of them graduated from Open High-School.

Data Collection
In this research, a semi-structured interview form was prepared in order to determine the opinions of university students about providing value education within distance learning system. Pilot interviews were conducted with two university students following the advice of field experts so as to establish the content validity of the interview form. By this way, potential difficult points impeding the clarity of the questions on the interview form were identified and necessary adaptations and corrections were carried out.

Prior to the interviews, all students were informed about the research, and consent forms were signed by all the participants. All interviews were audio-recorded. All interviews were completed in January, 2014.

Data Analysis
Content analysis, one of the data analysis approaches, has been employed for data examination. As dictated by content analysis, following steps were followed for data analysis; data coding, labeling themes, categorization of the data in accordance with the codes and themes, and interpretation of the findings (Yıldırım and Simsek, 2005). In this sense, answers given for the interview questions were descriptively defined, then coding was carried out, related codes were gathered under a title, themes were formed, and findings were put under relevant categories. The reliability of the research has been settled through double analysis of the data by two researchers, and by using the formula ‘P (Agreement %) = [ Na (Agreement) / Na (Agreement) + (Disagreement)] X 100’ (Miles & Huberman, 1994). The result of the formula is P = % 98 which meant that the research is reliable.

FINDINGS
In this section, findings are presented in tables, and participants’ opinions were quoted where necessary. Table: 1 displays participants’ answers regarding the question about the necessity of value education for a society.
Table: 1

Opinions of university students about the necessity of value education for a society

<table>
<thead>
<tr>
<th>Value education is necessary for a society.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals should absolutely gain values either in family or at school.</td>
</tr>
<tr>
<td>Every human should have values such as honesty, respect, and tolerance.</td>
</tr>
<tr>
<td>There is a need to adopt values for daily life.</td>
</tr>
<tr>
<td>People should have moral values.</td>
</tr>
<tr>
<td>Interpersonal relations should be organized.</td>
</tr>
<tr>
<td>It is necessary to have values to be useful for a society.</td>
</tr>
<tr>
<td>Value education is the most significant field of education for a society.</td>
</tr>
<tr>
<td>Effective citizens should be furnished with values.</td>
</tr>
<tr>
<td>Values contribute a lot to personal development.</td>
</tr>
</tbody>
</table>

Participating students believe that value education is of crucial importance for a society. Regarding value education as a necessary component for a society, students stated that individuals within any society should absolutely be taught about the values in order for the social order to prevail. What makes value education compulsory are the fact that each member of a society should bear values such as honesty, respect, and tolerance, the necessity to arrange daily life and interpersonal relationships, and the need to raise individuals adopting moral values.

Similarly, participants also mentioned that value education is essential in terms of being beneficial for a society, raising effective citizens, and personality development. University students underlined that value education is the most significant educational field for any given society.

One of the participants (S.4) stated the following with respect to the necessity of value education for daily life:

*An overview of the society clearly displays the need for value education in many fields. An adult smokes, and throws his cigarette away when he is finished. People without values act like this. If you collect the cigarette butts in the streets, you may easily pile a huge butt-dump. Providing value education for the members of a society may be a remarkable precaution to stop this cigarette-dump.*

Likewise, participants think that value education matters significantly in terms of arranging relationships in daily life, ensuring that people turn into effective individuals with steady personalities enhanced by values such as honesty, respect, and tolerance.

Table: 2 depicts the opinions of university students who already completed value education course about the necessity of offering value education to students within distance learning system.
Table: 2
University students’ opinions about the necessity of providing value education to students within distance learning system

| Students within distance learning system should be provided with value education.  |
| Distance learning is a vast tool to spread value education throughout the whole country. |
| Unethical behaviors can be eliminated. |
| People living in far away spots can be accessible. |
| Workplaces will be full of fair, honest, and hardworking workers. |
| Professional ethics can be attained. |
| Having values matters more than having professional knowledge. |
| It raises awareness of values. |

| It may not be beneficial to provide value education to students within distance learning system.  |
| It is too hard to gain values. |
| Even face-to-face education can’t succeed in value education. |

Students who already took value education course think that their peers in distance learning system should be given value education as well.

Participants underlined that distance education reaches out to many students and that training those students on value education would mean training the entire country, which proves the usability of distance learning for value education.

Underpinning that a majority of the students in distance learning system work at the same time, participants believe that unethical behaviors can be eradicated and that raising fair and honest workers with a well-balanced code of ethics can be facilitated through value education. Emphasizing that gaining values is of more significance than having professional knowledge, university students stated that their peers in the distance learning system should absolutely be equipped with values. The least outcome of providing value education to students in distance learning can be a well-educated level of awareness of regarding values. Following are opinions of a university student (S.3) about the necessity of giving value education to students within distance learning system and how unethical behaviors can be stopped by this way.

*I have some experience since I graduated from an open high-school. For example, some people took exams instead of others, and this led to injustice. Students may be furnished with an awareness and consciousness concerning honesty through value education, and such unethical behaviors can be diminished or eliminated. Furthermore, open-education students should also be considered as mothers, fathers, and workers. Training them on values would improve the society as a whole.*

Holding the belief that furnishing students with values is a tough and long-winded process, few of the participants said that even face-to-face education had to tackle many difficulties in value education, and that, therefore, it might be a useless effort to try value education for students within distance learning.
A university student (S.14) stated his/her opinions as follows:

_We do not gain some values in the classroom while we study value education course. So, I’m not quite sure how beneficial distance learning can be for value gaining, I guess what is taught would not transfer from the class to practice. It is of vital significance how to present value training through open education. It wouldn’t be useful if students have to study the subject from a book and then have to take a multiple-choice exam about it._

University students in this research think that distance learning has a tremendous influence for value education with respect to its extensiveness in reaching a seriously wide population.

Highlighting the difficulties of providing value education, some of the participants mentioned that value education can’t be conducted through distance learning.

The opinions of university students who already took the value education course about how to present value education to students within distance learning are shown in Table: 3.

<table>
<thead>
<tr>
<th>What can be done within the value education process targeting students in distance learning system according to the university students?</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV and radio can be used</td>
</tr>
<tr>
<td>TV programs can be prepared</td>
</tr>
<tr>
<td>TRT-School can be used</td>
</tr>
<tr>
<td>Movies highlighting values can be shown on TV.</td>
</tr>
<tr>
<td>Animations can be prepared</td>
</tr>
<tr>
<td>Personal stories can be scattered among various media settings</td>
</tr>
<tr>
<td>Radio programs can be prepared</td>
</tr>
<tr>
<td>Technological means can be employed</td>
</tr>
<tr>
<td>Video-conferences can be conducted</td>
</tr>
<tr>
<td>Value education can be turned into a project within distance learning</td>
</tr>
<tr>
<td>E-certificate programs can designed</td>
</tr>
<tr>
<td>Face-to-face education can be utilized</td>
</tr>
<tr>
<td>Seminars can be organized at workplaces where a great many of workers are also students in distance learning system</td>
</tr>
<tr>
<td>Value education course can be delivered</td>
</tr>
<tr>
<td>Value education centers can be established in several cities</td>
</tr>
<tr>
<td>Coursebooks can be used</td>
</tr>
<tr>
<td>Values can be spread in coursebooks</td>
</tr>
</tbody>
</table>

Participating students stated that value education could be presented through integration with distance learning. In this sense, tools of distance learning such as TV and radio programs, video-conferences, and e-certificate programs can easily be employed for value education. Similarly, examples and stories about values can be put inside various coursebooks. Stories and movies underlining values may be broadcasted in order to efficiently make use of the TV system. Participants think that value education course may be incorporated into TV and radio programs.
within distance learning. Likewise, value education centers that would offer seminars can be established in some cities, and in this way, value education can be supported through several face-to-face organizations. A university student (S.11) stated the following as to how value education can be given to students within distance learning system:

Value education centers can be founded in some cities with a high number of open-education students such as Diyarbakir and Ankara, and value education course can be provided in a face-to-face setting through monthly seminars. In this way, students would feel that they are valuable for their university. Since value education is very important for both individuals and societies, these centers might be very resourceful in terms of raising awareness and producing a society in which all the individuals know themselves.

Based on the research findings, one can conclude that value education can be provided through TV and radio programs, video-conferences, and coursebooks within distance learning system. Participating university students were asked what kind of benefits it would bring to provide students in distance learning system with value education, and their answers are given in Table 4 below.

<table>
<thead>
<tr>
<th>Social benefits of providing value education to students within distance learning system according to university students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social order can be achieved</td>
</tr>
<tr>
<td>The society gets organized</td>
</tr>
<tr>
<td>It contributes to formation of a society composed of honest people</td>
</tr>
<tr>
<td>Differences are respected</td>
</tr>
<tr>
<td>A more peaceful and happier society emerges</td>
</tr>
<tr>
<td>Sensitivity for ethics increases</td>
</tr>
<tr>
<td>A huge group of people are furnished with values</td>
</tr>
<tr>
<td>It helps raising effective students</td>
</tr>
<tr>
<td>It makes people fair</td>
</tr>
<tr>
<td>People become more responsible</td>
</tr>
<tr>
<td>Rules are followed</td>
</tr>
<tr>
<td>People adopt positive attitudes</td>
</tr>
</tbody>
</table>

As for university students, training students in distance learning system about values may yield socially significant benefits. According to the participants, offering value education to a mass body of people from many different layers of society may contribute seriously to the formation of a more peaceful and happier society composed of honest people. Educating the majority of people in a society about values help people adopt positive attitudes, lead to social order, and increases sensitivity towards ethics. Besides, the number of effective citizens grows vastly. A university student (S.8) said the following about making value education accessible for a huge group of people through distance learning system:
By reaching out to as many people as we can, we may appeal to a high number of individuals in a society. Through distance education, we first reach the individual in person, then to his/her family and friends, and finally to every nook and cranny in a society. In this way, the number of people appreciating the importance of value education, acting accordingly, and respecting differences will significantly increase.

Conducting value education through distance learning may tremendously and positively contribute to social order and efforts to raise effective citizens, hence, the future of a country.

CONCLUSION AND SUGGESTIONS

The opinions of participating university students who took the value education course about administering value education through distance learning system have been presented under several categories; these are the necessity of value education for a society, the necessity of conducting value education for students within distance learning system, the process of value education through distance learning, social benefits of conducting value education for students within distance learning system.

Participating university students believe that value education is necessary for a society. Research findings indicate that education is the primary way to furnish individuals in a society with values. In addition, research findings also point to the significance of value education in order to establish a society composed of individuals who love, respect, and tolerate each other and who hold moral values. As stated by Scapp (2003), the need for value education is underlined by the threat that the whole humanity is under, namely wars, terrorism, and human rights violations. Durkheim (2004) believes that events leading to corruption can’t be avoided unless moral forces in a society start acting and people exert genuine efforts for social interests. Since moral goals aim a society as a whole, it won’t be wrong to say that a society consisting of people with moral values would have healthier structures.

Participants stated that value education process could be organized and conducted via use of TV and radio programs, video-conferences, and e-certificate programs within distance learning system. As pointed by Bozkaya (2006), students can ask questions, perform group works for given tasks, try to understand and interpret the information through synchronous interaction, reach main sources of information, and discuss their opinions online via video-conference system, also known as virtual classroom in the literature.

A value education course augmented and strengthened with video-conference may have similar effects to the one conducted in face-to-face settings.

Emphasizing that distance learning system is a considerable source of power in terms of equipping individuals and a society with values, participating university students mentioned that conducting value education within distance learning is important due to several reasons. Sivaswaroop (2009) expressed that values are constantly learned within lifelong learning, and therefore, open and distance education is more advantageous with respect to increasing sensitivity towards ethics and values as compared to traditional learning settings. Giving the example of how national values can
be taught to Turks living in Europe, Toker Gokce (2008) stated that desired cultural values could easily be transferred to individuals living in different places since distance learning erases the spatial differences. According to Toker Gokce (2008), any government wishing to preserve the identity of a nation state can reach out to its citizens living in different countries and can furnish them with national values through use of distance learning systems. Distance education can be employed both to protect national culture and to spread global culture. Tuncer and Taspinar (2008) analyzed Suanpang et.al’s (2004) study in which traditional education and distance learning were compared in terms of efficacy, skills, values, and ease of use, and underpinned that distance learning was more effective in improving every aspect including the values.

Referring to the difficulties of value education, several participants mentioning that even face-to-face education falls short in terms of value training said that distance education would have no influential role in teaching values to people. However, Koksoy (2004) believes that e-learning will be a remarkable alternative to traditional learning and that it will play a major role in terms of meeting the educational needs at every level. Based on the findings of this research and what Koksoy thinks about it, one can conclude that distance learning may well be employed for value education.

E-learning services within Anadolu University Distance Education System started in 1994 in order to offer the chance to study through computerized settings together with TV programs and books. Students can study and learn some courses at their own pace through interaction by using related soft-wares within computer-assisted learning settings (Anadolu University, 2014). Value education course to be conducted through e-learning services provided by Anadolu University can have an influential role in gaining values to the society.

Participating students who already completed value education course mentioned that administering value education course through distance learning system may have prominent contributions with respect to establishing a more peaceful and happier society composed of honest people.

This may help the formation of a developed society with effective citizens. Some scholars use the term value education as an umbrella definition to cover ethics and citizenship education (Wikipedia, 2009).

As expressed by Sugur and Savran (2006), Anadolu University Open and Distance Learning System stands as the one with the highest number of students among the other examples throughout the world. Students in Open Education in Turkey have different personal aims and they are mainly adults with families professionally working as a member of an occupational group as civil servants or workers and living mostly in urban areas. Providing value education to such a crowded student group with diverse profiles would undoubtedly and dramatically contribute to social order and raising effective citizens.

Kaltsounis (1987) stated that values are intrinsic source of power affecting and controlling an individual’s behaviors. Since values help individuals contain their behaviors, value education poses a great potential with respect to maintaining social order. Offering value education to students in
the open education system may help establish a society consisting of individuals who can control their behaviors. Following can be suggested based on the research findings:

- Value education should be provided within distance learning systems either directly or indirectly. In terms of direct approaches, value education course can be incorporated into the programs. As for indirect approaches, values can be scattered across different tools and topics.
- Online instructional settings such as websites can be designed for value education.
- Value education centers can be established for distance learning students in different cities, and these centers can regularly organize value education activities and events.
- Various programs and shorts to be broadcasted on TRT-School can be prepared.
- Several projects aiming to furnish open education students with values can be developed, and project results can be depicted via related research studies.
- Research studies can be conducted to indicate the efficacy of administering value education within distance learning system.

BIODATA and CONTACT ADDRESSES of AUTHOR

Assoc. Prof. Dr. Handan DEVECI is a member faculty of Anadolu, Department of Primary Education, Social Studies Education Programme. She got her bachelor’s degree and Master’s degree in curriculum and instruction, and she has a PhD in primary school education. She completed her master's and PhD theses on social studies education. She achieved the title of Associate Professor in “Social Studies Education” area. She is still working in Anadolu University Education Faculty as head of the department of Social Studies Education.

Her studies focus on teaching learning processes to develop social studies education. Additionally, her research topics include values education, teaching current events, and local society studies.

Assoc. Prof. Dr. Handan DEVECI
Anadolu University
Educational Faculty, Eskisehir, TURKEY
Tel: +90 (222) 335 0580 ext: 3583
Mobile: 0505 401 2778
Email: hanil@anadolu.edu.tr

REFERENCES


Baydar, P. (2009). İlköğretim beşinci sınıf sosyal bilgiler programında belirlenen değerlerin kazanım düzeyleri ve bu süreçte yaşanılan sorunların değerlendirilmesi [The level of value acquisition which is determined in fifth grade primary school and the evaluation of the problems which are encountered in that process]. Yayınlanmamış yüksek lisans tezi. Çukurova Üniversitesi, Adana.


Sivaswaroop, P. (2009). Ethical and value sensitization through open and value and value sensitization through open and distance learning. *Turkish Online Journal of Distance Education-TOJDE, 10*(3).


ABSTRACT

This paper shows the results of research activities for building the representative model of the learning process in virtual spaces (e-Learning). The formal basis of the model are supported in the analysis of models of learning assessment in virtual spaces and specifically in Dembo’s teaching learning model, the systemic approach to evaluating virtual learning by Badrul H. Khan, and the Cybernetic model for evaluating virtual learning environments. The e-Learning model is systemic and of feedback by nature. The model integrates the society, Institution of Education, virtual training platform, virtual teacher and students, and finally the assessment of student learning in virtual learning spaces supported by ICT. The model consists of fourteen processes. Processes are defined taking into account the following dimensions: identification, academic, pedagogical, educational, formative, evaluative, assessment of virtual learning and technological. The model is fundamental to the management of e-learning supported by ICT, justified by the fact that it is an operative model of the teaching-learning process in virtual spaces. The importance of having an operative model in virtual education is to project the management and decision in virtual education. Then the operational, administrative and decision phases will allow the creation of a set of indicators. These indicators will assess the process of virtual education not only in students but also in the virtual institution.

Keywords: Virtual education. ICTs, virtual learning platforms, process virtual learning, virtual assessment

INTRODUCTION

The Information Technology and Communications - ICT in the context of the knowledge society are fundamental tools for an education which attempts to be: open, asynchronous, distance, anywhere in the world and in any language. Virtual education supported by ICT should be a high quality one in order to ensure virtual learning. Ensuring the quality of e-learning requires understanding the process of virtual learning. Then this article is the first phase of a research process. This phase, based on the analysis of the state of the art of virtual training process, constructs a representative model of the formation process in virtual spaces.

Building the model required to: Understand the impact of ICT on the development of human talent of the XXI century. Analyze the theories of learning and their relation to ICT. Build the concept of virtual learning assessment. Analyze existing approaches to virtual learning process. Analyze the process of virtual learning evaluation.
Understanding virtual training process will allow the research to: Identify the relationship between the virtual institution and society. Understand the process of virtual learning with ICT. Identify the basis for designing a management model in virtual learning.

THEORETICAL BASIS OF THE MODEL THAT REPRESENTS THE PROCESS OF eLEARNING

The main objective of the evaluation of e-learning education quality aims at ensuring the virtual student learning. In this way, different authors have researched the assessment of quality in e-learning. The main representatives, without doing a thorough analysis, have worked on:

Quality Assurance in e-Learning, by Means of;
- applying accreditation processes to ensure the quality of an academic program in order to analyze “The eminent role of accreditation of online and distance learning programs on the transformation of quality measures in higher education” (Cabuk, Taner & Cabuk, 2013);
- using the concept of best practice as the “Use of ICT in Distance Education at Hanyang Cyber University: Possible Best practice for the Institute of Adult Education” (Mariki, 2013);
- ensuring the quality of e-Learning courses as is the case of “Which aspects of e-learning do students consider important for their learning achievements and course satisfaction?” (Paechter, Maier, & Macher, 2010, p. 222).
- using benchmarking to ensure the quality of on line courses as in the case of “A very positive example of the benchmarking approach is the development of European benchmarks for assessing the quality of e-learning in HE in the frame of the European project E-xcellence” (Hadzhikoleva, Hadzhikolev, Doneva, & Totkov, 2010); and
- using models such as “Models of e-Learning adopted in the Middle East” (Mirza & Al-Abdulkareem, 2011).

Some of this cases have used intelligent systems as in “A web-based intelligent report e-Learning system using data mining techniques” (Blagojević & Micić, 2013).

Ensuring the Quality of;
- e-Learning contents with check list using the e-Learning Courseware Quality Checklist (eLCQC) (Sung, Chang, & Yu, 2011);
- the course of e-Learning by interviewing participants (administrators, educational technologists, tutors and students) “taking into account the feedback for the student” (Jara & Mellar, 2010);
- e-Learning by using adaptative systems correlated with student’s learning styles as in the case of “Exploring the relation between learning style models and preferred multimedia types” (Ocepek, Bosnić, Nančovska Šerbec, & Rugelj, 2013);
- e-Learning transforming the traditional didactics in ways that extend beyond efficient delivery or entertainment value (Garrison, 2011); and
- course content of e-Learning certifying the quality of the information, as is the case of “Assesing information quality of e-learning systems: a web mining approach” (Alkhattabi, Neagu, & Cullen, 2011).
Assessment of the e-Learners:

- The SEQUEL core quality framework (Dondi, Michela Moretti, & Nascimbeni, 2006, p. 44);
- “Assessment of student achievement with respect to the objectives of the Programme” (Flasdiick, Michel, & Amaury Legait, 2006);
- The standard ISO/IEC 19796-1, used “...for assessment and evaluation of learning processes...” (Pawlowski, 2006, p. 72);
- The EFQM Excellence Model, which “...proposes different methods for the self-evaluation” (Stracke, 2006, p. 95);
- “Assessment of the learning sucess/progress” in Wirth (2006, p. 106); and
- Using rubrics in order to do assessment in e-Learning as in "Using wikis to develop student teachers’ learning, teching and assessment capabilities" (Lai & Ng, 2011).

The model representing students’ learning process in virtual spaces is supported theoretically on:

- The Teaching-Learning Model (Dembo, 1988).
- Cybernetic model for evaluating virtual learning environments.
- In the next section, this theoretical support will be developed.

Dembo´s Teaching-Learning Model.
Regarding the selection of different methodological elements, Tomei (2005) states that

“The selection of educational objectives, instructional strategies and classroom activities by the teacher, are partially based on their beliefs about the nature of learning. Dembo (1988) shows the impact of teachers in the learning process in their model of teaching and learning”. (Tomei, 2005, p. 23).

Dembo’s model is showed in

Figure: 1, below:
Analysing Dembo’s model in Figure 1, it can be identified that when designing instructional objectives (3. -These figures refer to number in Figure 1.-), it is necessary to take into account both academic content (1.) and learners behavior (2.). This means that the fulfillment of learning objectives depends on both the design of the content and students behavior during the learning process, specially regarding to their interest and motivation for learning. Learning principles (4.), individual differences (5), and teacher behavior (6.) determine the planning and operation of an instructional method (7).

This means that pedagogic principles, didactics, and learning principles must support the method of instruction, but when the method is being in operation, it must necessarily consider students’ individual differences.

Thus, it is possible to have a method of instruction (or teaching) supported by technological resources, but if teachers, technically and academically, are not using those resources, it can be concluded that unused or misused technology is a waste. Both instructional objectives (3.) and the method of instruction (7.) converge in the teaching and learning process (8.), being understood that the fulfillment of the responsibility of teachers to teach and the student to learn converge in the teaching-learning process. Process that depends on the method of instruction to meet the learning objectives that necessarily requires compliance evaluation (9.), which includes the assessment of student learning.

Dembo’s model is applicable to the specific context of class attendance. The model represents the flow of actions in the process of a face to face class, which is one of its strengths. However, for virtual training in this model it should be considered:
The learning platform supported by ICTs.
Training profiles that transcend specific virtual class.
The integration of the virtual course or curriculum of the Institution of Virtual Education (IVE) to the external environment in their relationship with society.

In summary, even though the Dembo’s model is useful as a starting point for building the representative model of the learning of students in virtual spaces with ICT, the model must necessarily be improved with the relevant considerations in virtual education.

The Systemic Approach to Evaluate e-Learning.
The proposed e-learning evaluation by Badrul Khan, in 1997, integrates eight components that make up the evaluation system in virtual training - ICT. These are identified as "Eight dimensions of E-Learning" (Khan, 2005, p. 15). Keep in mind that for the construction of these dimensions, Khan was based on several studies of program review, resources and elearning tools (Barry, 2002; Chin & Kon, 2003; Dabbagh, Bannan-Ritland & Silc, 2001; El-Tigi & Khan, 2001; Gilbert, 2000; Goodear, 2001; Kao, Tousignant, & Wiebe, 2000; Khan & Smith, in press: Khan. Waddill & McDonald, 2001; Kuchi, Gardner & Tipton, 2003; Mello, 2002; Romiszowski, 2004; Singh, 2003; and Zhang, Khan, Gibbons & Ni, 2001; quoted by Khan, 2005, p. 14).

The eight dimensions proposed by Khan (2005) are: Institutional, Pedagogical, Technological, Interface Design, Support Resources, Ethical Issues, Management, and Evaluation. Each dimension is composed of sub dimensions of eLearning in the systems approach. The dimensions and sub dimensions are as follows:

"Institutional dimension: Administrative Aspects; Academic Aspects; Students Services.

Dimension of Management: People, processes and products; Computer Management; Administration and development of E-Learning content.

Technological dimension: Institutional planning; Hardware; Software.

Pedagogical Dimension: Analysis of content; Analysis of audience; Analysis of objectives; Design approach; Instructional strategies; Organization; Strategies (Blending) for hybrid classroom face to face - virtual.

Ethical dimension: Cultural and social diversity; Political problems; Geographical diversity; Diversity of learners profiles; Digital Diversity; Labelling; Legal aspects.

Dimension interface design: Page and website design; Content design; Navigation; Accessibility; Usability and Testing.

Dimension of support resources: Online Support: Resources; and Dimension of evaluation: Evaluation of content; Evaluation of E-Learning environment; Institutional Assessment Program levels and E-Learning; Assessment of students”. (Khan, 2005, p. 5).

This approach strength is its systemic cohesin structure by integrating class levels, program and virtual institution. These actions interact with content assessment and evaluation of virtual students. However, the weakness of the approach, despite being systemic, is that it doesn’t show, in a clear way, students’ learning process in virtual learning spaces with ICTs. Additionally, it ignores IVE’s relations with the external environment of the institution.
Therefore, if the weaknesses of this approach are improved, its systemic perspective is essential to represent the formation of students in virtual spaces.

Then, Dembo’s model, being by processes, can be complemented with Khan’s systemic approach, in order to have a more comprehensive process model that faithfully represents the actions performed on subject formation through virtual spaces supported by ICTs.

Cybernetic Model for Evaluating Virtual Learning Environments.

One of the structural weaknesses of both Dembo’s model (1988) and Kahn’s approach is the lack of interaction between the model and the respective approach and the actions of the Institution of Virtual Education (IVE) and the Society. These relationships in the context of the knowledge society are critical.

This is justified because virtual organizations such as e-Learning, e-Training and e-Business, use virtual programs offered by education organizations. In this sense the IVE should meet the needs of society, in terms of e-Learning.

Meeting the needs of society demand for educational institutions continuously monitoring of both the performance of the graduates and the design of new offerings, or closing programs and virtual classes, which are not considered relevant to social needs at the levels of autonomous community, country, Union (European Union), national or intercontinental context.

Cybernetic model is the solution to the weaknesses above mentioned. The Viable System Model (VSM) is a feedback system that makes three systems interacts in an organized way. These systems are:

- The student applying to the virtual institution.
- The Virtual Education Institution.
- The Society.

The interaction process that takes place in the aforementioned systems is performed through key operational communication channels. Communication takes place between the administration of the virtual institution and social organizations (family, business and industry, state, etc.).

Based on the definition of Cybernetics proposed by Nobert Wiener as "the science of control and communication between the animal and machine" (Wiener, N. quoted by Beltran, J., 1999, p. 18), the VSM is used to represent the process of communication and control between the subject and the computer via the learning platform supported by ICTs.

Furthermore, based on the relationship established by Stafford Beer, who linked cybernetics to the organization.

"Cybernetics studies the problems of communication and control in complex systems. It studies the effectiveness of the organization [...]. Cybernetics systems are based on complex networks likely, interacting among themselves... How are such systems organized? They seem to be cohesive, self-regulating and stable but adaptable to change and able to learn from experience". (Beer, quoted by Beltran, 1998, p. 18).
The interrelationship of Cybernetics with the organization in the Viable System Model – VSM is formal basis, which confirms:

Firstly, systemic components of the VSM: subject institution of education and society are complex systems.

Secondly, as complex systems their effectiveness depends on their organizational structure, which confirms that complex but highly organized societies are effective, fulfilling the relationship between organization and effectiveness for other systemic components of the VSM.

Thirdly, the communication and the control between components, in the VSM, are essential, justified in terms of the three cybernetics control principles: "Feedback, homeostasis and the black box" (Beltran, 1999, p. 19).

Feedback, in the VSM, must exist in terms of communication and control among components: Society should feedback actions of educational services offered by the institutions, but the institution must provide feedback to the students about their virtual learning process, which is also double way process - student institution and institution - society.

Homeostasis is also accomplished in the interaction among the VSM sub systems: students as a living sub system must be adapted to the virtual institution as a social sub system and the social sub systems institution and society also try to achieve homeostasis, ie, the institution must adjust to the changing conditions of society. The black box principle is also true in the VSM sub systems according to Cybernetics; in the sense that they are systems in which "it is very difficult to discover exactly how the inputs are transformed into finished products" (Beltrán, 1999, p. 19).

This is the difficulty of assessing learning and virtual learning. To assess the fulfillment of the mission of an educational institution:

- How teaching actions become learning in the student knowledge schemata?,
- how educational activities integrally formed students through the curriculum program offered by the institution?
- to assess the accomplishment of standars or the constitution of a country.
- How ensure the right to education of its citizens by the state?

These are not easy questions to answer in terms of inputs and outputs in the transformation process that is held within each subsystem.
In summary the VSM and its components meet the needs in the different subsystems: student, institution and society, by using the key operational communication channels in the interaction between the institution and society, and in the interrelationship of the virtual institution with the student. The importance of considering the relationship between the organization and its needs is justified:

- By the identification of the needs of the organization: resources, functions, processes and outcomes.
- By meeting the needs of the organization. This necessarily must use indicators to carry out the assessment. Based on the "individual needs proposed by Maslow, it is possible to perform a similar hierarchy in organizations" (Beltrán, 1999, p. 18), as it was shown in Figure: 2.

According to individual needs pyramid proposed by Maslow, first, the human being must satisfy their basic human needs such as food, housing, health and clothing. Second, they have to meet the security needs which assure human survival because it is not possible to build social communities without necessary safety conditions. Third, people tend to meet their social needs as human beings which support their learning on communication skills and validation of truth conditions with the other; so family, school, church, the state, among others, are social organizations in which human beings must meet their needs.

Finally, self-esteem is the basic condition for achieving motivation and consequently maintaining subject motivation and achieving self-realization. Meanwhile, the organization or
institution (in the context of research, the Institution of Virtual Education (IVE)) must satisfy the following requirements:

**Demand**
The fundamental demand in the IVE is to provide the virtual educational service to society. This is done using human knowledge as products built on content and virtual actions stored in the platform.

Only if the educational service is purchased by the society, the virtual institution will survive. Additionally, only if the virtual educational IVE offers quality service, it will meet the demands in virtual education, in this case, the virtual formation of society.

**Resources**
Providing an educational service to society implies the use of resources such as human, financial, technical, administrative, academic and organizational ones. Although, educational organizations are complex, the institutions offering the service of virtual education are even more complex.

Then, in this sense the fulfillment of the IVE mission becomes more complicated and therefore the satisfaction of the needs of the resources required in the IVE becomes more complex.

**Direction**
"(...). When a company lacks a precise sense of direction, it becomes a reactive system that simply responds to the forces acting on it" (Beltran, 1999, p. 12). The IVE cannot exist without government. This is justified because of the changing conditions of technological resources and educational approaches that can be applied in virtual learning. The direction in IVE refers to planning, organization, management, operation or performance of the function of virtual education, control, projection and prospective.

**Be Efficient**
The IVE must be efficient in administering the aforementioned resources. This means that virtual educational activities must be performed with the possible minimum number of resources of all kinds. If this is not met, the IVE does not fully accomplish its mission due to the lack of resources. Additionally, the IVE may disappear as an institution because of wasting resources.

**Be Efficacious**
Given that the service offered by the institution is an educational service, and being the research here reported educational in nature, in the management area, it necessarily requires the concepts of quality, service and price. It is clear, therefore, that in economic terms, if the educational service offered has a quality guarantee (international accreditation), it costs to the user, because it is doing what the institution should do, that is, teaching with quality.

**Be Effective**
The IVE is effective if it ensures the effectiveness and efficiency, in terms of satisfaction of the virtual students and society.
CONSTRUCTION OF THE REPRESENTATIVE MODEL OF THE LEARNING PROCESS IN VIRTUAL SPACES

The theoretical basis of the representative model of virtual training process has been developed in the previous section. The model represents the learning process of the virtual student. This process is accomplished with navigation and the performance of activities of virtual teaching through a learning platform supported by ICTs. The model has the following characteristics:

- It represents the process or virtual learning.
- The closed-loop model is fed back with a unidirectional input derived from the process and bi-directional braiding relations between the Institution of Virtual Education (IVE) and the needs of society input. Therefore, it is a model that is based on the Viable Systems Model-VSM.
- The model is systemic and is outlined in its general processes in Figure: 3.
- The model, in their internal processes, uses Dembo’s teaching and learning model (1988) in their specificities of class attendance but adapted to virtual spaces with ICT training, and additionally takes foundations of systemic approach to assessing learning virtual student by Khan (1997).

The model is shown schematically in Fig. 3. Figure 4 shows the model with each of its processes numbered.

![Diagram](image)

**Figure: 3**
Macro model representative of the virtual learning process.

The representative model of virtual learning shows the set of processes that supports the construction and operation of the virtual course and its educational and technological functional units in connection with the needs of society.

The model is presented in a sequential way (Figure 4), making it clear that as a close loop and feedback model, it does not follow a linear way in its processes, and any component of the
model can be returned to its predecessor. Therefore, only for clarity purposes in the graphic presentation, components are presented in a sequential and numbered manner. The Figure 4 is described as follows:

- Based on the Cybernetic model, the Institution of Virtual Education (IVE) identifies the needs of society (14\(^1\)), in terms of needs in virtual spaces. To meet these needs the IVE offers a set of programs or virtual classes. A bi directional interaction (\(\leftrightarrow\)) society - institution is presented. In the interaction, the society also recognizes the social and educational work of the institutions that provide the service of virtual education.
- Identified the social needs at the virtual level, the IVE proposes to construct the virtual course (1). The online course must necessarily define their identity (1). The course can be offered as an online class or a set of online courses that constitute a virtual curriculum. The online course is built with the participation of experts in: virtual education, computer and education, and graphic designers. It must be done according to manufacturing standards for online courses. These standards should be used in order to achieve specifications in building virtual environments. Some of these standards are those of the Institute for Electrical and Electronic Engineers Learning Technology Standards Committee (IEEE LTSC); the Advanced Distributed Learning (ADL), which has developed SCORM; the IMS Global Learning Consortium; and finally those of the Aviation Industry CBT Committee (AICC) (Hernández, 2002).
- Once the course has been created and the social system has interacted with the IVE, the IVE and virtual student systems start interacting. The IVE decides the stage of organization and administration of online course (2). This stage requires the course properly identified and cataloged as academic offerings in the academic structure of the IVE. Additionally, the course must ensure functionality in order to be provided to the virtual students. This, therefore, requires organization and management in computer education to ensure the functionality of the virtual course.
- As the organization and management of the virtual course have to be functional, the course must have learning profiles (3) for the virtual student. These profiles may be professional, occupational or skills. Professional profile refers to knowledge acquired by students of the content offered by the virtual course. Occupational one refers to what is required by the society for the operation of a professional in the industries. Competence (or skills) profile is the know-how acquired in context by the student in the virtual classroom.

The next steps in the process of e-Learning are supported on Dembo’s teaching-learning model (1988), adapted to e-learning supported by ICTs.

- Achieving learning (or training) profiles of students through the online course requires the use of a virtual course pedagogical approach (4), which must be consistent with the Education Program Project (EPP), the Institutional Educational Project (IEP) and the curriculum frameworks that support the virtual course.
- With a clear pedagogical approach (4), the learning objectives of the virtual course (5) are defined. Subsequently the didactic to be used in the course should

\(^1\) Figures refer to numbers in Figure 4.
be designed. For this it is necessary to identify content and activities to be developed in the course, these are the pedagogical and didactic actions in the virtual learning process.

- The educational and teaching activities of the virtual learning goes ahead by using teaching strategies (6) regarding didactic, responsible for answering the question, How to teach some content in an online course?. At this point, the processes of teaching and learning intertwine as didactic (in the model, teaching practice) is applied (7). The teaching process is implemented on the platform of distance learning supported by ICTs, a process which allows the student to learn at virtual level. This is the formative component of the virtual student learning, because it is the point at which the theoretical foundation of structural learning theories and different learning approaches are used. Among the theories, it can be mentioned Conditioning (Ramnero, & Torneke, 2011, p 99; Weiner, Nelson, Randy, & Mizumori, 2012, p 19), Gestalt (Blunden, 2010, p 153; Wertheimer, Spillmann, & Wertheimer, 2012, p 79), Genetic-Social Psychology, and Dialectic Psychology (Mayo, Sharples, & Moen, (eds.), 2012, p. 10).

At this stage is important to emphasize that the pedagogical, educational and training components of the process cannot be interpreted as elements disjointed, sequential and without any intersection in the process. Conversely, they necessarily must be interpreted in a holistic sense, which integrates the theoretical and practical elements of teaching into the virtual learning process, where they are necessarily interacting with each other.

- Once teaching actions are put into practice through the didactics (7) via virtual platform, student learning is assessed. The student evaluation is explicitly identified in the model as the "process of assessment of student learning (8)". At this stage the junction of the teaching and learning processes in the virtual course is concluded.
- Having accomplished the above processes, the expected results of the virtual learning (9) are obtained. These results are:
  - i) The individual assessment of student learning, and
  - ii) the use of assessment in the evaluation process of the virtual course.

The processes of evaluating individual student learning (8) and expected results in the process of virtual learning (9.) make up the evaluation component in the virtual student formation process supported by ICTs.

At this point in the building of the process of virtual learning model, the support of Dembo’s teaching-learning model (1988) finishes.

- Once achieved the student training at the virtual level, there is a social and professional integration of students (12) into the labor market, where it is really validated whether the virtual course was useful for the student. Student professional performance (13) for meeting society needs (14) depends upon their professional integration; and at this point, the process returns to the starting point of the model by interacting society ↔ IVE. The action of the IVE will be the reconstruction of the virtual course.
- The evaluation process of the technological platform (10) is actually done throughout the model, but it is presented at this point for purposes of clarity and its goal is to achieve better performance or operation of the virtual
course in terms of hardware technology, software, communications (Comware) and organization of the computer center (orgware) at the level of human skills required for the operation of the virtual learning platform.

- Finally, there is an ongoing process of improvement of the virtual course (11), which becomes point back to generate a second version or subsequent versions of the virtual course, which would be interpreted as a reconstruction of the virtual course (1) returning to the starting point of the process of the model and thus ending the construction of the proposed model.

The architecture of the representative model of the formation process in virtual spaces is presented at the chart in Figure 4, with their respective numbered components (1 ... 14.). Each $C_i$ ($1 \leq i \leq 15$) is the indicator that is compared with other virtual institutions.
Figure: 4
Representative model of the virtual learning process
FUTURE RESEARCH

The architecture of the virtual education process model (Figure No. 4) as a model of the process is the basis for building the operating model of evaluation of online learning for meaningful and active learning (e-Olal). The projection of the research is divided into three phases: i) The construction of the core layer of virtual learning (represented by the operative model e-Olal). ii) The construction of intermediate layer identified as operational management of virtual learning. iii) Construction of the management layer of virtual learning (represented by the Systems Management Indicators Online Learning - SYMIOL). e-Olal Model validation is planned with the participation of universities and virtual education institutions, representing the continents of Europe, America and Australia. Finally, the three layers form the Management System of Virtual Learning. This system is an online information system developed with the support of technology databases.

CONCLUSIONS

The construction of the representative model of the learning process in virtual spaces allowed to:

- Identify the steps of the virtual learning.
- Support the process of e-Learning with the following bases: A systems approach (Khan, 2005). An educational model (Dembo, 1988). A Cybernetic model.
- Integrate educational theories with the formation in virtual spaces supported by ICT.
- Project the elaborated model through the following phases: operational management and e-learning management.
- View a Management System of Virtual Learning to be built in the future.

BIODATA and CONTACT ADDRESSES of the AUTHOR

Jose CAPACHO is an assistant professor at the Universidad del Norte (Barranquilla, Colombia). He did his doctoral studies at the University of Salamanca (2008) (Spain), in Learning Processes in Virtual Spaces. Professor Capacho earned his Master studies in Education at the Pontificia Universidad Javeriana (Colombia, 1996). His undergraduate was made in Systems Engineering in the Universidad Industrial de Santander-UIS (Colombia, 1982). Professor has over 30 years of service at Universidad del Norte. During this time, as Coordinator of the System Program, he has lead projects of National and International Accreditation of the System Program (Universidad del Norte), with institutions such as the Colombian National Accreditation Council (NAC) (1998, 2005, 2012);and the Agency Accreditation Board for Engineering and Technology (2003, 2005). As a teacher he has participated in the renewal accreditation process of the System Program with ABET Accreditation International (2013, 2014).

Assistant profesor José CAPACHO
Km. 5 Autopista a Puerto Colombia,
Universidad del Norte, Barranquilla, COLOMBIA
Telf: +57 5 3509279 / +57 5 3509268 Fax: (95) 35098852
Email: jcapacho@uninorte.edu.co
REFERENCES


Cabuk, S., Taner & Cabuk, A., (2013). Accreditation of online and distance learning programs: OnLine GIS education program experience. Turkish Online Journal on Distance Education-TOJDE, 14 (1), Article 20. ISSN 1302-6488


Mariki, B. (20013). Use of ICT in Distance Education at Hanyang Cyber University: Possible Best practice for the Institute of Adult Education. *Turkish Online Journal on Distance Education-TOJDE, 14*(2), Article 11. ISSN 1302-6488


EDUCATION FACULTY STUDENTS’ VIEWS ABOUT USE OF E-BOOKS

Murat YALMAN, Lecturer
Dicle University
Diyarbakır, TURKEY

ABSTRACT

Parallel to technological developments, numerous new tools are now available for people’s use. Societies adapt these tools to their professional lives by learning how to use them. In this way, they try to establish more comfortable working environments. Universities giving vocational education are supposed to teach these new technologies to their students to help them become successful in their future profession. Books that serve as the basic sources of information for education faculty students are increasingly being transformed into e-books parallel to these new technologies. In line with these developments, identifying students’ approaches and preferences regarding e-book could help determine the needs regarding this type of new technologies. In line with this purpose, the present study aimed at determining the views and preferences of preservice teachers regarding e-book as well as their levels of general knowledge about this technology. The participants of the study were 1179 students attending an education faculty (660 female, 519 male). In the study, qualitative and quantitative methods were used together. The results revealed that the students did not have sufficient knowledge about e-book and that they regarded any digital source on the Internet as e-book. Of all the participating preservice teachers, only 6% of them had sufficient knowledge about e-book.

Keywords: e-books, reading books, digital printing, e-book readers.

INTRODUCTION

Today, technological developments have fundamental effects not only on social structure but also on the current education system. Use of technological renovations for instructional purposes increases the quality of education and makes it easier to reach most individuals in a society. Widespread use of computers in a number of areas has increased the variety of software used in this platform. With the invention of the Internet designed to connect computers with each other, the number of individuals using these devices has rapidly increased.

Today, thanks to easy access to the Internet, the concept of information technologies has occupied the agenda. Gathering a number of sources used for educational purposes under a single roof has made it possible to reach the necessary information in a shorter period of time. The rapid spread of digital versions of printed sources in digital environments has helped lay the foundations of electronic publication. These digital sources available on the Internet are known as a general name given to combinations of software and equipment that allow reading
texts of various formats such as doc, txt and pdf with the help of electronic devices other than
the computer (Cliff & Dearnley 2003; Vidana 2003; Lam et.al., 2009). Based on another
definition, e-book is a new product of information technologies that facilitate reading as well as
reading information. Also, e-book is a written text that can be read with the use of a PC, PDA
(personal digital assistant) or a reader specially designed for this purpose (Kang et.al., 2009).
The variety of devices (PC, PDA, mobile phones and so on) used by e-book users to read e-books
results in use of different software. This has caused companies dominant in the electronic
market to design devices that allow reading e-books (Wilson, 2003; Moore, 2009).

Because of the technologies used in the initial devices designed by companies to read e-books
as well as because of the problems with the user interfaces, new designs were made based on
the interpretations of printed-book readers. The problems with the old commercial products
were overcome, and the new designs gained such new functions as background LED-lighting to
allow reading in dim light; and larger font size that help readers with visual impairment
(Siegenthaler et.al., 2010). Despite the technological developments and renovations,
technological differences and deficiencies in devices used to read e-books are thought to be a
serious obstacle to adoption of e-books (Slater, 2010; Wilkie & Harris, 2010). It is also
important for users to know about the functions of the devices used to read e-books. Thus,
being aware of the advantages and disadvantages of e-books before buying them could have
positive influence on users’ views about e-books.

Advantages and Disadvantages of E-Books
In line with the increasing number of e-book users, advantages and disadvantages of e-books
have been a matter of debate among researchers. In addition, the most important advantage of
e-books is that hundreds of books can be stored even in low-capacity flash memories
(Wittmann, 2000). When the heavy weight of books that students are supposed to carry in
their school bags every day is taken into consideration, storage of hundreds of e-books in low-
capacity flash memories may itself cause users to prefer e-books (Poftak, 2001). Another
advantage of e-books is that they help save large amounts of paper and thus help avoid cutting
trees, the national wealth of countries (Rukancı and Anameric, 2003). Digital versions of
printed books will decrease the cost of publication of books and help introduce new authors
(Day, 2001). It will also be easier to store and preserve e-books since they do not occupy any
physical space as printed books do (Palmer & Donaldson, 2001). In addition, small-font
problems experienced by those who prefer printed books can also be avoided as it is possible to
increase the font-size in e-book reader devices (Day, 2001). Also, the background light in e-
book reader devices allows users to read even in darkness (Rukanci and Anameric, 2003).

Besides all these advantages, one prominent disadvantage of e-books is that users who buy
cheap e-book reader devices just because of their low prices are likely to experience headache
or eye-strain due to low screen resolutions of these devices (Herring, 2001). In addition,
security gaps involved in commercial e-books cause business concerns regarding copy-right
issues and illegal distributions of e-books (Palmer & Donaldson, 2001, Hodges, Preston, and
Hamilton, 2010, Arch 2012). Also, the fact that there is no standard determined for the formats
supported by e-book readers makes it necessary to pay attention to the software support of e-

For the purpose of protecting the resources in a country, it is fairly important to introduce this
technology to individuals with a habit of reading printed books. In our country, with the e-book
project supported by the Ministry of National Education, both students and teachers are
expected to use this technology. If preservice teachers learn such technological tools during
their higher education at university, then they may overcome the possible problems they are likely to experience in future regarding the use and teaching of these technologies. Teachers meet these technological tools not during their university education but during their teaching in future at school and experience adaptation problems (Yalman and Tunga 2013). In this respect, it is important to determine to what extent the preservice teachers adopted and knew about the subject examined in the study.

METHOD

In the study, the qualitative research method was used. The qualitative method is a research technique in which such qualitative data collection methods as observation, interview and document analysis are used. The qualitative research technique is sensitive to the natural environment, necessitates the participatory role of the researcher, involves a holistic approach to events, allows revealing the perceptions, provides flexibility in the research design and requires inductive analysis (Yıldırım & Simsek, 2004). While determining the preservice teachers participating in the present study, the criterion sampling method was used. The purpose was to examine the participants’ views about e-book in detail. The departments included in the study were those with the highest number of students in Education Faculty. Determining the preservice teachers’ views and knowledge about e-book and e-book devices is important since these devices and digital books are used by teachers as well as students within the scope of FATIH Project supported by the Ministry of National Education. In the study, in order to obtain findings regarding the causes and results of the research data, interviews were held with 68 preservice teachers to determine their views. In line with the views of the faculty members from the departments of Turkish Language Education and Education Sciences about the content unity of the questions determined the students interviewed, an open-ended questionnaire was prepared to determine the views of the students.

Data Collection Tool

A questionnaire was conducted to determine the demographic backgrounds of the students participating in the study and their general knowledge about e-book. The questionnaire developed was made up of two parts. The first part of the questionnaire included three items regarding the personal characteristics of the students. As for the second part of the questionnaire, there were eight items to determine the participants’ views about e-book. In line with expert views prior to the data collection process, the interview forms were prepared and distributed to the students to determine their views in writing. Of all the students participating in the study by filling out the interview form, 68 of them whose responses to the interview form were found consistent were interviewed on face-to-face basis. It is important for validity to provide direct quotations regarding the results obtained from the students and to explain the results accordingly. For this purpose, some of the data collected in the study were presented without any related interpretation to increase credibility (Wolcott, 1990). Different from scales, questionnaires do not reveal any total scores. Therefore, technically, there is no such issue as reliability and validity as in scales. As the measurement tool used in this study was a questionnaire, no reliability analysis was conducted.

Study Group

The participants of the present study were 1179 students attending the departments of Elementary School Teaching, Pre-School Teaching, Religion and Ethics Teaching, Elementary School Mathematics Teaching, French Language Teaching, English Language Teaching and Science Teaching at Education Faculty. Table 1 presents statistical information about the study group.
Table: 1
Study Group Profile

<table>
<thead>
<tr>
<th>Variable</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>660</td>
<td>55.98%</td>
</tr>
<tr>
<td>Male</td>
<td>519</td>
<td>44.02%</td>
</tr>
<tr>
<td>Departments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary School Teaching</td>
<td>510</td>
<td>43.26%</td>
</tr>
<tr>
<td>Science Teaching</td>
<td>138</td>
<td>11.70%</td>
</tr>
<tr>
<td>Pre-School Teaching</td>
<td>78</td>
<td>6.62%</td>
</tr>
<tr>
<td>French Language Teaching</td>
<td>48</td>
<td>4.07%</td>
</tr>
<tr>
<td>English Language Teaching</td>
<td>102</td>
<td>8.65%</td>
</tr>
<tr>
<td>Elementary School Mathematics Teaching</td>
<td>219</td>
<td>18.58%</td>
</tr>
<tr>
<td>Religion and Ethics Teaching</td>
<td>84</td>
<td>7.12%</td>
</tr>
<tr>
<td>Total</td>
<td>1179</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Of the all the participants in the study, 55.98% of them were female, and 44.02% of them were male students. As for the distributions of the preservice teachers with respect to their departments, 43.26% of them were from the department of Elementary School Teaching; 11.70% of them from Science Teaching; 6.62% of them from Pre-School Teaching; 4.07% of them from French Language Teaching; 8.65% of them from English Language Teaching; 18.58% of them from Elementary School Mathematics Teaching; 7.12% of them from Religion and Ethics Teaching.

Data Analysis
The data collected in the study were analyzed with the content analysis technique. The basic procedure followed within the scope of the content analysis method included gathering the similar data within the framework of certain concepts and themes and organizing and interpreting these data. In line with the purpose, the data collected were first conceptualized and then arranged logically according to the concepts obtained, and the themes explaining the data were determined (Yildirim & Simsek, 2004). In order to conduct various analyses regarding the themes determined and to make related comparisons, categories were formed (Coolican, 1992). In this way, the qualitative analyses conducted helped obtain more detailed and in-depth information.

FINDINGS
The preservice teachers’ responses to the subjects found in the questionnaire were examined and divided into various categories. By gathering the similar responses to each question item, the groups were formed as a result of the analysis of the students’ views about the questions directed in the questionnaire. Among these groups, the data obtained via the responses were presented in Tables including the related frequency and percentage distributions.

Besides the categories formed in line with the students’ responses to the items found in the questionnaire, face-to-face interviews were held with the preservice teachers regarding the research questions related to these categories. The participants’ views about the common categories were evaluated in their own categories.
Preservice Teachers’ Views about e-Book

Among the education faculty students, 18% of them reported no views about the use of e-book and stated that they even did not know what it meant. One of the preservice teachers said “During our education processes (elementary school and high school education), I never used any electronic devices. Because the schools I had attended were state schools and because these schools had limited sources, I got introduced to such technologies as the Internet and computer after I started my university education. Although I heard of FATIH Project and e-book both via the printed press and via the news of the radio or on television, I haven’t needed to investigate them as they don’t interest me.” Regarding the same subject, another preservice teacher stated “I have read or heard about them a few times before, but I don’t know what they are.” The results revealed that the students based their lack of knowledge about such technologies on certain excuses. The most popular response given by the preservice teachers regarding the reason for their lack of knowledge about e-book was “I don’t have time or money. I live in a dormitory. I’m not interested in technology at all, and technological tools terrify me. I don’t need any of them.”

Table: 2

<table>
<thead>
<tr>
<th>What is e-book?</th>
<th>F</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t know</td>
<td>212</td>
<td>18</td>
</tr>
<tr>
<td>A book that works on a computer</td>
<td>259</td>
<td>22</td>
</tr>
<tr>
<td>Electronic texts</td>
<td>649</td>
<td>55</td>
</tr>
<tr>
<td>Books in a digital environment</td>
<td>59</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>1179</td>
<td>100</td>
</tr>
</tbody>
</table>

Some of the students defined e-book as books that worked on a computer. It was found out that 22% of all the participants thought so. One of the preservice teachers providing this definition stated

“*It’s the image of a book on the computer screen. You may not always find a traditional printed book easily. However, with the help of books saved in your computer, you can easily reach the necessary information. I can keep hundreds of such books in my computer, and I will have a number of options at a time.*” Another preservice teacher said “*I read longer written texts like summaries of books, books, informative texts and articles on my computer*”, while one other preservice teacher mentioned “*written texts, articles, romans and newspaper columns that I read on my computer.*”

When these definitions were taken into consideration in general, it was found out that the students regarded e-book only as software running on a computer.

Of all the preservice teachers who reported views about e-book, 55% of them stated that e-books were just electronic texts that could be obtained via the Internet and used with the help of a computer.

Therefore, they believed that e-books could be used with the help of such devices. Regarding this, one of the preservice teachers said
They are files that we download from the Internet to do the assignments given by our teachers during the lessons. We can run these files with certain software installed on our computers.”

In addition, among the participants, only 5% of them stated that they knew what e-book was.

Preservice Teachers’ Views about the Features of e-Book

Among the participants, 39% of them reported that “I know nothing about the features of e-book and I have never used it”, while 13% of the preservice teachers pointed out that e-book allowed reading even in darkness. During face-to-face interviews, one of the preservice teachers mentioned the features of e-book saying

“Thanks to their screen lights, it could be easier to read e-books saved on a computer, laptop or on a tablet computer. To me, it is impossible to read (traditional printed) books in darkness or in dim light. Thus, e-book seems to have more advantages.”

Another preservice teacher, while reporting that reading printed books in daylight is much pleasing, mentioned both advantage and disadvantage of reading e-book saying

“I think e-books allow me to read articles, romans or other written texts in dark without any difficulty when I use them in my computer. However, reading a book on the computer screen is not really easy. The lighted screen tires my eyes. Thus, I don’t have any pleasure reading e-book as much as I do while reading traditional printed books in daylight.”

<table>
<thead>
<tr>
<th>Features of e-book</th>
<th>Opinion</th>
<th>F</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t know</td>
<td>460</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Reading in darkness</td>
<td>153</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Portable</td>
<td>436</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Easily accessible</td>
<td>130</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1179</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Of all the participants, 37% of them stated that e-book was portable thus easy to carry. During the interviews, the preservice teachers stated that they paid special attention to the good use of their own books; that some people were not so careful in using printed books; and that they thus did not want to share their books with others. Regarding this, one of the preservice teachers reported that

“The spread and low-cost of flash memories mean that all students can buy and carry such technologies. I have at least three such flash memories in my pocket. I can easily download the files and books from the Internet and carry them in my flash memories. However, if it were a printed book, it wouldn’t be possible for me to carry so many books with me.”
Another preservice teacher said:

“\textit{I can easily save my course-related sources in portable disks and take them with me. Well, this is quite a good feature. However, this feature has a bit different importance for me. I don’t fancy giving my own books to other people because I don’t like other people using books carelessly. Thus, it is quite good to keep books in digital format, and I can share them with friends without any hesitation.}”

Thinking that digital copies of e-books could be given to anyone, the preservice teachers pointed out that they felt themselves in more comfort while sharing their e-books with their friends when compared to printed books.

Another feature of e-book, which was related to easy access to such books, was mentioned by 11% of the preservice teachers.

During the interviews, one preservice teacher claimed that it was quite easy to find e-books or printed books via the Internet saying

“\textit{I can easily access e-books at any time in any place if I have the Internet and a computer. Also, I use the Internet even to buy printed books because the book I am looking for may not always be found in the bookstore I visit. Thus, we have to order printed books via the Internet. Well actually, it is easy to search for a book on the Internet.}”

Views about where to get e-Books
Analysis of the preservice teachers’ responses to the questionnaire revealed that 39.19% of them were not knowledgeable at all about how to get an e-book. It was seen that most of the participants regarded any document on the Internet as an e-book.

One of the preservice teachers interviewed stated that e-books would be provided by the Ministry of National Education saying

“\textit{Are you talking about the books in tablet computers which will be distributed by the Ministry of National Education to the teachers and students based on a current project supported by the government for a few years? My elder sister is a high school teacher, and a tablet computer was given to her. I had the chance to examine that tablet computer. I saw the e-books in her tablet computer, yet I didn’t open them. Thus, I think we will be able to get such books from our future institutions we will be teaching in.}”

Referring to the FATIH Project, the participants pointed out that such sources would be provided by the government. Reporting a similar view, another preservice teacher said

“\textit{From both printed media and visual media, I have learnt that such technological devices have been given to students and teachers for free at state schools. Thus, I believe e-books will be provided by the government. However, as I haven’t graduated from university or got employed as a teacher, I don’t know whether I will get such books for free or not.}”
Almost half of the participants reported that they could get e-books via the Internet. Regarding this, one of the preservice teachers said

“Availability of the Internet in any place has made it easier to purchase such products in these environments. Especially buying books or searching via the Internet is easier. With the help of Google, I can rapidly learn where I can find a book. I don’t have to visit bookstores. If variety is of concern, then I can find everything via the Internet.”

<table>
<thead>
<tr>
<th>Where to get e-books?</th>
<th>F</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, I don’t know where to get them</td>
<td>462</td>
<td>39,19</td>
</tr>
<tr>
<td>Yes, I know</td>
<td>717</td>
<td>60,81</td>
</tr>
<tr>
<td>Total</td>
<td>1179</td>
<td>100</td>
</tr>
</tbody>
</table>

Regarding where to get e-books from, some of the preservice teachers stated that they could save e-books for free in their computers by downloading them from download websites. During the interview, one of the preservice teachers said

“I am a student, and I have a limited budget. The Internet is a very important source for me. Without any payment, I can reach a number of documents, books or information I need.”

Regarding the question of “Then, how do you do this?”, one of the preservice teachers said

“There are websites where we can download such books and publications on the Internet. You just sign up these websites. Following this, you enter the information about the necessary source in the search engine available on the website. If the source you are searching for is found on the website, you immediately find it. If not, then you can reach different other sources related to the information you entered. What you are supposed to do is just to make your selection and click on ‘download’.”

Regarding another question,

“Such websites are generally not legal. Do you know anything about this?”, the preservice teacher said “Yes, in general, they are not legal, but what can I do? Legal websites are generally quite expensive. Thus, I prefer to meet my needs in that way.”

The fact that the language support of these illegal websites is generally English requires users of these websites to know at least one foreign language.

Preservice Teachers’ Views about e-Book Reading Software

In the study, it was found out that the preservice teachers did not have much knowledge about the software used to read e-books. Of all the participants, 71,27% of them did not know which software to use for e-books. Among the participants, 28,73% of them, who said
"Yes, I know", mentioned the names of such programs as Adobe Reader, Ms Word and Ms ExcelHtml. During the face-to-face interviews, one of the preservice teachers said

"Based on my search on the Internet, I can say that the files found on the Internet are mostly in the file-format of "pdf". When I searched in ‘Google’ to learn which software to use for such files, I ended up with Acrobat Reader. I installed that program on my computer, and I no longer had problems with such files." In addition, when asked about the association made between this program and e-book, the same preservice teacher said "When I opened the files I had downloaded from the Internet for my homework, I saw books included in these files. Thus, I thought this program could also be used to read e-books."

Table: 5
Frequency and percentage distributions of preservice teachers regarding the software and file-formats used for e-book reading

<table>
<thead>
<tr>
<th>Software used to read e-books?</th>
<th>Opinion</th>
<th>F</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, I don’t know which software to use</td>
<td></td>
<td>840</td>
<td>71,27</td>
</tr>
<tr>
<td>Yes, I know</td>
<td></td>
<td>339</td>
<td>28,73</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1179</td>
<td>100</td>
</tr>
</tbody>
</table>

In the study, it was seen that the students’ insufficient knowledge about e-books influenced their responses in this category. The fact that students unable to use technological tools for educational purposes lack the necessary knowledge about information technologies explains why they are not familiar with the concept of e-book. Regarding this, one of the preservice teachers said

"I can’t make good use of even the technological tools I’ve got introduced to during my undergraduate education, and e-book is quite unfamiliar to me. It is impossible for me to say which software to use to run a technological tool that I haven’t fully understood."

Preservice teachers’ views about the devices used for e-books
The fact that the brand and kind of a device do not matter for the software used in technological tools allows such software to run even if they are too complex or simple. Regarding the technological devices to be used for e-books, 46,31% of all the preservice teachers were not knowledgeable at all about which devices to use for e-books. In this respect, during the face-to-face interviews held with the preservice teachers who responded as

"Yes, I know" (53,69%), one of the preservice teachers said "I think e-books can run on computers and tablets. I believe so because e-books are found on the Internet. Now that these devices have Internet connection, they should allow reading e-books", while another preservice teacher reported "as it is possible to read e-books via the Internet, I think they can run on phones or on tablets. However, it is quite difficult to read books on phones because they have small screens, which makes my eyes tired."
Table: 6
Frequency and percentage distributions of preservice teachers regarding the devices used for e-book reading

<table>
<thead>
<tr>
<th>Devices that allow reading e-books</th>
<th>F</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, I know</td>
<td>633</td>
<td>53.69</td>
</tr>
<tr>
<td>No, I don't know</td>
<td>546</td>
<td>46.31</td>
</tr>
<tr>
<td>Total</td>
<td>1179</td>
<td>100</td>
</tr>
</tbody>
</table>

Due to the fact that the electronic tools used by students to reach the necessary information are quite varied with different names, the participants in the present study reported their views and made comments about such devices without knowing much about the purpose of use of these devices. In addition, none of the preservice teachers who reported their views about the devices that allowed reading e-books used the phrase ‘e-book reader’.

Preservice Teachers’ Views about Their Preferences of Printed Books versus e-Books
The preservice teachers’ responses to the question of “Which do you prefer? e-books or printed books?” revealed that 19.15% of them did not report any preference; that 54.88% of them favored printed books; and that 25.97% of them preferred e-books. During the interviews, one of the participants who favored printed books said

“I prefer printed books because I don’t enjoy reading without turning the pages of a book or without the smell of the paper. Thus, I don’t like e-book at all.”

Similarly, another preservice teacher said “I favor printed books because I want to touch the book while reading. Also, I don’t want to spend much time in front of the computer.”

Table: 7
Frequency and percentage distributions of the preservice teachers’ preferences of e-books and printed books

<table>
<thead>
<tr>
<th>e-book or printed book?</th>
<th>F</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Those who did not make any selection</td>
<td>226</td>
<td>19.15</td>
</tr>
<tr>
<td>Printed book</td>
<td>647</td>
<td>54.88</td>
</tr>
<tr>
<td>e-book</td>
<td>306</td>
<td>25.97</td>
</tr>
<tr>
<td>Total</td>
<td>1179</td>
<td>100</td>
</tr>
</tbody>
</table>

One of the preservice teachers who favored printed books mentioned the health-related aspect of e-book saying

“I prefer printed books because I like turning the pages. Also, I think e-book is unhealthy as it emits radiation.” Regarding the same point of view, another preservice teacher reported “e-book is better in terms of reaching more information in a shorter period of time but I think it is harmful for health. Thus, printed books are much better in terms of health, and I also believe in the spirit of printed books.”
One other preservice teacher mentioned both the permanency of information given in printed books and the health-related harm of e-books saying

"I prefer printed books because it is not possible for any information to get lost. Also, e-books are not good for eye-health. Thus, I favor printed books."

One of the preservice teachers who preferred e-books said

"I prefer e-books because I can gather more than one book in a single tablet and use them practically in my daily life as well as in my education life."

Likewise, another preservice teacher said

"I prefer e-book as it saves time while reaching the necessary information. Also, it helps avoid paper consumption. I think paper saving could itself be the mere cause of my preference of e-books."

One other preservice teacher mentioned the importance of keeping pace with technology saying

"I don’t know how to use e-book, but I would prefer to use it. To me, I can keep up with the technology if I use it."

One preservice teacher who found himself/herself competent in Internet use said

"To be honest, I prefer e-books because I can buy them via the Internet and easily pay for it. Also, I may sometimes have difficulty finding a necessary printed book in our local bookstores, but it is much easier for me to get the book I want via the Internet."

while another preservice teacher emphasized easy and practical use of the Internet and mentioned the reason for the need for e-books saying

"I prefer e-books because I can find more alternatives regarding the subject I am searching for on the Internet. I can also reach more detailed information about any subject via the Internet."

In order to reveal why some of the preservice teachers did not choose either e-books or printed books, face-to-face interviews were held with them.

During the interviews, one of the preservice teachers said "in some cases, I prefer e-books, and sometimes, I prefer printed books because if I want to have more detailed information about any subject, I prefer to use e-books. However, if I just want to pass good time, then I read printed books. Thus, as the two options have different benefits and advantages for me, I haven’t made any selection."

Another preservice teacher said

"I prefer both because e-book allows me to reach the necessary information in a shorter period of time. As for printed books, they should be read all the time, not
just at a certain time. In villages, sometimes, there are power-cuts in electricity, and when your computer has an empty battery, you can’t open and read e-books. In contrast, you can read printed books in such a case. In this respect, I didn’t make any selection as I believe both have different specific advantages.”

DISCUSSION

This part includes the findings obtained from the preservice teachers. The students’ responses to the questionnaire and the findings obtained via the face-to-face interviews are presented under three headings.

Features and Definition of e-Book

Of all the preservice teachers, 18% of them reported that they did not have any knowledge about e-book. Among the participants who responded to the question of ‘What is e-book?’ as ‘I don’t know’, 22% of them referred to it as ‘books read in a computer’, while 55% of them referred to e-books as ‘electronic texts’. Regarding this, only 5% of the participants were found to provide satisfactory definitions of e-book. The face-to-face interviews held with the students revealed that they did not use technological tools at all before their higher education or that they were not encouraged enough to use these technological tools. The fact that the students were not able to make efficient use of the limited sources of state schools could be explained with the lack of technological tools as well as with the lack of teachers who can efficiently use such technological tools (Seferoglu 2004, Bahar et.al., 2010, Yalman et.al., 2013).

Categorization of the preservice teachers’ responses to the questionnaire regarding the features of e-books revealed that 39% of all the participants reported “I don’t know” and that 37% of them said they could carry hundreds of books with them in a flash memory (Mallett, 2010). While no participant reported views about paper consumption in the questionnaire, only two of those interviewed on face-to-face basis stated that e-books helped avoid paper consumption (Marshall & Ruotolo, 2002). None of the preservice teachers mentioned multiple-language support of e-books, which was the most important advantage of e-books when compared to printed books (Nathaniel, 2010). In addition, it was found out that the preservice teachers participating in the study were not much knowledgeable about e-books and e-book reader devices or about their features.

E-book Readers and File-Formats

Of all the participants, 39,19% of them did not know anything about where to buy e-books from. Most of the participants reporting “Yes, I know” stated that they bought e-books from “technology stores, Ministry of National Education, bookstores, download websites and schools”. All the preservice teachers interviewed on face-to-face basis who reported their views about where to buy e-books from stated that e-books could be purchased via the Internet or from online stores.

The preservice teachers did not have much knowledge about the file-formats and software to be used for e-book reading. Of all the participants, 71,27% of them reported that they did not know anything about “e-book readers and the related file-formats”. Categorization of the preservice teachers’ responses regarding the file-formats revealed that they mentioned the file-formats of “pdf, doc, xls and ppt”. The preservice teachers reported that they were not familiar with e-book readers and the related file-formats since they did not use them previously saying “I didn’t want to abase themselves by making comments about a subject I don’t know much about”. It was found out that the preservice teachers reported their views without
having much knowledge about e-book readers and related file formats. In the study, none of the preservice teachers from the departments of Elementary School Teaching, Religion and Ethics Teaching and Pre-School Teaching reported any views in this section of the questionnaire. In addition, the interviews held with the participants from the departments in question revealed that they experienced problems even with the use of the Internet and computer and that they did not want to suffer from such tools they were not familiar with.

Preferences of e-Books and Printed Books
Of all the preservice teachers participating in the study, 19,15% of them did not make any selection regarding printed books or e-books. The interviews held with the participants who did not make any selection revealed that they did not make any selection not only because they had never used e-books but also because they did not have the habit of reading books. In addition, the interviews also demonstrated that some of the students who did not report any related views did not make any selection as they thought both e-books and printed books had advantages specific to their own.

Among the preservice teachers, 53,69% of them were knowledgeable about the devices that could be used to read e-books. The interviews held with the students who reported that they knew about these devices revealed that they mentioned such devices as tablet computers, PCs or laptop computers. It was found out that none of the participants used e-book readers to read e-books. According to the results obtained in studies in related literature, not only the failure of e-book readers to support a number of file-formats but also lack of standard user interfaces in in e-book readers hinders the use and spread of these devices (Ahlroos & Hahto 2012; Kemp, Lutz, and Nurnberger 2012).

Of all the participants in the study, 25,97% of them preferred printed books. The categorization of the preservice teachers’ responses to the questionnaire revealed that the participants found printed books "healthier, less tiring for eyes, natural, traditional, permanent, more entertaining and beautiful and easy to understand". The interviews held with the participants who preferred printed books demonstrated that they mostly preferred printed books as these books are traditional.

In addition, the participants reported that their lack of knowledge about technology just caused them to prefer printed books. It was thus found out that the participants preferred printed books just because they were simple and easy to use when compared to e-books. It was found out that the participants who reported that e-book readers and tablet computers could be used as devices to read e-books found even these devices too complicated and thus preferred printed books. Pattuelli & Rabia, (2010), in their study, reported that e-book readers were simple and easy to use and that spread of such devices could help avoid prejudices against these devices. In studies examining students’ use of e-books revealed that more than half of the participants had never used e-books (Cassidy, Martinez and Shen 2012; Smyth & Carlin, 2012). Of all the participants in the present study, 25,97% of them preferred e-books. The interviews held with the preservice teachers revealed that all the participants preferring e-books had been using the Internet and computer for a long time. It was found out that most of the participants preferred e-books as they thought it was easy to use of e-books downloaded via the Internet in their courses.

With respect to their departments, the most reasonable views reported by the preservice teachers participating in the study were reported by those from the departments of Science Teaching, English Language Teaching and French Language Teaching. As for those who did not
CONCLUSION AND SUGGESTIONS

Preservice teachers’ approaches to the use of technological tools and their related knowledge levels have become increasingly important both for their professional lives and for their social lives in recent years.

When preservice teachers get introduced to electronic books during their undergraduate education, this will help solve the problems to be experienced by their future students at school where they will be employed. It was seen that preservice teachers still regard e-books as documents present in computer and Internet environments.

In order to overcome students’ related deficiencies and to support the use of technological tools, it is necessary for university libraries to provide preservice teachers with related facilities. When university libraries provide e-book readers, this will also help avoid the difficulties likely to be experienced while reading e-books (Rodzvilla, 2009). In addition, if students can borrow such devices, their level of knowledge about e-books may increase as well.

The fact that e-books, besides their numerous advantages, have a number of beneficial features makes it necessary for students to use this technology. Considering the fact that students can keep their course books in hand-size portable flash memories and take these e-books with them where they go, e-books will help students get rid of a big burden. Studies conducted demonstrated that students carrying heavy school bags full of books at younger ages are likely to suffer from backaches (Demir et al., 2012).

Considering the fact that preservice teachers attending education faculties are responsible for teaching how to use tablet computers and e-books within the scope of the e-book project supported by the Ministry of National Education, it is important to determine their views and knowledge levels regarding such devices.

Determining how students adapt this type of technological tools to their own education process will help overcome future possible deficiencies. In this respect, learning environments could be established by providing students with course schedules appropriate their curricula. Projects to be developed within the body of university could help overcome students’ related deficiencies by making it easier for them to obtain e-books and e-book readers.

By designing and developing university libraries in a way to provide service also in the electronic environment, it will be easier for these libraries to provide students with e-books. E-libraries could contribute to the use of the limited sources at universities (Yalman and Kutluca, 2012). Allowing students to borrow the e-books found in this digital environment will help raise students’ consciousness of e-books.
BIODATA and CONTACT ADDRESSES of the AUTHOR

Murat YALMAN got his undergraduate degree from the Computer Engineering Department at the Faculty of Engineering and Architecture at Lefke European University (North Cyprus Turkish Republic) in 1999. In 2010, he finished his Master's Degree in the Department of Information Technologies, Institute of Science, Bahçeşehir University. For the last 12 years, he has been working as an instructor at Ziya Gökalp Education Faculty, Dicle University.

Murat YALMAN, Lecturer
Dicle University, Computer Education and Instructional Technology, Diyarbakır, TURKEY
Phone Office: +90 412 248 80 30/8974
Fax: +90 412 248 82 57
Email: mumanenator@gmail.com

REFERENCES


IMPORTANCE OF KNOWLEDGE MANAGEMENT IN THE HIGHER EDUCATIONAL INSTITUTES

Ms. Sangeeta NAMDEV DHAMDHERE
Librarian, Modern College of Arts, Science and Commerce, Ganeshkhind, Pune, INDIA

ABSTRACT

Every academic institution contributes to knowledge. The generated information and knowledge is to be compiled at central place and disseminated among the society for further growth. It is observed that the generated knowledge in the academic institute is not stored or captured properly. It is also observed that many a times generated information or knowledge in the academic institute is not known to any one and remains as grey literature, which might be useful if proper recoding is maintained in the organization. In fact academic environment is treasure of knowledge but it is not organized properly and hence utility is also lacking and cause for the repetitions of the activity. This project is undertaken under Board of University and Colleges, University of Pune for finding importance of KM of past knowledge of an institute. Also study on data capture, data analysis, data categorization, data mining, data mapping, knowledge mapping, concept mapping, indexing, linking and repackaging of knowledge, tools, techniques, strategies and copyright issues in sharing this knowledge through knowledge base.

Keywords: Knowledge management, knowledge sharing, Tacit knowledge management, knowledge management strategies, knowledge management policies in higher education.

INTRODUCTION

Knowledge management (KM) is a new immerging field in the academic environment. Many upcoming conferences and seminars at national and International level are on Knowledge Management. Many International Universities are actively participating in KM related activities and doing research. It is now becoming popular in Education field due to need to disclose the intellectual power available in institution for sharing experiences. It has great potential and should have equal and even greater significance for education sector. Knowledge builds on knowledge and past events helps in generating new knowledge.

The main source of generation of knowledge is human efforts which are developed through conducting good educational activities, research activities and generating innovative concepts in the area of interest. All knowledge generating organizations like industries, R and D centers, and higher education academics from colleges to universities are in search of new concepts in their subject of interest and also contribute to knowledge through various means.

They are considered as “Knowledge Houses” where knowledge flows from teachers to students and new knowledge is created. The information generated is covered in different forms and
sources like books, journal articles, thesis or dissertations, technical reports, fact finding reports, case studies, patents, development of test methods and standards, different scholarly communications etc. Every academic institution contributes to knowledge. The generated information and knowledge is to be compiled at central place and disseminated among the society for further growth. It is observed that the generated knowledge in the academic institute is not stored or captured properly It is also observed that many a times generated information or knowledge in the academic institute is not known to any one and remains as grey literature, which might be useful if proper recoding is maintained in the organization. In fact academic environment is treasure of knowledge but it is not organized properly and hence utility is also lacking and cause for the repetitions of the activity.

Knowledge Management (KM) in educational institution makes good sense and a good combination of intellectual output of the academic organization if preserved well using technology. The KM efforts could be monitored by the libraries and disclose it along explicit knowledge to the users, but tacit knowledge compilation is difficult as it is preserved at individual level. But librarian could make better efforts in making available such kind of knowledge with the support of the knowledge developers using technology to capture tacit knowledge generated in the organization. In this role of each and every staff and student is very important as its not sole responsibility of Librarian.

Rashtriya Uchchatar Shikshan Abhiyan (RUSA) is giving importance to employability of the students. The new goal for educational institutions today is to develop such knowledge base of student’s knowledge (both tacit and explicit) including their capabilities and skills with the help of latest technologies. It will help to students to pick up their capabilities, talents, prior knowledge and experience and work on that to enlarge and adapt this knowledge more effectively and easier to cope up with present environment. This knowledge base can be useful to students as self motivator, self knowledge manager, team building, innovator and problem solving agent.

This research is for finding importance of KM of past knowledge of an institute. Also study on data capture, data analysis, data categorization, data mining, data mapping, knowledge mapping, concept mapping, indexing, linking and repackaging of knowledge, tools, techniques, strategies and copyright issues in sharing this knowledge through knowledge base.

**ORIGIN OF THE RESEARCH PROBLEM**

Based on the various considerations to develop a Knowledge Management or Institutional Repository or a Knowledge Base for an academic institution in the ICT era and digital media, it is found economical and useful similarly new emerging strategies which enhanced the accessibility to traditional, grey and institutional knowledge by developing open access to literature. Self archiving trends, sharing of thoughts using web tools are added in the process of KM development.

Developed countries have managed KM however developing countries are pursuing to this activity. In India among many projects few projects like "Shodh Ganga", “Vidya Nidhi”,”TKDL” projects and scholarly communications in the form of different publications, are developed to communicate information to users. To support such activities educational institutes have to initiate the development of Knowledge base, which may be benefited to develop a network of knowledge developed at academic institutional level using technology. A preliminary effort towards development of Knowledge Base for an academic institution will be tried in this project.
It is present need of an organization to transform and recreate themselves by destroying the existing knowledge system and by inventing new ways of thinking and doing. The knowledge has to built on its own, frequently enquires, intensive and laborious interaction among the staff, students and group of the institute rather acquiring knowledge from outside. The institutes going to involve in to cope dynamically with the changing environment needs to create information and knowledge efficiently. The staff and students should be active in innovation. Each individual in the institute must have responsibility to create new knowledge and transfer it into organizational knowledge.

Author observed that there are very few rare educational institutes in India we found who capture their students and teachers tacit knowledge too and preserve to give access to society to build new knowledge. These educational institutes conduct various activities and strategies for staff and students to inculcate research culture and create new knowledge(discussed in detail in this report).

Most of them are published as article, project reports or theses form and preserved. But apart from this explicit recorded knowledge many times tacit knowledge of people (hidden in the mind) is not recorded properly. In IT industry various strategies are applied to capture tacit knowledge of experts and they keep record. If not done and if expert leaves the job for better opportunity in between that industry suffers. Similarly selected tacit knowledge capturing activities must be recorded in educational institutes. They are no doubt will be used for submitting reports asked by various funding and grading agencies, universities, industries, foreign collaborations. Also to strengthen the alumni association also this Knowledge management practice will be very powerful.

RESEARCH OBJECTIVES

The main objectives of this research project are

- To create knowledge base of captured tacit and explicit knowledge of staff and students/Institute
- To study the application of ICT and web technology for creating knowledge base
- To share resources or knowledge of an Institute
- To preserve knowledge of an Institute
- To study the current situation and/or problems of knowledge management practices and strategies used in the selected NAAC “A” Grade academic institutes in Pune.
- To identify and analyze the development of knowledge management processes, strategies used including critical success factors of knowledge management.
- To organize and manage tacit as well as explicit knowledge of the organization
- To find out biggest hurdles in implementing KM in educational institutes.
- This article provide guidelines for educational institutes regarding collecting, capturing, analyzing, classifying, indexing, repackaging and sharing the explicit and tacit knowledge recorded and captured through various activities conducted in institutes for staff and students using technology.
REVIEW OF RESEARCH AND DEVELOPMENT IN THE SUBJECT

International Status
Knowledge management education sector is being spoken since 2000. Later few researchers like Nanoka, Takeuchi, Sveibi, Polanyi, etc developed different tools, methods, models and theories in this area. Some universities in United States have started pioneer introduction to KM since 2000. KM is seen there as a set of activities that help improvement of information and knowledge exchange in the decision making process.

Rowley (2000) mentioned that the educational sector has always been recognized as the focal point for various knowledge processes, namely, knowledge creation, dissemination and learning. We believe that effective knowledge management is of vital importance for: increasing the quality and efficiency of education and research, for retaining the best professors and researchers, for developing new curricula, for improving cost efficiency and for exceeding the limits of time and space allowing for the fulfillment of student expectations anywhere and at anytime. The goal of Institutes like Institute of the Study of KM in Education, ISKME, California were to help education institutions to enlarge their capacity of gathering and sharing information and knowledge, to implement that on troubleshooting, and to support research and continual improvement of their work (Petrides, 2003).

V. P. M’s polytechnic is a well renowned self-financed polytechnic in educational sector in Maharashtra. This institute works with the mission of “Imparting creative learning through innovative methodologies to expose the talents” since from its inception (1983). The knowledge workers (seekers) and knowledge seekers had together developed a good KM system. The perception of Knowledge Management among academic staff is that their work involves managing knowledge.

So they are the managers of their own knowledge and hence are already involved at some level in KM. The different recipes are to be used to transform ignorance into knowledge. Faculty uses all technology and tools to transfer the knowledge to students. Environment developed in the institute not only helps in knowledge transaction but also provides all opportunities to manage and develop knowledge to each individual.

Serban and Luan (2002) claimed that colleges and universities exist to create and share knowledge. Later in 2003 Tippins stressed that managing knowledge in HE is often very difficult because of several bureaucratic and cultural factors which present obstacles. There is a lack of social interaction which influences effectiveness of the communication process and the creation of social networks, and also a lack of interest because of complacency and disengagement from the learning process. Geng, et al. and Gibb, A (2005) mentioned in 21st Century the power of successful university depends on its ability to create, manage and use knowledge in the most effective way. KM in HE is the art of increasing value from selected knowledge assets which could improve its effectiveness.

Since the Dearing report, global competition has intensified and high-level skills and knowledge have become ever more central to the UK’s economic success (Higher Education Funding Council for England, 2006). Shattock (2003) contends that one of the most significant changes in the way we think about universities today is how we identify its success. Given all of these changes to the Higher Education system in the UK, he further contends that universities do not all start from the same position and that historically, locationally, and financially, their positions could be very different (Cranfield and Taylor, 2007). But how do these factors affect
In this context, how do institutions perceive the importance of KM?

In 2011 KM study was conducted in 3 public universities in Slovenia, 44 public faculties and about 110,000 students enrolled in public HE institutions. The study was focused on the teaching staff of faculties, and selected 2 public faculties from the area of social sciences, using two criteria. The first criterion applied was the number of enrolled students, and the second was the level of the implementation of ICT (Information and Communication Technology) in support of learning and teaching at HEIs.

What is Knowledge?
Knowledge is an important source for value creation in an organization and needs to be managed carefully-Massa and Testa (2009). It is a vibrant force in the rapidly changing global economy and society. Kidwell (2000) discussed Knowledge, which starts from the basic facts called data, which covers only raw data or facts or numbers, based on these facts information is generated. The information generated is captured in various documents and databases and made available to use which gets searched by researchers using information technology systems, and information retrieval systems. The reason behind this is unless information is used and applied with an experience then adds value in to it, till then it does not become knowledge. Knowledge includes insight and wisdom of employee and could be used for decision making. It is also embedded in work processes, teams and exists in all core functions of an organization as well as its systems and infrastructure. For the Japanese, Knowledge means wisdom acquired from the perspective of the entire personality. With reference to the educational institute, input by teacher is the data for the student, when he understands the things given by data that is information for the student when he analyses the information it becomes knowledge aspired by him and when he applies in the field it becomes his wisdom.

Oxford Dictionary and Wikipedia resources (http://english.oxforddictionaries.com http://www.wikipedia.org) explain the meaning of Knowledge which includes facts, information, descriptions, and/or skills acquired through experience or education. It can refer to the theoretical or practical understanding of a subject. It can be implicit (as with practical skill or expertise) or explicit (as with the theoretical understanding of a subject); and it can be more or less formal or systematic.

Cavell (2002) defined the term and stated that Knowledge acquisition involves complex cognitive processes, which involves perception, learning, communication, association and reasoning; while knowledge is also said to be related to the capacity of acknowledgment in human beings. Knowledge is generated and used for various purposes.

Types of Knowledge
There are two types of knowledge viz. explicit knowledge and Tacit Knowledge

Explicit Knowledge: is recorded and well documented information that helps in taking action and also expressed in formal language. It is published and made available for use like primary, secondary information sources and also covers packaged, communicable, transferable, and also easily available. It can be articulated, captured, presented and codified in various forms like words, numbers, specifications, facts, rules, reports, blog post, email or other sort of printed (books and journals) and digital asset, policies and shared without need for discussion. It is about past events or objects there and then. It is transmittable in formal and systematic language.
Tacit knowledge: is knowledge people carry around in their head. It is embedded within the head/minds of researchers of the institution or organization or research unit etc. It covers insights, perceptions, expertise views, techniques and skills, which is unique to the person. Tacit knowledge is not communicated in written form as it is purely personal, specific to any field, and even very difficult to capture, share verbally and transfer in the society. Tacit knowledge is personal, context-specific and therefore hard to formalize and communicate. This (Know How) knowledge is very useful but maintained as trade secrets by the individual person and not easily transmitted to the information society. Tacit knowledge has different characteristics as compared to explicit knowledge. Alhawary (2011) defined tacit knowledge, which is experimental, intuitive, and experience based knowledge that cannot be expressed in words, sentences, and formalized or articulated and therefore difficult to share also. Generally knowledge we refer to is explicit in nature meaning expressed in terms of words and numbers and knowledge could be shared. According to Ramanuj and Kesh (2004) tacit knowledge can only be exploited by effective communication and share.

The principal investigator mainly focuses on the tacit knowledge that employee, teachers, students, processes, systems of academic institutes have but they have difficulty in expressing or articulating it. There are two types of tacit knowledge one is knowledge of researchers which could be shared by both individual and groups. Another is tacit knowledge which can convert to explicit so that can be shared among the institute. Sternberg says that the knowledge which has not yet been converted into explicit is called as tacit knowledge.

Knowledge Creation
The process by which new knowledge is created within the organization or institute in the form of new products, services or systems becomes the cornerstone of innovative activity. The key to successful innovation process lies in the mobilization and conversion of tacit knowledge into explicit recorded knowledge.

Knowledge creation takes place in two forms. The one is where conversion takes place between tacit knowledge and explicit knowledge.

And other is where knowledge created by individual is transformed into knowledge at the group and organizational levels. Knowledge creation fuels innovation. Organizational knowledge is created during the conversion from tacit to explicit and back to tacit knowledge that organizational knowledge. Individuals create knowledge and an organization cannot create knowledge without them.

Therefore organizational knowledge creation is a process that amplifies the knowledge created by individuals and crystallizes it as a part of the organization network. To create knowledge organization has to provide the context for interaction among individuals across intra and inter organizational levels. It includes not only innovation but also learning, which can shape and develop approaches to daily work. Nonaka (1995)

Sources of Generation of Knowledge
The knowledge is generated in all the organizations, institutions, research centers, educational organizations, industries, and also in academics in different forms like books, projects, papers, dissertations, thesis, etc. But all the knowledge is not made available to public use. The knowledge made available is in explicit form only. The tacit knowledge is hard to get in to reality. Though IPR system now developed to protect the innovative ideas and benefited to the researchers by protecting knowledge in different heads like copy right, patents, trademarks,
geographical indicators etc but still few concepts are reserved as trade secret and not made available for general use. In educational institutions many concepts are filed locally and they remain as Grey Literature. Such intellectual information need to be compiles at institutional level and expert databases could be generated for use.

**What is Knowledge Management (KM)?**

KM is an old process initiated since 50s in the form of quantitative management and EDP which later extended to conglomeration (60s), portfolio management and strategic planning with automation (70s), TQM (80s), information system, intranets and extranets (90s) and recently since 2000 onwards KM is popularly used. (Gupta)KM is a process of transforming information and intellectual assets in to value. Knowledge is made available to take action when user needs it. Knowledge is considered as key to generate breakthrough ideas. The real focus of knowledge management is on “doing the right thing” instead of “doing things right”. It provides a framework within which the organization views, processes as knowledge processes and all business processes, which involves creation, dissemination and application of knowledge towards organizational sustenance and survival.

According to B. Gates (2000), "the knowledge management-is a very clever term to describe a very simple subject. You manage data, documents and the attempts of the employees.

Your goal is to enrich the common work possibilities, including the exchange of thoughts, the usage of successful ideas and the coordination of actions towards the common goal. The management of knowledge must guarantee that the required knowledge will reach certain people at certain time, so that people can take certain actions."

Ramanujan and Kesh (2004) described KM as “an organization’s ability to gather, organize, share and analyze the knowledge of individuals and groups across the institution in ways that directly impact performance”. It is a process through which organizations generate value based on their intellectual capital. Duffy, J.(2000) mentioned KM as a discipline of enabling individuals in an organization to collectively acquire, share and leverage knowledge to achieve business objectives. It is formal process that engages an organization’s people, processes and technology in a solution that captures knowledge and delivers it to the right people at the right time. KM for the organization consists of its ability to acquire knowledge from its own experience and sources and from experiences of others and to judiciously apply that knowledge in fulfilling the mission of the organization.

**Why Knowledge Management?**

Knowledge Management can transform organizational new levels of effectiveness, efficiency, and scope of operation, using advanced technology, data and information are made available to users for effective productivity. Knowledge Management is continually discovering organizational tacit knowledge. It is also useful for building knowledge, for problem solving and decision making purpose.KM is applied today across the world, in all industry sectors, public and private organizations and humanitarian institutions and international charities. KM, as a discipline, must result in better achieving, or even exceeding objectives. The purpose of knowledge management must not be to just become more knowledgeable, but to be able to create, consolidate, transfer and apply knowledge with the purpose for better achieving objectives. Most individuals, team and organizations today continually ‘reinventing the wheel’ which is very costly and inefficient activity, whereas a more systematic reuse of knowledge will show substantial cost benefits immediately. Effective knowledge management, using more
collective and systematic processes, will also reduce our tendency to ‘repeat the same mistake’. Effective KM, dramatically improves quality of products and or services. (http://www.knowledge-managementonline.com/index.html)

**IMPORTANCE OF KM IN EDUCATIONAL INSTITUTIONS**

Biloslavo and Trnavcevic (2007) expressed the importance of KM in higher education; similarly Dawson (2000) expressed term as “KM is especially important for organizations, comprised of experts where success depends upon generation, utilization and uniqueness of knowledge base. It would seem to be appropriate to consider higher educational institutions as organizations comprised of experts who contribute to knowledge base.

Internationalization of higher education, lifelong learning, and paradigm shift from teaching to learning, new technologies and globalization are the key factors in developing knowledge management. KM manages huge data systematically and therefore it will be a powerful tool to enhance productivity and reduce cost in the collection of a huge volume of data. It is very difficult to record tacit knowledge created by institutional staff. Many times staff leaves the Institute and his knowledge goes along with him. If KM practice is being operated in an institute as a continuous activity then only the generated knowledge could be captured and recorded as well preserved for future use. Similarly inspecting officers while visiting and assessing the gradation of the institution’s educational development and contribution reviews all tacit and explicit knowledge of past years, and in such practices KM plays a vital role.

Knowledge is the key for decision making and strategy creation. Knowledge should transfer into an action but unfortunately it does not happen always. In order to sustain in competitive world all educational institutes should implement effective tools for knowledge management. Barbara Friehs (2000) mentioned following assignments for effective KM.

- Mobilize the hidden implicit/tacit knowledge
- Integrate knowledge from organization and make it accessible to all
- Identify the missing knowledge
- Create new knowledge
- Make knowledge more accessible and usable
- Create knowledge sharing culture to experiment and learn
- Evaluate and reflect learning processes
- Codify new knowledge.

KM helps educational institutes to improve their capacity of gathering and sharing information and knowledge and apply these to problem solving and support the research and continual improvement of their work. KM of the educational system must reflect and comprise information at all levels starting from management level to student level in order to improve professional knowledge of employees, to achieve quality of lecturers and students. In all countries the government releases many funds for such activities.

KM gives most effective way to transfer efficient methods, models, ideas, practice is creating network as field of interaction that will provide circulation of them, as well as underpin innovation and development. For underdeveloped countries exchange of material resource can be useful. Faculties can mutually invest into resources they share. The exchange of information and knowledge in network like mutual newsletters, meetings, conferences, seminars and symposiums can serve as an instrument for knowledge and idea transfer and good practice.
Education systems are becoming market oriented from its basic democratic and decentralize system. Universities and academic institutes are considered to be responsible for students’ achievements in a democratic, contemporary and flexible educational system. In return they get certain compensation for their effort and responsibility. So student’s knowledge, skills, talents should be preserved in the knowledge base. It helps them to create new knowledge and gives platform to newly enrolled students.

In educational institute’s researchers, faculty experts, students contribute regularly to knowledge base by generating new concepts. Internationalization of higher education needs to share the organizational contribution/knowledge. Therefore Knowledge management provides techniques for capturing tacit knowledge hidden in experts/individual mind and practices and records it for future use. At the time of gradation of the institution's educational performance all tacit and explicit knowledge of past years can make available at one place with searching facility. KM can transform organizational new levels of effectiveness, efficiency, and scope of operation, using advanced technology, data and information made available to users for effective productivity. KM is continually discovering organizational tacit knowledge. It is also useful for building knowledge, for problem solving and decision making purpose. Quality and Service improvement is also achieved.

**Knowledge Sharing and Open Access Moment**

Knowledge Sharing is defined by Yu et.al.(2010) as “Processes that involve exchanging knowledge between individuals and groups”. According to Liaw, et.al (2008) Knowledge sharing is one of important goal of an organization where all individuals’ experiences and knowledge can be transferred as an organizational asset and maintained for future learning and creating new knowledge with the help of ICT. Knowledge sharing is the transfer and communication of knowledge. It is an activity through which knowledge is exchanged among people, friends, or members of a family, a community, an organization or collaborative parties. It is “making available what is not known” according to Awad & Ghaziri (2004). Institutions need to have significant consideration for knowledge sharing in order to achieve effectiveness in knowledge management (King, et.al, 2002; Shin, 2004). Effective knowledge sharing is at the heart of organizational life. For universities it is the core of their existence. Knowledge is shared not only with students and society, but it is also shared between faculty staff and in collaboration with external enterprises.

Nonaka(1995) focuses in his study on knowledge sharing and transfer inside organization. He mentioned knowledge sharing gives rise to an overall view of an organization not as a machine for processing information but as a living organism in which everyone is a knowledge worker.

Alhammad et al (2009) concluded after interviewing 300 academicians that they are less interested in sharing their knowledge than administrators.

Jain et al (2007) mentioned the tacit knowledge academics possess constitutes the bulk of a university’s intellectual capital. For such knowledge to have any real utility and constitute a source of value creation, it must be continually shared. In olden days the tacit knowledge was used to share normally face to face. But now due to electronic technology we can remove the barrier of communication with the people located in different parts of the world. Through email, chat, and online communication system knowledge sharing and initiation of communication become easy.
Tseng (2008) stated that recent development in IT and Web technology have made it easier to interact with staff and students, employees, suppliers and other partners, thereby improving operations.

Developments in KM focused on proving electronic databases, network systems and software to encourage the distribution of knowledge (Chow and Chan, 2008). With the help of technology now open access moment has also initiated all over world and receiving increased attention of scholars and academicians, librarians. Open access gives better visibility for researcher’s scholarship. It has been observed that open access articles are cited by other authors more frequently than comparable articles that aren’t openly available. No researcher wants to waste time and money conducting a study if they know it has been attempted elsewhere. But, duplication of effort is all-too-possible when researchers can’t effectively communicate with one another and make results known to others in their field and beyond.

**Knowledge Management and Sharing at Institutional Level**

The role of knowledge professionals and managers in developing KM in the educational institute is to coordinate the information related activities and clustering the data properly. But the main challenge is to capture tacit knowledge and manage it in developing repository. Copyright issue is also to be taken into consideration while capturing and presenting knowledge. The knowledge professionals (librarians and KM Committee) needs to capture different skills like information retrieving, evaluation, analysis, organization, collaboration and security and safety of data and ICT skills etc for proper management of knowledge.

The coverage of literature in the repository depends irrespective of types and formats published in local institute and parent organization. Directories and dictionaries of organization, staff related activities, reports submitted to various organization, rules and policies, different training material, syllabus, question papers, e-learning material, maps, charts, organizational structure, lectures, educational videos and OPAC of the library. However, while developing knowledge base few elements to be considered are consistency, interactivity, user friendly interfaces, simplicity, flexibility, accuracy and timeliness and currency of data is to be maintained (Aswath, 2009).

Tools and techniques required for developing KM are finance, ICT Infrastructure, standards, information tools (Directories, dictionaries, etc), human resource, physical space (library, departments).

Lau and Tsui (2009) mentioned that KM and knowledge sharing tools such as search engines, internet, intranet and peer to peer knowledge tools, all help learners to learn from anywhere and anytime and within the learning environment. Such tools help them to share their interest, information and knowledge to create new knowledge.

Information, domain experts from library and technology, collaborations with departments, team of staff, and concepts of data mapping are basic factors required for development of effective databases, knowledge bases as well as repositories, portals, gateways, websites etc. Leading factor for development of KM and KS is library and information centre and librarians and information experts who can handle and categories the implicit or tacit knowledge generating in an organization and record it properly using standard methods.
Various skills are also required like data capture, data analysis, data categorization, data mining, data mapping, knowledge mapping, concept mapping, indexing, linking and repackaging are only reared by library professionals hence every academic organization should this task to library professionals for effective use of tacit knowledge. But proper support from management, administration, technical advisors, computer experts, software developers should coordinate with library professionals in this activity. Further, motivation factor is also to be considered by the management. Various practices and trends are also useful for knowledge management purpose like generation of IR, data repositories, digital repositories, web tools (RSS Feed, Blog, Twitter, Facebook, social networks, moodle, Drupal, Blackboard, etc), development of portals, knowledge gateways, links to search engines and web/Internet based information resources, user groups, subject groups, expert groups, grey literature. An organization can develop its own portal or webpage giving links to internally developed databases and links to different institutional repositories. positories in the institute are many but prominent benefits are better return on investment, better bibliographic control of tacit knowledge, better dissemination of organizational goals and practices, for providing value added services, sharing valuable knowledge among different types of users and develop collaborative practices, avoid reinventing the wheel, solving problems using the literature, generation of new knowledge and concept and centralization of data.

A successful knowledge management implementation in an educational institute is a bigger challenge when compared with commercial outfits.

Collaboration of Educational Institutes, Industrial Organizations and Government in Knowledge Sharing

To share knowledge means to learn, understand, extend and repeat the information, the ideas, the views and the resources with each other, connected with, on a specific ground. Due to globalization and use of ICT the whole world has become one village and communication has become fast. Globalization demands that our society needs to move faster, work smarter and take more risks than at any time in our history. Earlier due to communication gap in research area duplication of research occurred. But now with open access moment everyone is sharing his knowledge with others through internet media and so it is obviously good for research development. Universities, publishers, libraries and individual researchers started sharing knowledge in the form for consortia, associations, groups with all. The changing research culture playing important role in knowledge sharing as day by day knowledge is adding new dimensions from the corners of the world in every field.

Collaboration between Universities, Industrial organizations and Government can play an important role in the field of knowledge sharing. Knowledge becomes meaningful when it is utilized on practical ground.

The researchers invent it and the industrial firms’ puts it in practice. Concept of collaboration for research work is not new. The relationship between Industries and Universities seems to be blossoming in many forms all over the world. Many countries like U.K., Germany, US, France, Japan, Canada, Brazil, South Africa are involved in this kind of collaboration on International level too. In India, attempts are made and efforts are increasing in this direction.

Collaboration is needed to pull out the knowledge from thesis to in practice. Knowledge which is generated in research works at university level lies in thesis unused in libraries. In Universities research work goes on and on haphazardly without any specific direction and coordination. Collaboration with industries gives specific direction to research speedily and
takes forward the knowledge to avoid reinventing and repetition of research work. It helps to
grow knowledge faster which is very much essential for knowledge society. It flow fresh and
pure knowledge directly from universities for industries and finally reduces the time for
research at the industrial level.

According to Parekh (2009) collaboration helps in Sharing valuable knowledge, avoiding re-
inventing the wheel, reducing redundant work and cost for invention, Creating knowledge with
the help of experts and experienced persons, giving a right direction to the enthusiastic
intelligent students, making them experts of future, solving problems aroused at primary level
which will save time, money and man power. It gives idea of which kind of change industrial
firms wanted? Which kind of problems they are facing and to solve it, which kind of research
works they are expecting from the university will be cleared well in advance. Maximum
production with the lowest cost is the main aim of all enterprises if they were raw materials, or
machinery and technology or management deals. By collaborations, the firms will inform
university and university will frame the research work as per the needs to fulfill the aim.

Role of university library is much more important in this kind of collaboration. University
librarian is knowledge manager and act as link between various departments and industrial
firms. Universities are making it compulsory to deposit one copy of all research work, papers,
thesis, project reports, etc in the university library to maintain, preserve and share. Knowledge
managers from enterprises or industries can access the available material in the library and
inform the concern departments, faculties and research students. This way research work
starts its journey.

After compilation of work, a copy of work will be given to the librarian. He then circulates that
work to the party to apply the knowledge. For any help again researchers again contact to
knowledge managers for further information and this cycle continues. Knowledge is generated,
shared, used and again reused. In this whole work of knowledge life cycle library is an axis.

Colleges are abiding to send all information about research and other activities to the
University. University conducts many activities to make staff and students participate in
various activities to create new knowledge. It is necessary to maintain separate databases of
tacit and explicit knowledge of students and staff year wise to colleges to report to University
or any funding agency.

**Efforts made by Government, UGC and RUSA in Developing KM**

In relation to knowledge management and resource sharing Government of India has taken
initiative in all departments. All Government organizations, ministries are providing maximum
information on their website. That is beneficial to all citizens. Government is promoting use of
technology in terms of funds and trainings too. Now affordable tablet PCs are boon to all school
going children in India.

At International level India has started collaborative efforts in education like exchange (staff,
students) programs, fellowships, scholarships, etc with major countries like USA, UK, and other
exchange programs. UGC is calling research projects from the researchers to motivate them
and making them available on their website too. Provides funding for conferences, seminars,
etc which is for nothing but knowledge management and sharing activity. UGC CEC has a vast
repository of 17000 educational video programs and nearly 1000 such programs are being
added to this collection every year. Programs are telecasted through Vyas Higher Education
Channel.
In the first phase of XIth plan UGC proposed to cover 200 Universities and 5000 colleges across the country for achieving the desired objectives by using Broadband, Wireless, DSL, Leased line/TDM/FTDMA VSAT/SCPC/DAMA/Radio Frequency link for establishing connectivity depending upon the geographical location for accessing global resources including multimedia based educational content though networking of colleges and universities and for providing platform for collaboration among teachers and students using communication networks and better access to e-contents, digitization of Indian Intellectual content (thesis/dissertations), union catalogues of books, serials, secondary serial, current holdings etc and other non-book materials for universities and colleges, providing audio/video conferencing systems at universities.

Through eprashala of inflibnet project [http://epgp.inflibnet.ac.in/about.php](http://epgp.inflibnet.ac.in/about.php) MHRD, under its National Mission on Education through ICT (NME-ICT) has assigned work to the UGC for development of e-content in 77 subjects at postgraduate level. UGC gives funds about 7lakh per subject to the project investigator to create the content and its quality is the key component of education system. High quality, curriculum-based, interactive content in different subjects across all disciplines of social sciences, arts, fine arts & humanities, natural & mathematical sciences, linguistics and languages is being developed under this initiative named e-PG Pathshala. This is very good initiative undertaken by the MHRD and UGC to capture tacit knowledge of teachers in their subject and convert it in digital form (explicit) and made available to all students in India.

In 12th comprehensive plan of Rashtriya Uchchatar Abhiyan for the development of state higher education system for ensuring access, equity and quality. Among the many objectives of RUSA following are very much related to knowledge management and sharing.

- Ensure governance, academic and examination (and evaluation) reforms and establish backward and forward linkages between school education, higher education and the job market.
- Expand the institutional base by creating additional capacity in existing institutions and establishing new institutions in un-served and underserved areas by way of up gradation and consolidation.
- Ensure adequate availability of quality faculty in all higher educational institutions and ensure capacity building at all levels.
- Create an enabling atmosphere in institutions to facilitate research and innovation.
- Integrate the skill development efforts of the government through optimum interventions.
- Promote healthy competition amongst states and institutions to address various concerns regarding quality, research and innovation.

The criteria for sanctioning the various grants they asked to share the information of their institutes related to students and teachers, their research work, collaborative work, etc. Component 11 of RUSA is faculty improvement. States will be given funds to develop faculty, improve academic and pedagogical skills of teachers, and develop innovative strategies to enhance quality of teaching, research and innovation by teachers. States may select any of the existing training institution or even a university or Academic Staff College for this purpose.
Under Component 16 Funds will be provided to create and maintain strong data systems at the State level for surveys and analysis that could provide information to the national MIS. The RUSA MIS and All India Survey on Higher Education (AISHE) will be integrated. Hence all the participating institutions/states will be mandated to participate in the AISHE and provide detailed information so that the data on State Universities and Colleges can be consolidated. Under this scheme up to 2 crore Rupees sanctioned for each state to centrally designed information system to cover all participating bodies and institutions. To provide a common tool to generate standardized information that would help in monitoring progress of reforms, utilization of resources etc.

Aswath and Gupta (2009) mentioned that universities are faced with a challenge to create and disseminate knowledge to society. They need to share information and knowledge among the academic community within and outside the institution.

KM has become a key issue in the universities due to changes in knowledge culture. They are not isolated entities but engage in teaching, research and community services. Therefore, knowledge created in university through research and teaching should be relevant to the society, and promoting knowledge as a major factor of business of the university and higher education institutions. Many Universities like University of Pune already started giving maximum information through their website, websites. (Syllabus, notifications, student’s portals, question papers, previous circulars, GR, guidelines, departmental information, etc). Libraries are started developing portal for sharing online available research material to their users. Similarly for the tacit knowledge sharing and collective efforts has to be made at each and every educational institute which is nothing but output to our research community and finally to the nation.

Key Factors in Developing KM in Institute
Chen and Burstein (2006), Aswath and Gupta (2009) discussed the issues related to successful KM strategy and suggested three components and key factors in developing KM i.e. people, policy/processes and technology. The component of people related to technology experts, knowledge professionals (teachers), knowledge managers (Library professionals), students etc. Technology covers all related technology which includes hardware and software packages (Roberson and Brun, 2005).

Culture is also an essential component while developing KM base (HUI King-Chung, 2001) which covers culture of openness, sharing of information, working in teamwork, motivation for contribution to knowledge base etc.

Steyn, G.M suggested following questions should be examined by educational institutions:

- How do knowledge model skills of higher education institution compare to those of competitors?
- How does the commitment of top management of knowledge model compare to that competitors?
- What unique aspect of the university allows it to enhance or sustain high quality knowledge model practices?
- What knowledge model practices have to be enhanced or sustained to capitalize on these unique aspects of the university?
**KM Process**

David Skyrme mentioned that KM process comprises processes of creating, discovering knowledge, knowledge sharing and learning, and knowledge organization. Creation and discovery of knowledge is characterized by data or text mining, content analysis, processes simulation, communities of practice, review, knowledge sharing, mapping of knowledge. Clark (2004) identified following four processes of knowledge management.

1. Knowledge gathering or acquisition
2. Knowledge storage and organization
3. Knowledge distribution
4. Knowledge application

Let’s discuss these processes one by one.

**Knowledge Acquisition or Gathering**
It comprises discovering existing knowledge to know what we know, gaining knowledge from outside resources and creating new knowledge. Before gathering and acquisition of knowledge there is process called knowledge identification. In this process one needs to identify the information about knowledge that the organization has and what knowledge needs in order to become more competitive. Only the organization which identifies itself as a learning organization is capable of managing its knowledge.

**Knowledge Storage and Organization**
The knowledge acquired, gathered and created needs to be organized and store in the form of database which enable to access it at anytime and utilize it. For that application of technology and indexing skills requires along with adequate infrastructure.

**Knowledge Sharing or Distribution**
The created knowledge on individual level or gained must be shared and distributed in organization or society in order to become usable. The main reason of sharing the individual knowledge to entire organization is that knowledge should not be disappear if that employee leaves the organization.

The scope of knowledge sharing should not be limited to organization but should be share among users, competitors, society and entire environment so that reinventing the wheels or duplication of efforts can be avoided and help in achieving better financial results.

**Knowledge Application:** Once the knowledge is shared among different group of people that knowledge should be apply for better return and create new knowledge and add new innovation to the knowledge database. If the gathered, stored, created and shared knowledge will not be applied properly the whole process will be in vain. So for proper application knowledge and KM process should be communicated to users.

**KM process in any higher education system involves knowledge acquisition in which students and teachers acquires knowledge from Library resources like books, journals, reports, projects, theses and dissertations or we can say from Primary, secondary and tertiary resource and all online resources accessed from Internet. Students and teacher can create knowledge via classroom teaching or interaction. Various kind of activities are conducted in educational**
institute to capture, create new knowledge and motive students to contribute to new knowledge area by conducting various activities like classroom teaching, brainstorming sessions, various competitions, projects, assignments, etc. All newly created knowledge should be stored in explicit form like digital form. This knowledge needs to map, analyze, classify, catalogue and at last this knowledge gets ready to share and apply. Different policies needs to be design and get sanction by the management of the college related to what kind of knowledge should be capture and preserved, how long it should be preserved, how to process it, etc.

Challenges in Developing KM
Though the KM practice is beneficial to all institutes including academic still awareness of its development is not yet practiced by college authorities. There is need to create knowledge sharing culture amongst the staff and students as they afraid to share and exchange their own knowledge. Use of ICT and development of advanced skills in teaching professionals for contributing, communicating, capturing, recording and sharing knowledge is lacking. A suitable policy need to be designed regarding the information and knowledge capturing and sharing among the academic professionals within organization using intranet or extranet for group of branches situated at different places under the same management. Infrastructure and technical help from ICT managers, network managers is necessity to all academics.

Moreover, the educational system is now a day’s becoming market oriented. They are responsible for student’s and staff’s achievements. They are answerable to higher governing body. So there should be motivating environment among educational institutes. Faculties are challenged today with different pressures of globalization, extracurricular activities, research, interdisciplinary subjects and complexity of global education market. Educational institutes are now becoming entrepreneurs. Gibb, A A stated in 2005 that global competition pressures are spread in three categories Individual response, Organizational response and Social response.

New demands from educational institutes are preparing students for lifelong learning, distance learning and short educational as well as professional courses and training, global mobility, adaptation of different cultures, part-time job, work in different organizations, increasing employability of graduates so that they will able to take family as well as social responsibilities, giving them value education. Salmi in 2000 mentioned new challenges to educational institutes and organizations in today’s knowledge economy are globalization, growing significance of knowledge and information-communication technologies.

Professional knowledge, capabilities of educational institutes and research created or output has become key factor to the success of an educational institutes. Therefore fundamental need for managing knowledge and make available and accessible necessary knowledge and make use of that knowledge for problem solving or creating new knowledge. Gibb, A A rightly said in 2005 that in 21st century the power of successful educational institute depends on its ability to create, manage and use knowledge in the most effective way.

Knowledge Manager looking after this activity needs following skills:

- Leadership to assemble information and policy development
- Friendly association with staff and student to share views regarding knowledge repository
- Create the knowledge base by involving contributors to add their knowledge
Knowledge of ICT and Web designing technology to be sheltered for the proper growth and management
Data analysis, mapping, mining, linking and repackaging to be practiced
Knowledge of copyrights
Dissemination of knowledge though various means to be practices

The Suggested Process for Knowledge Management in Academic and Educational

Based on the various considerations to develop a KM or IR or a knowledge base for an academic institution in the ICT era and digital media it is found economical and useful similarly new emerging strategies which enhanced the accessibility to traditional, grey and institutional knowledge by developing open access to literature. Self archiving trends, sharing of thoughts using web tools are added in the process of KM development.

Developed countries have managed KM however developing countries are pursuing to this activity. In India among many projects few projects like “Shodh Ganga”, “Vidya Nidhi”, “TKDL” projects and scholarly communications in the form of different publications, are developed to communicate information to users. To support such activities educational institutes have to initiate the development of KM base, which may be benefited to develop a network of knowledge developed at academic institutional level using technology. A preliminary effort towards development of KM model for an academic institution is tried in this article considering the suggested based of Chen and Burstein (2006) and others.

In this model various components have been considered from knowledge generation/creation, capture, store/assembly, repackaging, and sharing/disseminating/exploring/exploitation. This knowledge is better used for learning, teaching and regenerating new knowledge base. Since, explicit knowledge is handled by library and information centers on the similar grounds tacit knowledge as well as explicit grey knowledge developed at institutional level need to be managed by library professionals along with network or ICT managers. The components of the model involves like generators of information from academic faculty, data compilers related to Knowledge Management and librarian, information or knowledge repackaging or mining library activities and finally technological assistance to develop databases or IR or KMB etc.

The development of KM needs factors like information, domain experts from library and technology, collaborations with departments, team of staff, and concepts of data mapping. These are basic factors required for development of effective databases, knowledge bases as well as repositories, portals, gateways, websites etc. Leading factor for development of KM is library and information centre and librarians and information experts who can handle and categories the implicit or tacit knowledge generating in an organization and record it properly using standard methods. Various skills are also required like data capture, data analysis, data categorization, data mining, data mapping, knowledge mapping, concept mapping, indexing, linking and repackaging are only reared by library professionals hence every academic organization shoulder this task to library professionals for effective use of tacit knowledge. But proper support from management, administration, technical advisors, computer experts, software developers should coordinate with library professionals in this activity.

Further, motivation factor is also to be considered by the management. Various practices and trends are also useful for knowledge management purpose like generation of IR, data repositories, digital repositories; web tools (RSS Feed, Blog, Twitter, Facebook, social networks, moodle, Drupal, Blackboard, etc), development of portals, knowledge gateways, links to search engines and web/Internet based information resources, user groups, subject
groups, expert groups, grey literature. An organization can develop its own portal or webpage giving links to internally developed databases and links to different institutional repositories. Tools and techniques required for developing KM are finance, ICT Infrastructure, standards, information tools (Directories, dictionaries, etc), human resource, physical space (library, departments). The benefits gained due to development of knowledge repositories in the institute are many but prominent benefits are;

- Better return on investment
- Better bibliographic control of tacit knowledge
- Better dissemination of organizational goals and practices
- For providing value added services
- Sharing valuable knowledge among different types of users and develop collaborative practices
- Avoid reinventing the wheel
- Solving problems using the literature
- Generation of new knowledge and concept
- Centralization of data

The role of knowledge professionals and managers in developing KM is to coordinate the information related activities and clustering the data properly. But the main challenge is to capture tacit knowledge and manage it in developing repository. Copyright issue is also to be taken into consideration while capturing and presenting knowledge. The knowledge professionals need to capture different skills like information retrieving, evaluation, analysis, organization, collaboration and security and safety of data and ICT skills etc for proper management of knowledge. The coverage of literature in the repository depends irrespective of types and formats published in local institute and parent organization. Directories and dictionaries of organization, staff related activities, reports submitted to various organizations, rules and policies, different training material, syllabus, question papers, e-learning material, maps, charts, organizational structure, lectures, educational videos and OPAC of the library. However, while developing knowledge base few elements to be considered are consistency, interactivity, user friendly interfaces, simplicity, flexibility, accuracy and timeliness and currency of data is to be maintained (Aswath, 2009)

CONCLUSION

Higher education is a center of knowledge creating, delivering, and learning for society. On international level too knowledge sharing policies between two and more countries are going on. For the development of nation it is must. Discussions and exchange of information is very common among staff, students and scholars now days. This is the base for the generation of innovative concepts. Through open access movement everyone is able to access the information through internet. But at local and institutional level attempts are required for capturing tacit knowledge of individuals and sharing for new vision.

In today's open access system every researcher and user are getting information at their fingertips. For the development of country all western countries has already taken initiative to share the knowledge online which helps in avoiding repetitive work and better products are coming out. Open Access initiative is boon to researchers and if at every organizational level the better management, use and sharing of available resources/knowledge both explicit and tacit occur it leads to overall development of educational system and nation at fast speed. Knowledge plays a crucial role in the progression of institutions. The process of knowledge sharing plays a
significant role in determining the outcomes of knowledge management in institution. Universities and colleges are the core producers of new science. So at every organizational level such attempt has to be made for the benefit of working team and society. To maintain institutional tacit and explicit knowledge use of ICT, web technology along with digitization technology will help to search and give access to it. Each and every student and staff should be participating in this activity. It is not sole activity of any single person but it is collaborative activity.

Time to time audit of this knowledge is needed by the concerned experts. KM in educational institute will surely help in various report generation, strengthening alumni association, improving employability of students, to improve quality of staff and students performance, decision making and problem solving, generating funding and industry academia collaboration.

BIODATA and CONTACT ADDRESSES of the AUTHOR

Sangeeta N. DHAMDHERE is currently a Librarian and Associate Professor at Modern College of Arts, Science and Commerce, Ganesh-Khind, Pune, India. She has more than 13 years of experience as a librarian. She has completed computer-related courses and has expertise in library automation and digital libraries. She has published about 30 papers in national and international journals and conference proceedings and published one book with IGI Global, USA. In 2008, she received a VLIR fellowship to attend the International Training Program STIMULATE-8 in Brussels, Belgium. She is a member of a few LIS National and International associations and is presently pursuing her PhD and multiple research projects. She is an Editorial Board Member of few reputed international peer reviewed journals, and magazines.

Ms. Sangeeta NAMDEV DHAMDHERE
Librarian, Modern College of Arts,
Science and Commerce, Ganeshkhind, Pune, INDIA
Mobile: +9109822935320(M)
Email: modernlibrary.sangeeta@gmail.com

Author’s note for Financial Support
To undertake this project financial grant is provided through the Board of Colleges and University, University of Pune, Maharashtra, India.

REFERENCES


Guidelines for innovative/emerging areas during the XI plan period (2007-2012) accessed at http://www.ugc.ac.in/financialsupport/xiplan/innovativeprogramme.pdf on 12th November 2013 at 8.45pm


Ziggy, HUI King-Chung Knowledge Management to be needed in on-line education. Press conference at MIT (2001).
TEACHERS ACCEPTANCE OF MOBILE LEARNING FOR TEACHING AND LEARNING IN ISLAMIC EDUCATION: A Preliminary Study

Aliff NAWI
Sultan Hassanal Bolkiah Institute of Education,
University Brunei Darussalam, BRUNEI

Mohd Isa HAMZAH
Faculty of Education, University Kebangsaan, MALAYSIA

Azwin Arif ABDUL RAHIM
Centre for Modern Languages and Human Sciences,
University Malaysia Pahang,
Pahang, MALAYSIA

ABSTRACT

This study was conducted to investigate the perceptions of the religious teachers' readiness to use mobile phones as m-learning. The focus of the study is to examine some aspects namely;

- types of handset used;
- the use of mobile applications,
- mobile learning activities, and;
- the acceptance of mobile phones in teaching and learning. The targeted population was the religious teachers from Putrajaya, Selangor.

The purposive sampling technique was used to gather data from 32 religious teachers from five secondary schools. Data were collected via questionnaires based on Likert-five-point scales. The data were tabulated, analyzed and interpreted using descriptive findings to find the frequency distribution and percentage. Research findings revealed that religious teachers are exposed to learning activities using mobile phones, and they are ready to make mobile phones as m-learning.

Keywords: M-learning, mobile phones, Islamic Education, teaching and learning
INTRODUCTION

M-learning or mobile learning is a relatively new field in research and exploration by many researchers around the world. It offers a way of learning new techniques to improve the mastery of knowledge in society. The mechanism of m-learning includes the use of mobile devices like mobile phones, iPad, Personal Digital Assistants (PDAs) and Tablet PC. This creates a method of learning a lot different from conventional methods commonly used in teaching and learning.

Mobile devices such as mobile phones, PDAs, and tablets such as iPad are more popular and attractive among consumers due to several factors. Among the factors that attract the attention of consumers is the price of portable devices much cheaper than the computer, more durable and suitable for obtaining information quickly; attractive design, and suitable for incorporation in extracurricular activities (Black & Hawkes, 2006). This shows that the trend of learning through mobile devices is a current trend in future learning.

Other factors such as the increase of mobile phone users also have a positive impact on the use of m-learning method. During the year 2010, a total of 7.5 million units of mobile phones were sold in Malaysia, and smart phones is a major contributor in the sale. This shows that there was an increase of 30% from the previous year (daily news online, February 17, 2011). Statistics issued by the SKMM (Malaysian Communications and Multimedia Commission) also proves that the use of mobile phones in Malaysia until 2009 as in Table: 1.

<table>
<thead>
<tr>
<th>Age</th>
<th>Percentage of use (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2007</td>
</tr>
<tr>
<td>Teenage (19 years)</td>
<td>14.5</td>
</tr>
<tr>
<td>Adult (20-49 years)</td>
<td>74.9</td>
</tr>
<tr>
<td>Elderly (&gt;50 years)</td>
<td>10.5</td>
</tr>
</tbody>
</table>

LITERATURE REVIEW

The term m-learning is a result of the distance learning method (d-learning) and electronic learning (e-learning) (Brown, 2005; Keegan, 2005). It is an expansion of the idea of learning which offers consumers more flexibility and mobile-ness. The word "learning" itself actually means mobile or mobility in which learning can happen anywhere and at any time (Vavoula & Sharples 2002). This gives a new dimension to education where the m-learning method is convenient for users to learn in a more flexible manner.

Advances in technology aspects also have given a big impact on education. Education process is no longer concentrated on one platform, such as in the formal classroom orientation (Mohd Aliff et al., 2012). M-learning is more independent learning (self-learning) which only requires mobile
equipment such as personnel data assistants (PDA), Palm Talk, Smartphone, iPAQ and Pocket PC to access the information to name a few (Wagner, 2008).

Portable equipment makes m-learning possible at any time, and any place compared to the use of a notebook that can easily be damaged and does not last long (Ahmad Sobri, 2010).

M-learning method has been practiced in developed countries like Europe and the United States (Ahmad Sobri, 2010). In Malaysia, m-learning is relatively at infant stage. Study of m-learning in Malaysia must be intensified as what researchers in other part of the word are conducting various studies and testing for its effectiveness in learning. The use of m-learning is small portion compared to the use of e-learning and d-learning which have become affective medium of teaching nowadays. However, the existence of m-learning provides more opportunities for consumers to be more focused on learning without interference from others.

Although the use of m-learning in Malaysia is still early, many studies in the country have been conducted to understand to what extent the use of m-learning can have an impact on teaching and learning. Among the earlier studies related to m-learning done in Malaysia, include the study of secondary school curriculum design (Ahmad Sobri, 2010), studies on the subject of History (Syafiza, 2007), Mathematics subject (Saipunidzam et al., 2010), Science (Dewitt & Saedah Siraj 2010), handwriting recognition application (Noor Azam et al., 2010) and Muslim market application (Norleyza, 2008).

**METHODOLOGY**

This is a preliminary study and first part of development in m-learning module for religious teachers. There are five processes in the study of m-learning module development using the ADDIE model: (1) Review the analysis of mobile phone use among the teachers of Islam (2) The process of designing m-learning modules, (3) process of m-learning module development, (4) The implementation of m-learning modules; (5) The evaluation process of m-learning modules.

![Phase analysis](image-url)
A total of 32 Islamic Education teachers are involved in this study. They were asked to answer a questionnaire relating to the readiness of the use of mobile phones as learning tools. Questionnaires distributed to religious teachers are divided into several parts:

- Demographics - to know the background of teachers.
- Phone type - to know what type of phone used.
- The use of mobile phones - to know the term mobile phone use and the applications used.
- Learning activities - to know what teachers' perception towards mobile phone use in teaching and learning.
- The level of readiness - to know the teachers' readiness to use mobile phones as learning tools.

Information resulting from this study (needs analysis) is important because the findings will be used to assist in the subsequent review of the m-learning module development for the religious teachers.

FINDINGS

A total of 32 religious teachers were selected to answer the questionnaires. The data were collected and analyzed descriptively using Statistical Package for the Social Sciences (SPSS) software.

Demographics & Mobile Phone Type
Figures: 2 and 3 show the overall demographics of the respondents' age and type of handset used.
Figure: 2 depicts the respondents' ages ranging from men to women. Respondents aged 36-40 years was the largest number of respondents in this study, representing 41%, followed by the number of respondents aged 41-50 by 25%, while respondents aged 45-46 years and 31-35 years respectively were 13% and 12%. Respondents aged less than 30 years and 51 years are at least 3%. Figure: 3 shows the categories of mobile phones used by the respondents. Smart phones (smartphone) are the most mobile categories used by the respondents (82%). While normal phones are still used by the respondents (15%), PDA phone users were with the lowest recorded score that is 3%. Figure: 4 details the types of smart phones used by the respondents. Nokia branded mobile phones are the most numerous types used by the respondents (63%). Respondents who use Samsung mobile phones are 15%, while phone users using iPhone and CSL respectively 7% and Sony Ericson branded mobile users, and Myiman is the lowest consumer of 3%.

The Use of Mobile Phone Application

Table 2 shows the use of mobile applications within 24 hours. The most common application used by the religious teachers is a gallery picture (80%) while the least used application is Internet access (40%). Other applications such as video cameras, writing notes, reminders, Bluetooth and MP3/MP4, received a moderate score ranging 55% to 75%.

Table: 2
The Use of Mobile Phone Application (n=32)

<table>
<thead>
<tr>
<th>Application</th>
<th>Scale</th>
<th>Frequency (f)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture Gallery</td>
<td>Never</td>
<td>12</td>
<td>9.4</td>
</tr>
<tr>
<td></td>
<td>Seldom</td>
<td>2</td>
<td>6.3</td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>26</td>
<td>81.3</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>1</td>
<td>3.1</td>
</tr>
<tr>
<td>Video Camera</td>
<td>Never</td>
<td>3</td>
<td>9.4</td>
</tr>
<tr>
<td></td>
<td>Seldom</td>
<td>6</td>
<td>18.8</td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>19</td>
<td>59.4</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>4</td>
<td>12.5</td>
</tr>
<tr>
<td>Taking Notes</td>
<td>Never</td>
<td>4</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>Seldom</td>
<td>2</td>
<td>6.3</td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>6</td>
<td>18.8</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>20</td>
<td>62.5</td>
</tr>
<tr>
<td>Reminder</td>
<td>Never</td>
<td>3</td>
<td>9.4</td>
</tr>
<tr>
<td></td>
<td>Seldom</td>
<td>24</td>
<td>75.0</td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>3</td>
<td>9.4</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>2</td>
<td>6.3</td>
</tr>
<tr>
<td>Bluetooth</td>
<td>Never</td>
<td>4</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>Seldom</td>
<td>9</td>
<td>28.1</td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>17</td>
<td>53.1</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>2</td>
<td>6.3</td>
</tr>
<tr>
<td>MP3/MP4</td>
<td>Never</td>
<td>4</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>Seldom</td>
<td>10</td>
<td>31.3</td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>17</td>
<td>53.1</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>2</td>
<td>6.3</td>
</tr>
<tr>
<td>Internet Access</td>
<td>Never</td>
<td>1</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td>Seldom</td>
<td>1</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>10</td>
<td>31.3</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>15</td>
<td>46.7</td>
</tr>
</tbody>
</table>
Learning Activities in Mobile Phones
Figure 7 shows a number of learning activities in a mobile phone within 24 hours. Three main activities of learning most often used in mobile phones are discussing the assignment p & p (71.9%), SMS to the teacher / student (75%) and received the order p & p (75%). Video and voice recording activities p & p moderation scored 40.6% while the activities of editing word documents, received the lowest score (9.4%).

Level of Acceptance of Mobile Phones in Teaching and Learning
Table 1 shows the level of acceptance of the Islamic Education teachers on the use of mobile phones in teaching and learning. A total of 96.9% of respondents would like to learn at anytime and anywhere. While 93.8% of respondents want to do enrichment activities in spare time. However, 9.4% of the respondents did not agree to make mobile phones as a tool for teaching and learning. However, the findings showed that 96.9% of respondents were willing to use m-learning material provided in the form of mobile technology.

Table: 3
Level of acceptance of mobile phones as learning tools

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would like to learn anytime, anywhere</td>
<td>96.9</td>
</tr>
<tr>
<td>I want to do enrichment activities in leisure</td>
<td>93.8</td>
</tr>
<tr>
<td>I want to make mobile phones as a tool for teaching and learning</td>
<td>90.6</td>
</tr>
<tr>
<td>I am willing to use m-learning in Islamic Education</td>
<td>96.9</td>
</tr>
</tbody>
</table>
DISCUSSION & CONCLUSION

This study is generally to see to what extent the religious teacher’s readiness to use mobile phones as learning tools. After the study data were recorded and analyzed, the findings showed that the religious teachers had positive attitudes toward the use of mobile phones as learning tools.

Religious teacher actually had expertise in using mobile phones in their daily life (see Table 2). In fact, the findings in Figure 5 shows the religious teachers use learning activities in their mobile phones. In addition, the finding of high scores (table 1) also shows that the religious teachers are prepared to make the mobile phone as m-learning in their life. This indicates that m-learning method has high potential to be adapted in teaching and learning in religious education.

This study is consistent with previous studies (Muhammad Ridhuan & Saedah, 2010; Mohd Aliff & Mohd Isa, 2014) which show that there is potential for m-learning produced for Islamic Education in secondary schools. Although this study only opt religious teachers as samples and may differ in other areas of teaching, but it provides an initial overview to the researcher on mobile phone use among religious secondary school teachers. The proposal to produce m-learning modules in religious education should be realized and that the m-learning modules that will be produced can be a reference for teachers as well as students at any time and everywhere.

BIODATA and CONTACT ADDRESSES of the AUTHORS

Aliff NAWI is a Research Assistant and PhD candidate at the Sultan Hassanal Bolkiah Institute of Education, Universiti Brunei Darussalam. He obtained his M.Ed. in Islamic Education from Universiti Kebangsaan Malaysia with a thesis on Mobile Learning in Islamic Education. His current research is on cyber ethics, Islamic values and educational technology.

Aliff NAWI
Sultan Hassanal Bolkiah Institute of Education,
Universiti Brunei Darussalam,
Tunku Link Road, BE1410, BRUNEI,
Email: aliffnawi@yahoo.com (Corresponding Author)

Mohd Isa HAMZAH is a senior lecturer in Faculty of Education, Universiti Kebangsaan Malaysia (UKM, The National University of Malaysia). He graduated from al-Azhar University (B.A. Hons in Theology), Birmingham University (M.A. in Islamic Studies) and Warwick University (Ph.D in Education). He teaches various subjects in Faculty of Education UKM including philosophy, teaching methodology, moral education and ICT in education at both undergraduate and graduate programmes. He also supervises research students of masters and doctoral programmes. His research interest is ICT in Islamic Education and Values/Moral Education).
Mohd Isa HAMZAH
Faculty of Education, Universiti Kebangsaan Malaysia,
43600 UKM Bangi, Selangor, MALAYSIA.
Tel: +603 8921 6298
Fax: +603 8925 4372
Email: cher69@gmail.com

Azwin Arif ABDUL RAHIM is an English lecturer at Universiti Malaysia Pahang (UMP) has more than 13 years experience of teaching. With TESL background, his interest are sociolinguistic, instructional design and technology enhance language learning. He is currently undergoing his PhD in UKM in the area of ESP and Mobile Learning.

Azwin Arif ABDUL RAHIM
Centre for Modern Languages and Human Sciences, Universiti Malaysia Pahang. Lebuhraya Tun Razak, Kuantan, Pahang Darul Makmur, 26300 Pahang, Malaysia. Email: ariftesl@gmail.com

REFERENCES


www.informationweak.com
E-MAIL WRITING:
Providing Background Information in the Core of Computer Assisted Instruction

MA of TEFL, Behzad NAZARI
Islamic Azad University,
South Tehran Branch, Tehran, IRAN

MA of TEFL, Sahar NIKNEJAD
Islamic Azad University,
South Tehran Branch, Tehran, IRAN

ABSTRACT

The present study highly supported the effective role of providing background information via e-mail by the teacher to write e-mail by the students in learners’ writing ability. A total number of 50 EFL advanced male students aged between 25 and 40 at different branches of Iran Language Institute in Tehran, Tehran.

Through the placement test of Oxford English Language Placement Test (OELPT) the students’ proficiency level seems to be nearly the same. Participants were randomly assign into two groups of experimental and control, each consisting of 25 students. After the administration of the proficiency test, all groups were assigned to write topic 1 as the pre-test. Next, the teacher involved the learners in the new instruction (treatment).

During writing topics 2, 3, 4, 5, 6, and 7 experimental group’s background knowledge was activated through e-mail before writing and e-mailing topics while the control group received no background knowledge activation through e-mail. After the treatment was given to the experimental group, the students in both groups were required to write another composition about the last topic, topic 8. Again, in this phase, none of the groups received any background information.

The results indicated that providing background information via e-mail by the teacher to write e-mail by the students significantly improved learners’ writing ability.

Keywords: Computer-assisted language learning, Computer-mediated communication, Asynchronous computer-mediated communication, Synchronous computer-mediated communication, Writing, Background Information, Holistic Scoring
INTRODUCTION

Education technologies were one of the newest areas in the world in the second half of the 20th century. In the late 1950s, in developed countries, computers which have arrived the academic life are still developing without any stop throughout the world.

Today, computers have become more powerful, quicker, easier to use, more convenient and cheaper, and they can process and save much more information, as well.

At the end of the 20th century, the computer-mediated communication and the Internet have reformed the use of computers for language learning. Computers are no longer a way for just information processing but also a tool for information processing along with communication. With the help of the Internet, language Learners can now interact with others or target language speakers all over the world. According to Dhaif (1989), computers can never substitute the ‘live’ teacher, specifically in language teaching, where the attention is on mutual interaction between people. It can just accept a role in teaching the second or foreign language as help to the teacher.

The abbreviation of CALL which stands for Computer Assisted Language Learning is a term used by teachers and students to refer to the use of computers as parts of a language course (Hardisty & Windleatt: 1989). It is traditionally described as a means of ‘presenting, reinforcing and testing’ particular language items. Firstly, the learner is provided with a rule and some examples, and then answers a set of questions which test her/his knowledge of the rule and the computer provides proper feedback and determines a mark, which may be stored for later scrutiny for the teacher. Jones & Fortescue (1987) present that the traditional description of CALL is inappropriate and they introduce the computer as adjustable classroom aid, which can be used by teachers and learners, within and out of class, in different ways and for various purposes. On the other hand, as any other teaching aid, using the computer needs to be connected to ordinary classroom task and CALL lessons, like the other lessons, need to be planned meticulously.

Keeping up to date with e-learning is a -moving plan on the Internet. Today, the activities such as reading daily e-learning newsletters, online magazines and attending e-learning conferences are offered. Interpersonal communication involves learners in real life communication with main partners.

E-partners can be detected on the Net by employing ordinary search engines. Unfortunately, e-mailing haphazardly between pals does not lead to beneficial learning, and, as a rule, is restricted to sharing personal information. Even with appropriate key partners, e-mailing can often be challenging in the case of time and reliability of the relationship.

Since the telephone, e-mail appears to be the most substantial, unique way for communication and increasing relationships (Suller, 1998). First, it is easy to use. Second, people consider it to be familiar and safe – it is like letter writing. Third, it is the most usual and powerful. Unlike face to face communication, e-mail interaction is asynchronous, i.e. does not take place in ‘real time’.

A person has time to think, evaluate, and compose a message. Having the chance of thinking time can immune e-partners from unnecessary misunderstandings and discussions. However, aperson’s
proficiency to interact beneficially via e-mail is highly based on their writing skills (Suller, 1998). E-mail is a less voluntary form of interacting than speech.

In contrast to conversation - where words issue forth and fade fast – writing puts one’s views in a more clear, constant, tangible, and objective format. Weak writing can lead to misunderstandings and probably challenges. Spelling, grammar, vocabulary, sentence structure and style affect the nature of the writing and demonstrate one’s character.

From its advent up to now, CALL developed in line with the equipment prepared by computer technology. As mentioned by Jones (2001), the significance of computer technologies in foreign language learning and teaching has been found by many people. Language teachers and administrators find out the movement towards CALL; moreover, students require computers via the facilities which make them prepared for language learning. Advanced technological facilities have been at the service of CALL to make the highest communicative learning situations for activities that promote listening, speaking, reading, and writing skills. With the help of networks’ high transfer potentials, it has been probable to achieve authentic cultural resources and get foreign language learners together with native speakers of the related language (CALICO, 2001). All language centers accept that it is not possible to make progress without modern technology and computers in the developed world.

Based on the mentioned facts, the present researcher aims to perform a study in the case of the effect of e-mail writing on learners’ writing development. In order to make good in the academic context, students require a wide range of linguistic skills that will aid them both develop their learning opportunities and illustrate proficiency of their learning. For learners whose native language is not English, such proficiency has been especially hard to achieve in the domain of writing. No wonder writing is often considered to be the fourth skill.

This is because of the fact that naturally writing is instructed as the final, fourth stage of the sequence of learning the four skills (i.e. listening, speaking, reading, and writing). Critically, it is the most difficult of these skills too. Surprisingly, this sequence remained sound in the process of human language development

Writing, the most difficult skill among the four skills in language learning, has received attention after listening, speaking, and reading. For a large number of students writing seems to deal with great problems and most of these difficulties come from inadequate preparation for the writing task. Many techniques have been suggested to function as the pre-writing activities in order to pave the way for the students to improve their writing skill.

Activating students’ background knowledge stands in a unique position among these techniques. Direct education on background knowledge can result in an approach such as previewing, where students are provided introductory material before they read special texts. Such introductory material may cover background information such as explanations of difficult concepts, definitions of new vocabularies, and translations of foreign phrases.

Through providing students’ background knowledge, teachers will be able to indirectly touch other facets of academic performance, specially writing.
CALL THEORETICAL FRAMEWORK

CALL is still a young field and does not have a theoretical framework. SLA researchers and practitioners suffer from the problems which ring true in the domain of CALL. In fact, because of the relative youth of CALL they are even more severe. Due to a lack of theoretical framework it is hard for researchers to compare and study findings from CALL studies. In the other words, there is no widely accepted theoretical framework to provide direction for improvement and application of CALL materials for practitioners (McCarthy, 1999). Rare resources are turned, if not wasted, in the process.

Mei Lin Ho (2000) claimed that ICT cooperative project between two schools in Singapore and Birmingham found various writing tasks via the electronic exchange of information. In this study the students’ confidence, awareness and understanding of their own and their correspondents’ cultures were promoted. The study also scrutinizes the role and place of the foreign language teachers over a period of research time, and argues the implications for both the teachers and learners. Students demonstrated a positive attitude towards writing and proved to be more motivated. Analysis of the electronic messages displayed a level of perfection in students’ cognitive development.

Learners learnt to work cooperatively and developed their interaction skills. Pedagogical implications of the study cover knowledge on who, why, how, and what. In other words, teachers require to know well the people who are engaged in the study, the special domains for research and follow-up that have to be practiced clearly with special goals, understand the clear-cut purpose of the study and how it will assist participants in specific areas, and, ultimately, to know a clear step-by-step process of fulfillment.

Suggestions and rationale for using e-mail in foreign language teaching are provided in (Gonglewski et. al., 2001). Educational benefits of e-mail are: encouraging equal opportunity participation, expanding topics beyond classroom-based themes, extending language learning time and place, promoting student-centered language learning, and providing authentic interaction and a context for real-world communication. Many ideas for using e-mail are proposed: group e-mail interaction, e-mail exchanges in the group,

The survey done at the University of Canberra on computer use showed that the number of regular users of computers was a little more than half of the 128 respondents spending time surfing the Internet or e-mailing (Jones, 1998). Based on another survey conducted by Jones (2001) at Urbon University in Thailand, 100% of 68 respondents used computers for e-mail and expressed a desire to develop computer skills in order to improve their English.

Statement of the Problem

CALL has had different impacts on the foreign language learning process. In their study titled “Language learning in cyberspace”, for second language learners from universities, Donaldson & Kötter (1999) conducted a real-time MOO (Multiuser Object Oriented) system. For five months the sample used this system one session a week for cooperative tasks.
The researchers came to the fact that such CALL applications are appealing, help students learn more communicatively, and inspire students in language learning. Kartal (2002) also conceded that computer use in foreign language teaching is triggering for students since computers can personalize learning, and aid students to learn quicker and simpler than before.

A large number of researches have studied the impacts of e-mail writing on grammar by asynchronous computer-mediated corrective feedback, but a very limited number of such researches studied the role of e-mail on writing, and none of these studies can be traced in an Iranian context. Regrettably, in Iran like many other countries in the world, writing does not receive the due attention. Teachers tend to give more importance to the reading skill which the learners need for their continuing study and their future academic life. Being regarded a neglected skill; writing should be paid the appropriate attention it deserves.

For this reason, some vigorous studies should be done to provide learners, teachers and administrators with some sound vision to the process of writing, especially through e-mail.

**Purpose of the Study**

To come to a good way and method to teach writing skill many researches have been done and to some extent came to some positive findings. In this new age of communication, students tend to communicate internationally through the technologies and they should be provided and supported to express themselves in a broad way. Sending and receiving e-mails is a dominant way of communication for the students to get closer to what they desire.

In the light of the problem statement, the present study aimed to determine whether providing background information via e-mail by the teacher and writing e-mail by the students is effective in learners’ writing ability.

**Significance of the Study**

Most of the researches regarding providing background Information have so far been concerned with classroom contexts and numerous studies have corroborated the effectiveness of it in these environments. However, the problem is that not much investigation has been devoted to providing learners with background Information through computer technologies.

Therefore, there is a need to further investigate the impact of providing background Information through technologies on language improvement. Thus, the present study investigated the impact of providing background Information via e-mail by the teacher and writing e-mail by the students, in EFL context in Iran.

**Research Question and Hypothesis**

Based on the above mentioned problem, the present research attempted to answer the following main question:

Does providing background Information via e-mail by the teacher and writing e-mail by the students have any effect on Iranian EFL male learners’ writing ability?
In order to answer the preceding question, the following null hypothesis was formulated. Providing background information via e-mail by the teacher and writing e-mail by the students does not have any effect on Iranian EFL male learners' writing ability.

METHOD

Participants
In order to investigate the effect of providing background information via e-mail by the teacher and e-mail writing on Iranian EFL learners’ writing ability, the present researcher examines Iranian advanced learners. To do so, a total number of 75 EFL advanced male learners whose ages ranged between 25 and 40 at different branches of Iran Language Institute in Tehran, attended the study, but just 50 of those students whose proficiency levels seem to be nearly the same were chosen as the main participants through the placement test.

Participants were randomly assign into two groups of experimental and control, each consisting of 25 students (Table: 1).

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Experimental</td>
<td>25</td>
</tr>
<tr>
<td>Male Control</td>
<td>25</td>
</tr>
</tbody>
</table>

Instruments
Four instruments were used in this study:

Oxford English Language Placement Test
To make sure that the participants are at the same level of proficiency, advanced level, the Oxford English Language Placement Test was administered. OELPT is a 50-item placement test developed by Oxford University Language Centre. The answer sheets of the 75 students who took the test were gathered and scored by the researcher. Those participants who had 41-50 correct answers out of 50 items were accepted to participate in this study as advanced learners. The participants were further, randomly divided into two parallel groups of experimental and control groups of homogenous learners.

Pre-Test and Post-Test based on TOEFL iBT Writing Topics
The last section on the TOEFL iBT is Writing, for which you have a total of 50 minutes. This part measures your ability to communicate clearly in writing and compose well-organized essays using correct grammar, spelling, vocabulary, and sentence structure.
The participants were given one topic and 30 minutes to write an essay of about 4-5 paragraphs, or 300-350 words.

Students in both groups were supposed to write eight topics (chosen among recent TOEFL writing section) in different phases of the study, the pre-test and the post-test. The scores of the first writing were later used as the pre-test scores. In the case of topic 1 and 8, none of the groups received background information via e-mail; they were just given topics and asked to write.

Since this study lasts 8 sessions within 4 weeks the students were just given 8 topics, one topic for each session. Topic 1 considered as the pre-test for both groups, topics 2, 3, 4, 5, 6, and 7 as the treatment for experimental group, and topic 8 as the post-test for both groups. During writing topics 2, 3, 4, 5, 6, and 7 experimental group’s background knowledge was activated through e-mail while the control group received no background knowledge activation through e-mail.

Cue Cards
Students in experimental group were sent some cards via e-mail by the teacher relevant to the topics, which illustrated different pictures or key words on them. Looking on these cards, learners’ background knowledge was being activated and triggered to elaborate their comments on the related topics while the students in control group were just introduced the same topics without cue cards in the classroom to write a paragraph for the next session. So, this was just considered as one of the ways of activating background knowledge.

E-mail and Computer
The students in experimental groups received e-mail, containing cue cards and some special outline of the topics, on the writing topics and they replied the e-mail by typing the topics in the Word Software attaching to their e-mail and sending them to the present researcher. Fortunately, in this new age of communication, all of the participants were well conversant with the technology of computer, e-mail, and internet and they all have computers and access to the internet, so the investigator faced no challenge in this important case.

Procedure
This study was conducted in five separate phases:

Sampling (based on Oxford English Language Placement Test)
To make sure that the participants were at the same level of proficiency, advanced level, the Oxford English Language Placement Test was administrated. Students who had OELPT scores of 41-50 were considered as the main participants. They were further, randomly divided into two experimental and control groups.

Pre-Test Administration
After the administration of the proficiency test, both groups were assigned to write topic 1 as the pre-test. The aim was to compare the changes, if any, on the part of the learners’ writing development after the final phase i.e., the post test. In this phase none of the groups received background information by means of e-mail; they were just given topic 1 and were asked to write about it.
Treatment
In this phase, the teacher involved the learners in the new instruction (treatment). Like on the TOEFL writing section, both groups were assigned to write one topic, and given 30 minutes to write an essay of about 4-5 paragraphs, or 300-350 words in the classroom out of topics 2, 3, 4, 5, 6, and 7 and these topics were considered as the treatment for experimental group. During writing topics 2, 3, 4, 5, 6, and 7 experimental group’s background knowledge was activated through e-mail before writing and e-mailing topics while the control group received no background knowledge activation through e-mail.

Post-Test Administration
In the fourth phase and after the treatment was given to the experimental group, the students in all groups were required to write another composition about the last topic. Again, in this phase, none of the groups received any background information by means of e-mail and they were just given the topic and asked to write about it.

A Brief Training Session for Raters
After all the compositions were written, they were given to three raters including the researcher to score them. Compositions were scored by three different scorers because the more readers per paper, the more reliable the scores. Jacob et al (1981, p.69) have mentioned that “for maximum reader reliability each composition should be read by at least three raters, independently”. Following this guideline, three raters, including the researcher, read the papers to make sure that the evaluation was valid, i.e. inter-rater reliability. Therefore, the mean score of three scores (by the raters) for each student on each topic was calculated as the final score of that topic.

During this phase, the criteria for scoring was chosen: holistic method of scoring, because Heaton (1990) has observed that if compositions were scored by three or four impression markers or holistic scores, the total mark will be found to be far more reliable than if the marks were awarded by one analytic marker. He has also stated that the holistic method is a useful method of marking a huge number of compositions.

In this research the researcher chose the scale from 0 to 30, based on TOEFL writing score. Subjectivity of the scoring is decreased by considering the mean of three scores’ marks as the tester’s mark.

Design
This study is a true experimental research and has the pretest-posttest equivalent-groups design. The participants were randomly divided into two groups. The control group (N=25) received conventional instruction; whereas, the experimental group (N=25) received necessary background information by means of e-mail as the instruction type of treatment. The major variable which the researcher hoped to manipulate in this study (independent variable) includes providing background information by means of e-mail and writing e-mail but learners’ writing ability is the dependent variable that the researcher measures to determine the effect of treatment on it in EFL advanced learners.
The study includes both a pilot study and a main study and uses sampling procedure, so the design can be labeled true experimental.

RESULTS AND DISCUSSION

This section provides the detailed statistical analyses performed in this study and it represents every step which was taken for analyzing the obtained data in order to test the hypothesis of the study based on the results:
Providing background Information via e-mail by the teacher and writing e-mail by the students does not have any effect on Iranian EFL male learners’ writing ability.

The collected data were fed into the SPSS software to be analyzed considering the scales of measurement of the variable of this study. The data analysis was first followed to examine the reliability of the instrument, and Corobach’s alpha values are obtained to compare the pilot study and actual data reliably. Statistical procedure in this study included the descriptive analysis and referential statistics of the scores obtained on the 3 tests of OELPT, pre-test, and post-test. In the main procedure of data analysis, the descriptive statistics of the scores were calculated. Then a series of t-tests were run to compare the results obtained from both groups.

Analysis of Scores on Proficiency Test

Before administering the treatment of the study, all participants of main study (n = 75) took the proficiency test i.e., Oxford English Language Placement Test (OELPT) to have their language proficiency pretested. The purpose of proficiency test was to manifest the learner’s homogeneity or to show whether the learners’ knowledge of English was at the same level. Every one of the participants was assigned a number that was fixed until the end of study.

The descriptive statistics of proficiency test is shown in table 2. Regarding this table the minimum and maximum of the scores were 31 and 50 respectively. The mean of scores was 41.31 and standard deviation was 5.12. The far distance between the minimum and maximum of scores indicates that the distribution of scores is not normal.

Table: 2
Descriptive Statistics of the Obtained Scores from OELPT

<table>
<thead>
<tr>
<th>N</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>OELPT Scores Valid N (listwise)</td>
<td>75</td>
<td>19.00</td>
<td>31.00</td>
<td>50.00</td>
<td>41.4521</td>
<td>5.12088</td>
</tr>
</tbody>
</table>

As it was mentioned, the participants with scores below 41 were excluded from the study. Thus, as demonstrated by table 3, twenty five of participants were excluded from the main analysis.
In order to prove the normality of the selected scores of proficiency test, another statistical procedure, namely, one sample Kolmogorov-Smirnov test was administered. As table 4 shows the most extreme differences between the scores is not significant. The measured significance level was 0.32 and it was higher than the assumed level of significance (i.e., 0.05), so it can be concluded that there was no significant difference between the observed distribution of selected scores of proficiency test, and the scores are normally distributed.

So, as the first evidence, it highly confirmed the homogeneity of participants’ proficiency level.

RESULTS OF THE TOPICS MEAN SCORES

Comparing the mean scores, as illustrated in table 5, we certainly observed that the mean score for topic1 in experimental group was 17.40 and this was 17.64 in control group. So, as the second evidence, it highly confirmed the homogeneity of participants’ proficiency level, in male participants.
On the other hand, in the case of topics 2, 3, 4, 5, 6, 7, and 8 the mean scores of experimental group were noticeably bigger than that of control group (informatively shown in Graph 4.1.). Based on this easy comparison we could reject the researcher’s null hypothesis (Providing background Information via e-mail by the teacher and writing e-mail by the students does not have any effect on Iranian EFL male learners’ writing ability) in that providing background Information via e-mail by the teacher and writing e-mail by the students affects and promotes Iranian EFL male learners’ writing ability, but as far as we were going to elaborate on the data analysis of independent samples test of experimental and control groups we preferred to be more patient In rejecting the first null hypothesis.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Topic</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>PreTest</td>
<td>Male Experimental</td>
<td>25</td>
<td>17.40</td>
<td>1.581</td>
<td>.316</td>
</tr>
<tr>
<td>Male Control</td>
<td></td>
<td>25</td>
<td>17.64</td>
<td>1.350</td>
<td>.270</td>
</tr>
<tr>
<td>Topic 2</td>
<td>Male Experimental</td>
<td>25</td>
<td>23.56</td>
<td>1.446</td>
<td>.289</td>
</tr>
<tr>
<td>Male Control</td>
<td></td>
<td>25</td>
<td>17.32</td>
<td>1.749</td>
<td>.350</td>
</tr>
<tr>
<td>Topic 3</td>
<td>Male Experimental</td>
<td>25</td>
<td>23.16</td>
<td>1.281</td>
<td>.256</td>
</tr>
<tr>
<td>Male Control</td>
<td></td>
<td>25</td>
<td>16.64</td>
<td>1.497</td>
<td>.299</td>
</tr>
<tr>
<td>Topic 4</td>
<td>Male Experimental</td>
<td>25</td>
<td>23.80</td>
<td>1.443</td>
<td>.289</td>
</tr>
<tr>
<td>Male Control</td>
<td></td>
<td>25</td>
<td>17.32</td>
<td>1.626</td>
<td>.325</td>
</tr>
<tr>
<td>Topic 5</td>
<td>Male Experimental</td>
<td>25</td>
<td>22.76</td>
<td>1.665</td>
<td>.333</td>
</tr>
<tr>
<td>Male Control</td>
<td></td>
<td>25</td>
<td>17.44</td>
<td>1.710</td>
<td>.342</td>
</tr>
<tr>
<td>Topic 6</td>
<td>Male Experimental</td>
<td>25</td>
<td>23.5200</td>
<td>1.12250</td>
<td>.22450</td>
</tr>
<tr>
<td>Male Control</td>
<td></td>
<td>25</td>
<td>17.7200</td>
<td>1.59478</td>
<td>.31896</td>
</tr>
<tr>
<td>Topic 7</td>
<td>Male Experimental</td>
<td>25</td>
<td>23.6400</td>
<td>1.28712</td>
<td>.25742</td>
</tr>
<tr>
<td>Male Control</td>
<td></td>
<td>25</td>
<td>17.0800</td>
<td>1.86905</td>
<td>.37381</td>
</tr>
<tr>
<td>Topic 8</td>
<td>Male Experimental</td>
<td>25</td>
<td>20.5600</td>
<td>1.58325</td>
<td>.31665</td>
</tr>
<tr>
<td>PostTest</td>
<td>Male Control</td>
<td>25</td>
<td>16.9200</td>
<td>1.52534</td>
<td>.30507</td>
</tr>
</tbody>
</table>
Graph: 1
Topics Mean Scores of Groups

Graph: 2
Mean Scores of Pre-Test and Post-Test in both Groups
### Table: 6
Independent Samples Test of Experimental and Control groups

<table>
<thead>
<tr>
<th>Topic</th>
<th></th>
<th>Levene’s Test for Equality of Variances</th>
<th></th>
<th>t-test for Equality of Means</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
<td>T</td>
<td>Df</td>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic 1 PreTest</td>
<td>Equal variances assumed</td>
<td>.1081</td>
<td>.304</td>
<td>-.577</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>-.577</td>
<td>46.852</td>
<td>.567</td>
<td>-.240</td>
</tr>
<tr>
<td>Topic 2</td>
<td>Equal variances assumed</td>
<td>2.596</td>
<td>.114</td>
<td>13.748</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>13.748</td>
<td>46.356</td>
<td>.000</td>
<td>6.240</td>
</tr>
<tr>
<td>Topic 3</td>
<td>Equal variances assumed</td>
<td>.736</td>
<td>.395</td>
<td>16.550</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>16.550</td>
<td>46.879</td>
<td>.000</td>
<td>6.520</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>14.903</td>
<td>47.336</td>
<td>.000</td>
<td>6.480</td>
</tr>
<tr>
<td>Topic 5</td>
<td>Equal variances assumed</td>
<td>.172</td>
<td>.681</td>
<td>11.145</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>11.145</td>
<td>47.967</td>
<td>.000</td>
<td>5.320</td>
</tr>
</tbody>
</table>
It was found that, in the case of topic 1, the obtained p value was higher than 0.05 (P = 0.567). As illustrated in Table 6, it can be concluded that there were no significant differences between the mean scores of the experimental and control groups in writing the first topic. This is to say, both groups were homogenous in terms of their knowledge of writing skill prior to the present study.

As demonstrated in the previous table the t-test results show that there is a meaningful difference between the means of the two groups in topics 2, 3, 4, 5, 6, 7, and 8.

It also indicates that in topics 2, 3, 4, 5, 6, 7, and 8 since P value is lower than the alpha level of 0.05 (P = .000), there was a significant difference between the experimental and control male groups in their knowledge of writing topics. Here again, based on this finding, we could reject the researcher’s null hypothesis (Providing background Information via e-mail by the teacher and writing e-mail by the students does not have any effect on Iranian EFL learners’ writing ability) in that there is a significant difference between the writing performance of male students who write e-mail, via receiving background information, and those male students who write traditionally without receiving background information.

**DISCUSSION**

In this paper, providing background Information via e-mail by the teacher and writing e-mail by the students proved effective in increasing Iranian EFL learners’ writing ability. Finally, providing background Information via e-mail by the teacher and writing e-mail by the students in experimental male learners showed statistically significant results compared to control male learners in terms of the learners’ writing ability.
In conclusion, it is noteworthy to reiterate the fact that due to the scarcity of the research and lack of sufficient evidence in this burgeoning field, more research is merited to gain deeper insight into the best and most effective ways to practice and integrate technology into language learning and teaching environments.

The main goal of this study was to find the effects of technology on learners' writing ability. It was supposed that, the use of writing e-mails would help learners in achieving a higher writing skill. The study showed that there was a significant difference between those who worked with technology from those who did not work with technology and took part in traditional classes.

The results of this study are to some extent similar to those obtained by Toyoda (2001) who claimed that "the technology can have a positive impact on learner autonomy when learners have extensive experience with technology" (Toyoda 2001, p. 11). He furthered that "it also can have a positive impact on autonomy only when learners perceive technology as a useful tool" (Toyoda 2001, p. 11).

The positive effects of technology on language learning also have been demonstrated by Warschauer (1996) who found that using technology in teaching encourages learners to develop their language skills.

The common things among all these studies is that, by connecting classroom learning with other learning outside the class situation students may see new ways of learning experience as an extension to the future (Allford Pachler 2007).

In other research findings, Donaldson and Kötter (1999) and Kartal (2002) found that CALL applications are interesting and motivate students in foreign language learning.

Different justifications can be brought for this finding. First of all, the participants of this study were advanced students and in lower levels there may be some differences. Advanced students may have the experience of working with computers for some years and their writing ability might have improved to some extent because of dealing with the language before. It seems that for them, the use of technology influences their writing ability.

**CONCLUSION**

The findings of the present study support the efficacy of providing background Information via e-mail by the teacher and writing e-mail by the students in experimental group showing significant improvement over the control group who did not receive background information via e-mail. CALL framework proposed in the study attaches ultimate importance to the whole process of learning, writing. In this study, the experimental group who received background information proved successful in writing.

The present study has really got some valuable results and surely can provide some enlightenment to EFL learning in Iran. But there are still some uncertainties and limitations needing further research.
In order to answer the main question of the study, namely ‘Does providing background information via e-mail by the teacher and writing e-mail by the students have any effect on Iranian EFL learners’ writing ability?’ we had to compare the mean scores of experimental and control groups. As previous tables showed, there was a wide gap in their scores, indicating the superiority of experimental group to control group in terms of their performance on writing topics.

**Pedagogical Implications for Teachers**

With respect to providing EFL learners background information, it is suggested that teachers activate related knowledge of the students to low level learners, too. It can be argued that learners at lower levels might not have enough proficiency to write, but it would be possible by providing support on the part of the instructors. It is also suggested that providing EFL learners’ background information be used with different proficiency level learners.

Thus, providing EFL learners’ background information can be taken into account as being effective when dealing with different level learners. Generally speaking, Iranian EFL learners are mostly inclined to look up to their teachers to provide them with correct writing rather than by themselves. Another suggestion is that when activating background information teachers should make use of different ways of activating background information.

**For Learners**

The implication is that learners can benefit a lot from this kind of instruction and that teacher intervention can be very instrumental in the process of teaching writing. Regarding online courses and e-learning in general, it is suggested that the students improve their language proficiency on line through fun, i.e., chatting with their friends and classmates in the foreign language, English.

**For Researchers**

Although this study firmly supported the positive role of activating background information intervention via e-mail in writing development, we see a need for further studies to be commissioned not only in the area of writing, but in all other language skills, with learners of different ages and proficiency levels, to better reveal the relative share of activating background information via e-mail in accomplishment of the most important concern in education, i.e. the learning. On the other hand, it would be a good idea to conduct further research with female participants.

It is highly recommended for those who are willing to do researches in the domain of activating background information to study its effect in other levels of language proficiency and scrutinize its role in other skills as reading. Iranian Researches can also do some researches at other institutes apart from Iran Language Institute and other cities rather than Tehran and researcher from other countries can do the same with the learners of different nationalities to zoom the effect of first language, if any, on the results of the studies.

**For Test Designers**

It is also believed that the findings of the present study can contribute to the improvement of testing and online courses as well. It is suggested that test makers evaluate learners on the basis of their overt incompetency regarding their on line performance. It is also recommended that more
ways of activating background information should be provided for learners with low proficiency levels. On the other hand, some key words as ways of providing background information activation might seem appropriate for learners with higher proficiency levels as they might possess deeper-level processing capabilities than lower level learners. Additionally, while dealing with low level learners, test makers are advised to test one structure in their writing performances at a time and avoid the combination of certain structures as it may result in learners’ confusion and uncertainty.

SUGGESTIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH AND SUMMARY

Suggestions and recommendations for future research are as following.

- The sample size in this study was relatively small (N = 50). However, further research with larger samples may provide different results.
- The proficiency level of the participants in this study was advanced. Further research with learners of different proficiency level may provide different results.
- In this research male learners participated, so conducting more research with female participants may bring about different results.
- This study was conducted within a period of four weeks during which eight writing topics were introduced. It is conjectured that longer treatment with more writing topics may result in different outcomes.
- Since the maximum of 350 words per writing was set as the limit in this study, it is suggested that further research be done with different range of words, preferably 150 words.
- Context is one of the most important factors influencing the results. Therefore, it is suggested that using different contexts may produce different results.
- Finally, more research is merited utilizing different types of activating background information than those of the present study through technology.

This study revealed that activating background information via e-mail by the teacher and writing e-mail by the students is effective in enabling learners to improve their writing skill. In accordance with and in support of previous research, the results of the present study indicated that the learners who received background information via e-mail by the teacher improved their writing skill. Those who did not received background information did not make progress in their writing skill.

Finally, it is hoped that the findings of this study provide further directions and guidelines for researchers and those interested in writing skill and background knowledge with the aim of enhancing learning and supporting the needs and requirements of learners.

It is also hoped that by integration of activating background information and writing skill more opportunities are provided for all to equally benefit from learning and education.
BIODATA and CONTACT ADDRESSES of the AUTHORS

Behzad NAZARI has an M.A. in TEFL from IAU South Tehran Branch. He is interested in Assessment, Dynamic Assessment, Testing, sociolinguistics, and related fields. He has been teaching English as a foreign language in Iran for four years and he is an English teacher at the ILI.

Behzad NAZARI (Corresponding Main Author)
MA of TEFL, Islamic Azad University, South Tehran Branch, Tehran, IRAN
English Instructor at Iran Language Institute
behzad.nazari1362@yahoo.com
Address: Iran Language Institute, Rasht St., Valiaasr St., Tehran, IRAN
Zip Code: 1591719811
Telephone Number: 0935 681 6340

Sahar NIKNJEJAD has an M.A. in TEFL from IAU South Tehran Branch. She is interested in Assessment, Teaching theories, and related fields. She has been teaching English as a foreign language in Iran.

Sahar NIKNJEJAD (Co-Author)
MA of TEFL,
Islamic Azad University,
South Tehran Branch, Tehran, IRAN
No. 10, Shahid Salehi Alley, Dampezeshki St.,
21 Metri-e Jay St., Ostad Moein Station, Tehran,
Zip Code: 1349745377IRAN.
Phone: 0098 935 681 6340
Email: sahar.niknejad@yahoo.com

REFERENCES


[http://iteslj.org/Techniques/Meloni-Email.html](http://iteslj.org/Techniques/Meloni-Email.html)


[http://iteslj.org/Articles/Ho-Email.html](http://iteslj.org/Articles/Ho-Email.html)

Suler, J. (n.d.) The basic features of E-mail Communication. Selfhelp Magazine.  


DESIGNING A MODEL OF V ocational training programs FOR DisableS THROUGH ODL

Dr. Shaista MAJID
Department of Special Education,
Faculty of Education,
Allama Iqbal Open University,
Islamabad, PAKISTAN

Adeela RAZZAK
Senior Teacher, Special Education Center,
Ghuas Pura, Sialkot, PAKISTAN

ABSTRACT

This study was conducted to designing a model of vocational training programs for disables. For this purpose desk review was carried out and the vocational training models/programs of Israel, U.K., Vietnam, Japan and Thailand were analyzed to form a conceptual frame work of the model. Keeping in view the local conditions/requirements a model of vocational training program was proposed. The proposed model involved the vocational training plan for the job of cashier for mild group, receptionist for moderate and computer operator for severe group. It specified the type of disability as well involved in the training plan.

The model recommended the vocational training of three levels of disability; mild, moderate and severe irrespective to the type. The model consisted of details of structure, objectives, professional support involved, vocational training plan and syllabus/activities, evaluation and on job training etc. International practices regarding VT mixed with the national existing situations were critically analyzed during desk review and finally a plan of VT for disables was proposed. A survey was conducted via a questionnaire to get opinion of the heads and senior vocational instructors of Federal Government vocational training and rehabilitation centers for PWDs. The collected data was statistically analyzed to quantify the suggestions on proposed model.

The major findings included that all stakeholders considered VT helpful in rehabilitation of PWDs. All heads and vocational instructors are willing to adopt this model, minimum or no extra funds are needed in its implementation, the vocational teacher employed in the centers can easily manage to adopt this model at their centers because no extra training is required for the staff and they all endorse the VT plan proposed in this model.
A vocational training model is required to reduce socio-economic gap and to set professional standards by developing human resources trained in trades. The syllabus, activities and methodology proposed for the vocational training of the students at special education centers for the disables was agreed upon by the experts. It was recommended that vocational training model on various jobs for specific disabilities may be developed. Vocational training model for after school youth may also be developed on similar pattern. It was recommended that vocational training must be implemented through ODL for the training of PWDs in acquiring vocational skills if there is no vocational skill training teacher or resources available at the centers.

In this way a large number of individuals who are taking education at special education centers and institutions can take benefits from VET programs at a time with minimal cost provided at their door steps or at institutions.

Keywords: Disable persons, vocational training, rehabilitation, ODL, model on specific jobs for disable.

INTRODUCTION

Vocational training of persons having disabilities is the part of ongoing rehabilitation process. Vocational training is designed to enable a disabled person for a suitable job which is in line with his vocational potential and he finds it easy to successfully advance in it. Vocational education and training focuses on abilities of people having disability to make them useful/productive worker in different jobs according to their abilities.

In this regard Abbas (2005, p.3) says that, "Vocational training means preparing affected people with physical, sensory or emotional disabilities for employment and helping them cope effectively with the environment”. It has been observed that the provided vocational training facilities are not enough in accordance with the requirements of persons with disabilities in both sectors; public and private. The Government of Pakistan (2002) emphasizes that the vocational training programs either administered by the federal, provincial, district governments or by private agencies should be utilization (Government of Pakistan, 2002, p.8). The existing facilities end up till the offering of pre-vocational skill training programs at schools for special children. The number of institution offering vocational courses at national level is also negligible.

There are also no standard criteria of vocational training curriculum selection for different levels. The special schools do not maintain any record of the students’ work that has left the school. Only few disabled students got jobs after leaving the schools, some got jobs either on the basis of their own efforts or the skills they gained after leaving the school. Such students are few in number while there is a large majority of school leavers who is sitting idle due to lack of vocational training and employment opportunities for them. Therefore it is essential to develop and design vocational training program to be properly run at schools in order to train the disabled students vocationally.
Due to lack of availability of vocational and technical network in Pakistan, a need exists to establish vocational training through ODL.

LITERATURE REVIEW

The vocational training is a movement towards reducing the gap between the normal and the handicapped. It is an essential tool for integrating the special people in society and making them productive member of community.

According to ILO, Disabled Persons Convention No.155, Recommendation No.168, (1993), vocational training is one means of helping a disabled person to become settled in employment. Methods of achieving this are similar to those used in planning for the able persons, (Sajjad, 2004).

There is probably not a single country in the world over where all young people’ without exception, can learn the trade they would most like. Sharma (2006, p.63) was of the view that "Government needs to give high priority to vocational and skill-oriented education to the children with special needs". Government of Pakistan (2006, p.74) also identified in National plan of Action 23 actions to be taken for rehabilitation of persons with disability. PWD’s can take up training to become skilled or semi-skilled workers in keeping with their capabilities and intellectual performance. Good pupils are free to acquire university entrance standards and enroll at college or university.

Vocational Training and Open and Distance Learning

Open and distance learning provides an alternate which can be used vigorously in VET training. Numerous countries of the pacific island are imparting VET through distance learning (common wealth of learning, 2002). The face-to-face VET delivery system could not fulfill the requirements of all communities in any country. Similarly the national governments cannot provide facilities of courses and professional support regarding this training in each and every corner of the country.

Since the VET involves material and facility, delivery mechanism and professional support, its provision at different institutions is costly and sometimes provision is not possible to all sectors. The requirements of skilled workers at different times in the communities also make it cost effective. The cost of providing a range of skilled workers in the areas of building, energy generation, food production, health services and automobile maintenance, is very large when the traditional face to face delivery system is used. Therefore the distance learning have been suggested by the researchers the best solution to this problem.

The distance education train people without incurring the costs of travel, accommodation, etc. According to Bartam, Lene, & Williams (2004) “the only alternative at present is to invest heavily in sending students off shore to study. The cost is enormous because it includes the cost of living and transport as well the cost of tuition, but this mode of learning is supported by island government for high end training such as medicine and law, where students might be sent to the universities of the South Pacific.

However it is not supported by the Island government for high need training areas such as basic trade skills in building, electrical and mechanical trades where larger number of skilled people are
needed” (pp. 100-101). A broader range of programs can be delivered and made accessible to people on remote areas of any country via ODL. Rumble (1997) says “it also has enormous advantages of taking some it not all of the training out of firm’s time and putting it into the trainee’s private time” (Rumble, 1997:151-152). According to the outcomes and Recommendations (draft); “for developing countries like India, a properly planned and effectively implemented Vocational Education and Training (VET) system through open and distance learning (ODL) will

- equip the learners having varying learning abilities with particular emphasized on marginalized groups with appropriate skills for sustainable livelihood,
- facilitate creation of a pool of technologically qualified human resource, and
- make the youth entrepreneurs. However, in many countries, particularly in developing countries, the VET programme under the formal education system faces certain limitations with regard to expansion, access, and equity and cost effectiveness.

Consequently a large number of individuals who would like to acquire competencies and skills are excluded from the benefits of VET” (International Conference Vocational Education and Training through Open Schooling, 8-10 February, 2006).

All level education is being delivered very rapidly by distance learning. The developed countries have opted this mode in the process of imparting TVET (technical/vocational education and training) reform more rapidly than developing countries. As AM KOMBE Stevens (August 2001) concluded that “the most viable option for the region (Sub Sahara Africa), under the prevailing conditions, is the implementation of a relatively basic model of distance education delivery that integrates print-based materials, remote study/ access centers, and the incorporation of face-to-face components for imparting manual/ psycho-motor skills”. Therefore the study was designed to formulate a model of vocational training of disabled through distance and open learning.

**OBJECTIVES OF THE STUDY**

The research intended to achieve the following objectives:

- To critically analyze the existing vocational training programs.
- To prepare a model of vocational training program for disable children.
- To analyze experts opinions on the proposed model of vocational training program through ODL.

**DELIMITATIONS OF THE STUDY**

The research was delimited to the:

- Development of a proposed model of vocational training programs for disables only for three levels of disability i.e. mild, moderate and severe.
- Only the existing vocational training models/programs of Israel, U.K., Vietnamese, Japan and Thailand were critically analyzed.
RESEARCH METHODOLOGY

The research was descriptive in nature. Desk review was carried out to critically analyze the vocational training programs and to develop a model of vocational training program for disables. The survey method was applied to take expert views on the proposed model.

Preparation of Model
The model was prepared through many stages. Firstly, Israel, U. K., Vietnam, Japan and Thailand models/vocational training programs were critically analyzed. Components for the model were drawn from the findings of this analysis.

Secondly, present situation was analyzed thoroughly and it was revealed that VT for PWDs in Pakistan is almost neglected.

Thirdly, these components were discussed with the experts of special education.

Fourthly, since the model had to involve specific job training to the disables, therefore information on vocational skills for the jobs of cashier, receptionist and computer operator were collected and enlisted from the internet search regarding these jobs.

Afterward these information were got confirmed from the professional experts of these jobs by discussing with them.

Population
The population of the study comprised of heads (11) and all vocational instructors (55) working at all vocational training and rehabilitation centers previously governed by Federal Government.

Sample of the Research
The sample of study comprised of 22 respondents, i.e., 11 heads and 11 vocational instructors. One head and one senior most instructor from each vocational training and rehabilitation center were selected for the sample of the study.

Instrument
Expert opinion on proposed model was gathered through a questionnaire containing 23 items, 16 items on VET model and 07 items on the use of ODL for the vocational training. 22 items were responded on Yes or No options and one on open ended option.

FINDINGS AND RESULTS

The current study was aimed at designing a model for the vocational training of disables through ODL. In this respect a thorough desk review of vocational training programs/systems in different countries, i.e. Israel, U.K, Vietnamese, Japan and Thailand was carried out. A model of vocational training was designed for the jobs of cashier designed for the hearing impaired students with mild disability, receptionist designed for the physically handicapped students with moderate disability, computer operator designed for the visually impaired students with severe disability. Expert’s
views were sought on the proposed model as well as opinions regarding delivery of this vocational training through ODL.

**A Proposed Model of Vocational Training Programs for Disable**

An adult is always preferred being an earning individual of the society, but in case of disability, the disable children and adults require vocational training along with school education from the early school years. The pioneer world report on disability by World Health Organization (2011), reveals that “more than one billion people in the world are disabled and 110-190 million encounter significant difficulties in their daily lives” (p.8). At many places the medical treatment and rehabilitation services for people with disabilities are provided at very low grade or do not exist. This is due to different reasons such as lack of awareness, education professionals and training. There is a dire need to enhance the number and variety of trained professionals working at schools and training institutions for the benefit of disabled population. The International Labor Organization (2009), states that “the increasing pace of economic, social and technological change, coupled with the growing need to seize opportunities opening up in a rapidly-integrating world economy requires continuous policy and institutional adaptation” (p.24). It has been observed that investment on producing skilled personnel in education and training always become a key to economic and social development of a nation. Because the money spent on developing peoples’ skills and capabilities increases his participation in economic and social life.

In some countries like Germany, Israel, Singapore, Thailand, Nepal, Australia, India, Japan and South Africa, vocational training models were developed, implemented and followed accordingly. Each and every model has its special features owing to the community’s needs and requirements. So it is said that not a single model can applicable to all situations.

In Pakistan the vocational training facilities are not sufficient to meet the requirement of persons with disabilities in both public and private sector (National Policy for Persons with Disabilities, 2002). Therefore the setup of vocational training center at district level was recommended for the betterment of socio-economic conditions of the PWDs. The National Plan of Action for persons with Disabilities (2006), proposed the short term measure which includes expanding and reinforcing vocational training, employment, promoting inclusive education and medical rehabilitation services. Vocational training of disables is restricted up to mere level of pre-vocational skills/training in National Special Education Centers. The main emphasis of this training is only to develop pre-vocational skills.

Similarly in vocational rehabilitation centers training of vocational skills is being imparted which is mainly of obsolete nature (e.g.) cane work, chick work, knitting, telephone operator, sewing, music, welding, agriculture, etc. The teaching methodology is also not appropriate and practicable. Therefore the students after this training again become dependent and neither find any job in the market nor the employer are satisfied with their vocational skills. An appropriate system of vocational skill development is desperately required in the present situation. In this research study a model of vocational training has been proposed.

Ground realities have been observed minutely and model is extended right from the existing situation. Trends and issues are kept in mind and the same is finalized keeping in mind the futuristic approach.
Structure
The proposed model of vocational training for disable is meant for the students of secondary level and relates to the disability levels such as mild, moderate and severe.

The model proceeds according to the needs of disables and is applicable within the held resources irrespective to the type of disability and the training depends on pre-requisite skills of particular job in a group. The disable persons fulfilling the pre-requisite skills will be eligible to gain vocational training of the mentioned job.

Objectives
The main objectives of this proposed model are as under;

- To prepare disable students for work by providing them with education and knowledge-based training for certain occupations; i.e. cashier, receptionist and computer operator.
- To prepare disable student a beneficial citizen of the society.
- To ensure rehabilitation of disable towards social/economical terms
- To enhance the reality of student profile and making it vocational/job skills based.
- To give awareness to the policy makers for the vocational rehabilitation of disabled from a new dimension.

Professional Support
The professional support for vocational training will be provided by the vocational instructor working at special education centers. These vocational teachers should be well experienced in teaching of vocational skills, vocational education and training.

Vocational Training Plan
The vocational training has been planned for disable children classified on the basis of level of disability such as mild, moderate and severe. Vocational training of these three groups is given separately as follows:

Hearing Impaired Students with Mild Disability
Specific Job
The job specification of cashier in a firm/bank is recommended for mild hearing students.

Pre-requisite Skills
Pre-requisite skills for the said job are;

- Math skills; i.e. counting, addition, subtraction, multiplication, division
- Writing skills
- Counting skills
- Well developed fine motor skills
- Social interaction
Required Job Skills
Required job skills for the post of cashier are:

- Development of cash handling skills
- Development of quick calculation abilities
- Development of advance counting and calculation skills
- Development of organizational skills in order to carry out all the tasks
- Development of strong customer skills
- Development of skills such as receiving the payment of bills of different categories, online transactions, etc.

Objectives
The main objectives of vocational training for the post of cashier are as under:

- To perform as cashier
- To produce cash handling skills
- To enable for quick calculations and counting
- To inculcate organizational skills
- To deal with customer efficiently

Training Procedure
The duration of the training will be six months/24 weeks. The registered students will undergo the given vocational activities during the training period.

Syllabus for the job skills as Cashier
The syllabus of vocational training will comprise the current syllabus of secondary level including languages, art and craft, social studies, science, Islamite and math. The math subject particularly should cover the following:

Math Skills
This component will cover number system including questions on simplification, Percentage, decimals, fractions, LCM, HCF, Ratio and Proportion, Percentage, Average, Profit and Loss, Discount, Simple and Compound Interest, Time and work, Time and Distance, etc.

Numerical Ability
Ability to solve numerical problems using the four fundamental rules of arithmetic: addition, subtraction, multiplication, and division.

General Knowledge/Current Affairs
General awareness of the environment around him. Knowledge of currency (local/ national and international).

Clerical Aptitude
Noting and drafting, preservation and maintenance of records of cash receipts and deposits Verbal and non verbal responses, typing etc.
Activity No.1

Cash Handling

- Students will be given mixed coins of values in rupees 01, 02, 05, 50 and they will be asked to group coins in values of rupees 5, 10, 20, 30,.................200 differently. The students will be given experiences to add and subtract the values of coins from 25, 50, 100, and 200.
- Students will be given 25 coins and they will be asked to sort 15 coins and then write the total coins, amount of sorted coins and is equal remaining amount in figures/words.
- Students will be given two packets of 25 coins and they will be asked to add 10 coins from packet to the other and then write same in figures/words. On the same pattern the activity will be extended up to 50, 100, and 200 coins.
- Students will be given mixed notes of rupees 10, 20, 50, 100 and 500 and will be asked to group these notes in values of rupees 100, 200, 300,.................5000 etc. The students will be given experiences to add and subtract these values of notes from 200, 500, 1000, 5000.
- Students will be given 200 notes and they will be asked to sort 50 notes and then write the total notes, amount of sorted notes and remaining amount in figures/words. On the same pattern the activity will be extended up to 500, 1000, 2000.
- Rehearsal/practice of above activities up till the development of skill in reasonable time span.
- Rehearsal/practice will be continuing until quicker than the reasonable time span, i.e., as quickly as within 3 to 5 seconds.

Activity No.2

Counting and Calculation

- Students will be given the currency notes of 10, 20, 50, 100, 500 and 1000 for practicing counting and calculations.
- They will be provided bundles of 10 to 1000 rupees notes and they will be asked to make bundles of ten notes in each category and write down the amount in figure.
- They will be provided 10 notes of 10 to 1000 rupees and asked to fetch out 5 notes of each category and then they will be asked to write the same in words/figures.
- Students will be asked to make 5 sets of two notes of each category (10 to 1000) and then count it and will write the same in figures/words.
- Rehearsal/practice of above activities up till the development of skill in reasonable time span.
- Rehearsal/practice will be continuing until quicker than the reasonable time span, i.e., as quickly as within 3 to 5 seconds.

Activity No.3

Organizational Skills

- Exercises of proper entries of receiving/handing over cash should be practiced in ledgers.
- Proper ledger will be provided to them and they will be asked to enter each incoming/outgoing amount properly in specified boxes/places.
- Supervised practice/rehearsals will be continued up till the accuracy of the task.
- Independent rehearsals/practice will also be provided.
Entries will be fed in the shape of computer data for further proceedings of the organization.

Activity No.4 Customer Care Skills

The students will be asked to work in artificial setting provided to them for observation and participation in customer care services.

The experience of customer care services will be given on job training in natural settings under proper supervision/observation.

Evaluation of Job Skills

Evaluation of job skills will be held comprehensively on the given criteria in activities. The trainees will be tested on these basis and granted grades.

On Job Training

Successful completers will be recommended for one month on job training. On job training will be splitted into two phases;

- Two weeks guided training under the direct supervision of the real cashier in a firm/bank.
- Independent training will be organized for the last two weeks. The trainee will work as independent cashier during this period. Successful completion will ensure the certification from the institution.

Physically Handicapped Students with Moderate Disability

Specific Job

The job specification of receptionist in an organization is recommended for moderate physically handicapped students.

Pre-requisite Skills

Pre-requisite skills for the said job are as under:

- Communication skills
- Operate the door/entry system
- Meet and greet clients and visitors
- Login visitors and clients
- Required job skills

Required job skills for the post of receptionist are:

- Development of effective team working skills
- Development of high level organizational skills
- Development of precise attention to detail
- Development of ability to multi task
- Development of diplomacy and sensitivity when working with client
- Development of good ICT skills
Objectives
The main objectives of vocational training for the post of receptionist are as under:

- To perform as receptionist
- To deal the visitors efficiently
- To train in ICT skills
- To create high level organizational skills
- To enable them for multi tasks

Training Procedure
The duration of the training will be three months/12 weeks. The registered students will undergo the following activities during the training period.

Syllabus for Receptionist
- The importance of the Receptionist’s role in the organization
- Creating the right first impression
- Personal presentation
- Good communications skills
- Handling incoming and outgoing calls
- Dealing with people/difficult customers
- Maintain links with all other posts available in organization
- Time management
- Effective organizational skills
- Knowledge of organizational structure

Activity No.1
Diary/Dispatch/Appointments
- Practice of entering incoming documents in organization’s diary register under the titles of serial No, date, subject, sender and receiving person/branch for first two weeks under supervision and then for two weeks independently.
- Practice of each and every out going document in organization’s dispatch register under the titles of serial no, date, subject, file no, sender, recipient and mode of dispatch for two weeks under supervision and then for two weeks independently.
- Practice of greeting the visitor, asking them about the purpose of visit, make links or give them the convenient date and time (appointment) for the required person/branch (if required) for two weeks observation to the senior person already doing these duties, then two weeks practice under supervision and then finally two weeks independently practice and recording of appointments in the appointment register and issuance of chits to the concerned visitor.

Activity No.2
Receptionist’s Organization Skills
- Organization of a lecture/seminar for telling them the importance of role of the receptionist in an organization
- The practical experience for creating very first impression will be given by the vocational instructor along with teaching them about personal presentation, proper
preparation of job side through role playing/video recording. The students will be asked for maintaining proper hair cut/combing/hair style. Well dressing/uniform maintenance will be ensured through role modeling/video recordings.

Activity No.3
Communication Skills
Communication skills include practice in following/giving direction accurately, communicating information, understanding and processing information and requesting or offering assistance up till the maximum accuracy/responsibility.

Activity No.4
Telephone Calls
The students will be given experience of receiving, dialing and transfer of local, national, international, intercom and cell phone calls quickly and efficiently according to the following schedule;

- Observation of said activities in the natural setting for two weeks.
- Performing the said activities under supervision for two weeks.
- Performing the said activities independently for two weeks.
- Excessive practical, exercise for lifting, holding, dialing and noting the information from caller will be given for two weeks under instructions.

Activity No.5
Organizational Skills
Organizational skills will be ensured by teaching time management through daily schedules, staying on task until the home time, using time accordingly, keeping work area clean/organized, keeping a check list of necessary tasks for accomplishment with in specified time, breaking of task in to simple steps and songs and games that help improve memory.

Evaluation of Job Skills
Evaluation of job skills will be held comprehensively on the given criteria in activities. The trainees will be tested on these basis and granted grades.

On Job Training
Successful completers will be recommended for two weeks on job training. On job training will be splitted into two phases;

- One week guided training under the direct supervision of the real receptionist in an organization.
- Independent training will be organized for the last second week. The trainee will work as independent receptionist during this period. Successful completion will ensure the certification from the institution.
Visually Impaired students with severe disability

Specific Job
The job specification of Computer Operator in an organization is recommended for severe visually impaired students.

Pre-requisite Skills
Pre-requisite skills for the said job are;
- Listening skills
- Mobility and orientation skills
- Find motor skills
- Retention skills
- Proficiency in English language
- Braille training

Required Job Skills
Required job skills for the post of Computer operator are;
- Development of key punching skills
- Development of ICT skills
- Development of skills using software
- Development of skills using hardware
- Development of allied computer accessories
- Development of skills using software specific for blind such as JAWZ, Open book, etc.

Objectives
The main objectives of vocational training for the post of computer operator are as under:
- To perform as computer operator
- To accomplish the assigned tasks efficiently
- To train them in ICT skills
- To promote the fine motor skills/key punching of the trainees

Training Procedure
The duration of the training will be six months/24 weeks. The registered students will undergo the following activities during the training period.

Syllabus for computer operator
Fundamentals of computer
- Introduction
- Input / Output & Processing (CPU)
- Memory Device
- Types of computers
- Characteristics of computer
- History & Generation
Applications of computer Windows XP Overview
- Some Basic Terminology & Typing Skills
- Desktop Settings & Control Panel
- Ms. DOS
- Ms. Paint
- WordPad
- Accessories & Multimedia

E-mail & Internet
- Introduction
- E-mail Account & Its Functions
- Search Engine
- Surfing WebPages
- Basics of Social Networking Site

Virus
- General Introduction
- Antivirus activities

Application Software
- JAWZ
- Open Book
- Microsoft Word
- Microsoft PowerPoint
- Microsoft Excel
- More: (practically Performed activities)
- Widows Seven Overview
- Burning CD/DVD
- Fundamentals of Audio/Video editing
- Fundamentals of Hardware & Networking
- Formatting Hard disk
- Installing Windows

Activities of computer operator
- Hands/fingers exercise regarding punching for two days.
- Orientation of key board through tactile method one week.
- Free style key punching for three days.
- Typing exercise under supervision with necessary soft ware for blinds for two weeks.
- Orientation of computer hardware through tactile method for two weeks practical knowledge/performance of necessary software available for the use of computer accessories needed for the work of computer operator.

Evaluation of Job Skills
Evaluation of job skills will be held comprehensively on the given criteria in activities. The trainees will be tested on these basis and granted grades.
On Job Training
Successful completers will be recommended for one month on job training. On job training will be split into two phases;

- Two weeks guided training under the direct supervision of the real computer operator in an organization.
- Independent training will be organized for the last two weeks. The trainee will work as independent computer operator during this period. Successful completion will ensure the certification from the institution. The flow sheet diagrams of the model were prepared and these are as follows:

Fig 1: Pictorial Representation of Proposed Model of Vocational Training Program for Disable

MODEL OF VOCATIONAL TRAINING PROGRAM FOR DISABLE
Fig2: Pictorial Representation of Model of Vocational Training Program for Cashier

VOCATIONAL TRAINING PLAN FOR THE JOB OF CASHIER

Objectives
- To perform as cashier
- To produce Cash handling Skills
- To include organizational skills
- To deal with customers efficiently

Pre-requisite Skills
- Math skills
- Writing Skills
- Counting Skills
- Fine motor skill
- Social interaction

On job Training
- Guided Training
- Independent Training

Evaluation of Job

Vocational Instructor

Required Skills
- To develop cash handling
- To develop quick calculation abilities
- To develop advance counting and calculation skills
- To develop organizational skills
- To develop strong customer skills

Training Procedure
- Syllabus for job skills cashier
- Math
- Numerical ability
- General knowledge/current affairs
- Clerical aptitude

Activities
- Activity I cash handling
- Activity II counting and calculation
- Activity III organizational skills
- Activity IV customer care skills
Fig 3: Pictorial Representation of Model of Vocational Training Program for Receptionist

VOCATIONAL TRAINING PLAN FOR THE JOB OF RECEPTIONIST

Objectives
- To perform as receptionist
- To deal the visitors efficiently
- To train in ICT skills
- To create organizational skills
- To enable them for multiple tasks.

Pre-requisite Skills
- Communication skills
- Operate the door entry system.
- Meet and greet client and visitors.
- Login visitors and clients.

Required Skills
- To develop effective team working skills.
- To develop organizational skills.
- To develop precise attention to detail.
- To develop ability to multi task.
- To develop good ICT skills.
- To develop diplomacy and sensitivity.

Evaluation of Job

Training Procedure
Syllabus
- Creating the right first impression
- Personal Presentation
- Good Communication Skills
- Handling incoming and outgoing calls
- Dealing with people/difficult customers
- Time Management
- Effective organizational Skills
- Knowledge of organizational structure

On Job Training

Vocational Instructor

Activities
- Activity I Diary/Dispatch Appointment.
- Activity II organizational skills.
- Activity III Communication Skills
- Activity IV Telephone Calls
- Activity V Receptionist organizational Skills.
VOCATIONAL TRAINING PLAN FOR THE JOB OF COMPUTER OPERATOR

Objectives
- To perform as computer operator
- To accomplish the assigned tasks efficiently
- To train them in ICT skills
- To promote fine motor skills

Pre-requisite Skills
- Listening Skills
- Mobility and orientation Skills
- Fine motor Skills
- Retention Skills
- Proficiency in English Language
- Brain Training

Required Job Skills
- To develop key punching skills
- To develop ICT Skills
- To develop skills using software and hardware.

Training Procedure
- Fundamentals of Computer
- Softwares
- E-mail and Internet
- Virus

Activities
- Activity I: Hands/Finger exercises
- Activity II: Orientation of keyboard
- Activity III: Free style key punching
- Activity IV: Typing exercise
- Activity V: Orientation of computer

On Job Training
Evaluation of Job

Vocational Instructor
ANALYSIS OF THE INFORMATION GATHERED THROUGH A QUESTIONNAIRE

A questionnaire comprising 23 items distributed in two parts was distributed to the 11 heads and 11 senior most vocational instructors. Out of 22 the 20 respondents returned back the questionnaire. The response rate was 91%. Analysis is given below in following tables separately.

Table: 1
Expert opinion on the model (N=20)

<table>
<thead>
<tr>
<th>S.N</th>
<th>Statement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Do you think that Vocational training is helpful for rehabilitation of PWDS?</td>
<td>19</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>01</td>
<td>05</td>
</tr>
<tr>
<td>2</td>
<td>Are you satisfied with the present situation of VT for PWDs in the country?</td>
<td>01</td>
<td>05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19</td>
<td>95</td>
</tr>
<tr>
<td>3</td>
<td>Is duration period proposed for the training appropriate?</td>
<td>18</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>02</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Do you agree with the structure of this model?</td>
<td>17</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>03</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>Do you agree with the procedure of this model?</td>
<td>17</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>03</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>Do you consider the model practicable?</td>
<td>18</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>02</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Do you endorse the vocational training plan proposed in this model?</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>04</td>
<td>20</td>
</tr>
<tr>
<td>8</td>
<td>Do you think that our disabled students will be willing to take VT at the centers through this model?</td>
<td>18</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>02</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Do you think that the model can be generalized for all disabilities?</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>05</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td>Do you think this model will be an extra burden for your institution?</td>
<td>05</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>11</td>
<td>Do you think extra funds will be needed for the implementation of this model?</td>
<td>05</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>12</td>
<td>Do you consider this model comprehensive enough for vocational training?</td>
<td>18</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>02</td>
<td>10</td>
</tr>
<tr>
<td>13</td>
<td>Do you feel that some extra training is required to the staff for successful implementation of this model?</td>
<td>04</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>14</td>
<td>Can already working instructors easily manage to adopt this model for the disabled students at their centers?</td>
<td>19</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>01</td>
<td>05</td>
</tr>
<tr>
<td>15</td>
<td>Will this model win the fame among the stake holders?</td>
<td>18</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>01</td>
<td>10</td>
</tr>
<tr>
<td>Σ</td>
<td></td>
<td>208</td>
<td>92</td>
</tr>
<tr>
<td>N (no of statements)</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>13.86</td>
<td>6.13</td>
</tr>
<tr>
<td>Standard deviation (SD)</td>
<td>6.01</td>
<td>5.58</td>
<td></td>
</tr>
</tbody>
</table>

The table 4 shows that 95% respondents opined that VT is helpful for rehabilitation of PWDs and only 5% respondents did not agree with this. Only 5% respondents were satisfied with the current situation of VT for PWDs in the country while 95% were not. 90% respondents considered the duration of period for VT appropriate while only 10% did not think so.

90% respondents are agreed with the structure for the model while 10% did not agree with it. 85% respondents were agreed with the structure & procedure of the model while only 15% were not. 90% respondents considered model practicable while 10% did not think so.
80% respondents endorsed the VT plan in the model while 20% did not endorse it. 90% respondents thought that the students would be willing to get VT through this model while 10% are of opposite view.

75% respondents said that the model could be generalized for all disabilities while 25% did not think so. 75% respondents did not think this model an extra burden while 25% took it as burden.

75% respondents were of the view that no extra funds were required for implementation of the model while 25% had opposite opinion. 90% respondents thought that the model was comprehensive enough for VT while 10% did not think so. 80% respondents opined that no extra training of the staff is required for implementation of the model while 20% thought it required.

95% respondents opined that the working instruction could easily manage to adopt this model in their centers while only 5% had opposite opinion. 90% respondents were of the view that the model would win frame among the stakeholders while 10% did not think so.

Mean score of “Yes” was 13.86 while the mean score of “No” was 6.13 and SD for both types of options was 6.01 and 5.58 respectively.

<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
<th>Responses</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Would you like to suggest certain changes/instructions in this model?</td>
<td>The model should have been proposed disability-wise.</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The implementation of this model should be through concerned authorities.</td>
<td>06</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The vocational rehabilitation centers for disabled must be established in each district headquarters of the country.</td>
<td>04</td>
<td>20</td>
</tr>
</tbody>
</table>

In the response of open ended question, 50% respondents suggested that the model should have been proposed disability-wise. 30% wanted its implementation through concerned authorities.

20% suggested that vocational rehabilitation centers for disabled must be established in each district headquarters of the country.

It was found out that the model should have been proposed disability-wise. Implementation of this model should be through concerned authorities. Vocational training and rehabilitation centers for disabled may be established in each district of the country.
The table shows, respondents were of the opinion that vocational training through ODL is the most appropriate and alternate mode of vocational skill training of the disabled persons if there is no vocational skill training teacher or resources available (95 %, 90 %, 80 %, 80%).

The respondents were of the opinion that Video programs, CDROMs on programmed instruction, Film clips on the employers concerns, On-line interview of the child, On-line of students’ portfolio, On-line discussion off counselor/vocational teacher with employer on client’s vocational skills (90%, 95%, 90%, 95%, 95%) are appropriate resources of ODL for vocational training of disabled.

Table: 3
Expert opinion regarding Vocational training through ODL (N=20)

<table>
<thead>
<tr>
<th>S/N</th>
<th>QUESTIONS</th>
<th>YES</th>
<th>%</th>
<th>NO</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Vocational training through ODL is possible?</td>
<td>16</td>
<td>80</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>18</td>
<td>It is appropriate to develop a short course on vocational skill training for the disabled through ODL.</td>
<td>19</td>
<td>95</td>
<td>1</td>
<td>05</td>
</tr>
<tr>
<td>19</td>
<td>ODL is the most appropriate and alternate mode of vocational skill training of the disabled persons if there is no vocational skill training teacher or resources available.</td>
<td>18</td>
<td>90</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>20</td>
<td>Will every special education institution agree to get register its students having vocational potential.</td>
<td>15</td>
<td>75</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>21</td>
<td>Is it possible that students get vocational skill training through ODL while studying at school times?</td>
<td>16</td>
<td>80</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>22</td>
<td>All children can get enrollment in short course on vocational training at AIOU.</td>
<td>16</td>
<td>80</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>23</td>
<td>Various resources of ODL as mentioned below are enough for vocational training.</td>
<td>10</td>
<td>50</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>-Text/print content for training</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Video programs on the vocational skill training</td>
<td>18</td>
<td>90</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>-CD ROMs on programmed instruction of vocational training</td>
<td>19</td>
<td>95</td>
<td>1</td>
<td>05</td>
</tr>
<tr>
<td></td>
<td>-Evaluation/examination of skills through ODL</td>
<td>12</td>
<td>80</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>-Film clips on the employers concerns</td>
<td>16</td>
<td>90</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>-On-line registration of disabled client</td>
<td>18</td>
<td>95</td>
<td>2</td>
<td>05</td>
</tr>
<tr>
<td></td>
<td>-On-line interview of the child</td>
<td>12</td>
<td>80</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>-On-line of students portfolio</td>
<td>19</td>
<td>95</td>
<td>1</td>
<td>05</td>
</tr>
<tr>
<td></td>
<td>On-line discussion off counselor/vocational teacher with employer onclient’s vocational skills</td>
<td>16</td>
<td>80</td>
<td>4</td>
<td>20</td>
</tr>
</tbody>
</table>

FINDINGS

The findings of the research were as follow;

**Critical Analysis of the Existing Vocational Training Programs/Models**

1. A vocational training model is required to reduce socio-economic gap and to set professional standards by developing human resources trained in trades.
2. Work place is the best place to learn accompanied by the relevance of VET and then the supported employment.
3. Engage PWDs with appropriate training methods included start with basics, group work, using online platform for teaching and learning materials, teaching finding resources and intensive schedule.
4. Lack of standard curriculum Department of Public Welfare training courses was relatively low.
5. E-inclusion of PWDs is the need of this era.

Proposed Model of Vocational Training Program for Disable
6. The proposed model of vocational training program for mild, moderate and severe disable was prepared. The pictorial diagram was developed.
7. The vocational training plan was developed for the job of cashier for mild disable group. The pictorial diagram was developed.
8. The vocational training plan was developed for the job of receptionist for moderate disable group. The pictorial diagram was developed.
9. The vocational training plan was developed for the job of computer operator for severe disable group. The pictorial diagram was developed.

Expert Opinion on the Proposed Model of Vocational Training Programs for Disable
10. Most of the respondents (95%) suggested that vocational training is help full for rehabilitation of the disable.
11. Most of the respondents (80%-90%) agreed that model is comprehensive enough practicable. Its structure, duration, procedure and vocational training plan was greatly endorsed by the respondents.
12. Majority of the respondents (75%) were in favor of the generalize ability of the model. They had the opinion it will not be and extra burden for the institutions because no extra fund will be needed.
13. Majority of the respondents (80%-95%) were of the opinion that the vocational teacher employed in the centers can easily manage to adopt this model at their centers because no extra training is required for the staff. All the disable students will be willing to get VT through this model.
14. Mostly suggested that the model should be implemented through ODL system by involving authorities.
15. Mostly were of the view that vocational training through ODL is the most appropriate and alternate mode of vocational skill training of the disabled persons if there is no vocational skill training teacher or resources available

DISCUSSION
All models of vocational training, which are being implemented in the different countries of the world have their own strengthens/weaknesses keeping in view the local condition/requirements. Dual model of Germany is considered though very successful model for VT but still almost all countries have their reservations about it, owing to their local conditions and requirements. Lack of proper management of the coordination between theory and practice seems the most crucial in this regard.
Isreali model for VT still needs adaptation from other countries keeping in view their legislation, policies, plans and infra structure. On the job vocational training models as wonderful advantages of practical nature but lacks theory of the concept.

Apprenticeship vocational model also face problems of infra structure and lack of coordination between theory and practice. Proposed model also needs expansion towards all the disabilities/locations/professions meant for/adaptable by the PWDs. ICT implementation in vocational training of PWDs is considered remarkably beneficial and admired at all levels through ODL.

CONCLUSION

The findings of the study revealed that different vocational models/programs implemented in different countries emphasized that proper vocational training is the most important requirement in the process of rehabilitation of PWD world-wide. Technologies are making the things better. Therefore need for proper syllabus and vocational activities are being felt at all levels. Infra structure for vocational training of disable is required.

Expansion in provision and trends are needed to be merged with the existing practices. The situation needs special attention of all stake-holders and authorities for up-dation of current practices at the special education centers for the implementation of the Proposed Model of vocational training of disable in the country. Vocational Education and Vocational Training must be implemented through open and distance learning (ODL).

A large number of individuals who are taking education at special education centers and institutions can take benefits from VET programs at a time with minimal cost provided at their door steps or institutions.

RECOMMENDATIONS

The study recommended that;

- Vocational training model on various jobs for specific disabilities may be developed.
- Vocational training model for after school youth may also be developed on similar pattern.
- Course curricula of vocational training should be standardized and up-graded.
- Supported employment should be introduced in Pakistan.
- An effective vocational assessment should emphasize before enlisting the pre-requisites of the job.
- Vocational training must be implemented through ODL for the training of the disabled persons in vocational skill if there is no vocational skill training teacher or resources available at the centers.
BIODATA and CONTACT ADDRESSES of the AUTHORS

Dr. Shaista MAJID is a scholar in the fields of special education and teacher's training at post graduate level and is working as assistant professor in department of special education of Allama Iqbal Open University of Pakistan. During her job she had developed courses on visual impairment, hearing impairments, physical disabilities and career planning and rehabilitation. She had supervised more than two hundred researches in this field including masters, M.Phil and PhD level.

Dr. Shaista MAJID
Department of Special Education,
Faculty of Education, Allama Iqbal Open University,
H-8, Islamabad, PAKISTAN
Cell No. 92-345-5357127
Email: adeeb_shaista@yahoo.com

Ms. Adeela RAZZAK is M.Phil degree holder in special education. She is running a special school for disabled children. She is a dedicated worker and had rehabilitated many children with disabilities living in rural areas of the country. The children trained by her are now spending their lives as independent citizens.

Adeela RAZZAK
Senior Teacher, Special Education Center,
Fateh Gar Road. Ghuas Pura, Sialkot, PAKISTAN
Cell No. 92-322-6140100

REFERENCES


Outcomes and Recommendations (draft) (8-10 February, 2006). International Conference Vocational Education and Training through Open Schooling Organised by National Institute of Open Schooling, India and Commonwealth of Learning, Canada, Kovalam, Kerala, India


Stevens, G. (August 2001). Distance learning For Technical and vocational education In Sub-sahara africa: Challenges and opportunities, afth4 the world bank (africa)


STRATEGIES FOR MAINTAINING QUALITY IN DISTANCE HIGHER EDUCATION

Dr. Sufiana Khatoon MALIK  
Assistant Professor  
Education Department  
National University of Modern Languages (NUML),  
Islamabad, PAKISTAN

ABSTRACT

The current paper was produced with the purpose of suggesting strategies for bringing quality in distance education programs at higher education level. In recent times distance education is becoming an indispensable part of education system globally. Every institution is trying to offer their educational course through general as well through distance education means in order to make market for its programs. There is need to introduce quality distance education programs. It can be done through bringing quality in the curriculum and instruction of distance education programs, providing students quality support services, training faculty members in innovative methods of instruction of distance education, provision of technical support for promotion of research culture, adopting multiple ways of assessment of distance students, developing code of ethics for distance education faculty members and students, provision of quality infrastructure and technology, launching courses of distance education only through approval of national accreditation council for distance education (NACDE) and taking measures of check at every delivery system of distance education courses through quality control agencies.

Keywords: Strategies, quality distance education, curriculum, national accreditation council for distance education, delivery modes.

INTRODUCTION

Distance education is a system of education that in which instructor and students have no face to face interactions rather they communicate with each other through distance modes of learning like correspondence through postal mail, online interaction through video or audio conferencing, electronic mail, radio, television, Internet, cable, broadband lines, fiber optics, satellite, wireless communications devices; or video cassettes, DVDs, and CD-ROMs, etc.

“Distance education is a planned teaching/learning experience in which teacher and students are separated by physical distance. In distance education courses and programs, student-teacher interaction may occur and course materials may be delivered in an asynchronous or synchronous mode over a wide spectrum of existing and evolving media”.
A degree or certificate program is considered distance education when a substantial number of credit hours (fifty percent or more of the courses for the program) will be delivered through distance education. "A course is considered distance education when the majority of instruction is delivered through distance education".

In recent times, courses in distance education are offered in blended way. It means that some courses are offered through traditional face to face instruction whereas some courses are offered using any one of more than one modes of distance education like Internet, video or audio conferencing, electronic mail, radio, television, Internet, cable, broadband lines, fiber optics, satellite, wireless communications devices; or video cassettes, DVDs, and CD-ROMs, etc.

Provision and expansion facilities for a vaster population of the country are the need of the hour. For this purpose distance education is the most effective tool in order to provide educational facilities to maximum population in cost effective mean for the country.

OBJECTIVES

The strategies for quality distance higher education have been developed to achieve following objectives:

➢ To highlight the concept of distance education in current era;
➢ To develop strategies for introducing quality distance higher education.

Followings are some suggested strategies for quality based distance higher education programs in universities/institutions:

Mission Statement and Commitment of Institution
The institutions/universities initiating distance education (DE) programs must have a clear and written mission statement for the programs they are going to launched. Not merely they have a documented mission statement of DE, rather they should be committed to achieve that mission. The programs offered by the university/institution should reflect their mission statement. Further the mission statement itself should promise the commitment of the university/institution to quality education. The Western Interstate Commission for Higher Education (WICHE, 2001) described nine aspects of "commitment". These were: financial commitment, the physical plant, articulation and other policies, technical support, legal compliance, etc.,

Curriculum and Instruction of Distance Education (DE)
The content and material presented by institutions/universities for courses of DE should be up-to-date. There should be a curriculum review committee comprising qualified experts in the field of curriculum to revise curricula of DE with changing demands of the knowledge, skills, market and society.

➢ Curricula of DE should be designed on individualized instruction, where students must have opportunities to analyze and assess their own progress within their course.
One of best practice in DE is to enhance distance learners motivation through relevant learning experiences which are related to their real life situations. Activities and projects of DE course should be designed in such a way that can foster their learning goals as well they are relevant to their life experiences. This method of content presentation can make learning interesting and meaningful for them. The next thing that can motivate DE learners is that they should be make familiar with the goals and expected outcomes of the programs they are going to pursuit.

Curricula of distance course should be developed to answer questions like: What are the skills and knowledge we have planned to transmit through of correspondence program? Whether our course objectives, methodology, course content and communication method for the suggested course, everything is in alignment with each other?

Course designing of DE should not be a replication of traditional classroom, rather in terms of maximum enhancement of distance learners’ capabilities through medium best suited for that course. Although acquisition of knowledge is essential for distance students but that only acquisition of knowledge is not sufficient for learners in the 21st century. There are important skills that are necessary for living a successful life. There universities/institutions of distance education should design their courses to promote at least following some important life skills:

- Communication skills
- Interpersonal and intrapersonal skills
- Decision-making skills
- Technical skills
- Awareness about environment
- Courage to take challenges and initiative
- Leadership skills
- Problem solving skills
- Think about life matters rationally and reasonably
- Tolerance
- Patriotism to sacrifice for the country
- Scientific outlook towards matters of life
- Use of ICT

Distance Higher Education for Four Pillars

- Learning to do, to acquire knowledge and skill and the competence to deal with it in many situations.
- Learning to live together, by developing an understanding of other people and an appreciation of interdependence, carrying out joint projects and learning to manage conflicts, in a respect of mutual values, mutual understanding and peace.
- Learning to be, so as to better develop one’s personality and be able to act with judgment and personal responsibility.
On the basis of the assumption that adolescents should "learn to be" and to "live together", there is a need for the provision of a more relevant education which moves beyond the acquisition of knowledge and technical/vocational skills.

- Course should be developed by consultation of these experts and then it should be peer reviewed by expertise from senior members and experts of board of governors (BOG) of the concerned institutions/universities/university. These members should grant sanction of these courses by measuring them against latest trends and market demands. Feedback about course can be gained through students’ feedback on prescribed evaluation form of the course.
- Keeping in view demand of ICT era we need to introduce blended course of distance higher education in order to bring quality in programs like computer-interactive hypertext course where student receive immediate feedback on their assignments and exercises they do in distance education programs. For developing standardized instructional material for e-learning courses, the Pennsylvania State University titled *An Emerging Set of Strategies for the Design and Development of Distance Education* (IDE, 1998) presented the following five principles of course design:
  - Learning goals and content presentation;
  - Interactions;
  - Assessment and measurement;
  - Instructional media and tools; and
  - Learner services and support.

**Infrastructure and Technology**

- In current information communication and technology (ICT) era we need to run DE programs in blended way. It means to introduce combination of more than one modes of education, e.g. traditional as well as online or electronic learning (e-learning). Therefore, in the world of today no institution can launch online programs of DE until it has an up-to-date technology based laboratories with complete infrastructure and personnel which is essential for successful delivery of electronic learning programs.
- In the world of today educational institutions can survive by offering their courses on ground campus as well as online courses. It is the need of the hour to blend courses of distance education. Therefore, for best results it is suggest that in order to make place in the world of work, the universities/institutions should launch courses not only on their ground campuses but through online means as well.
- Universities/institutions should offer programs of distance learning keeping in view the market value and market trends on the basis of demand supply ratio. For this purpose they can conduct survey.
Universities/institutions should have sufficient resources and infrastructure; physical, financial and human to continue distance education programs on sustainable basis.

Universities/institutions offering DE programs should have a national and international network so that they can develop and atmosphere of collaboration and can exchange their practices at national and international level in order to bring quality in their programs and to cater the demands of 21st century.

The American Federation of Teachers report *Distance Education: Strategies for Good Practice* posits (2001) recommended close personal interaction between students and teachers of DE. The IHE report (2000) about "Teaching and Learning" in DE further recommended that student interaction with faculty and other students as an essential characteristic that could be facilitated through a variety of technologies including voice mail and/or email.

**Promotion of Research Culture in Distance Higher Education Programs**

- The institutions/ universities offering DE programs should be provided opportunities for independent research projects like students of traditional system. For this purpose institutions should facilitate distance learners for having access to electronic research material. For this purpose students should be provided short online training in how to use electronic material like digital libraries for research purposes and how to avoid plagiarism while consulting electronic material.
- Training workshops at regional level and online guidance and supervision can be provided for completion of research projects in distance higher education programs.
- In order to promote research culture and to provide research training to graduates, universities/ institutions can arrange educational conferences and seminar where senior faculty members and guest speakers can train graduates students in the skills of doing research projects.
- In order to develop life skills in distance learners, educational conferences and seminars can be arranged at regional/local level where distance learners should be provided an opportunity to present an article/essay and it should be made mandatory component of the distance course.

**Faculty and Technical Support**

- The instructor/teacher works as a human guide in DE courses. Therefore, there is special need for training of faculty involved in DE/E. learning courses. This training should be of a specific type as interaction of teacher- student in DE programs is of a specific nature and demands of this interaction are rather different than interaction between teacher and student in tradition face to face learning in traditional classroom. For this purpose institution planning to launch DE programs will have to provide their faculty members special training for teaching and dealing with DE students.
- Supplementary benefits should be providing to faculty members for their extensive effort in making distance education program successful.
➢ The instructors working with distance education must be trained through specific techniques of instruction for teaching students of distance education.
➢ Competent and experienced senior instructors and evaluators must be recruited to evaluate performance of distance education instructors.
➢ Use of library is very important in any system of education. However, in DE it is the most important factor for universities/institutions offering DE programs. DE institutions/universities should make it sure that they have rich resourceful physical as well as digital libraries available for all its students with approach to latest material globally available.

**National Accreditation Council for Distance Education (NACDE)**

➢ National level accreditation councils should be established to grant accreditation / approval of programs run by a university of institution. National accreditation council should develop standards and implement for accreditation of distance education programs for maintaining quality of DE programs and should provide complete strategies for measuring quality of distance learning programs/courses. These standards should be transparent and consistent with the quality framework of Higher Education Commission (HEC) The country. Until national council at does not recognize or accredited a program of DE, the concerned university/ institution should not have authority or right to advertise admission in that DE program.
➢ NACDE should provide accurate information about procedure of assessment according to developed standards of NACDE.
➢ For bringing quality in distance higher education, institutional mission regarding quality distance higher education courses, and students' support services, faculty support, resources of the institution, curriculum and instruction and students' learning outcomes should be examined on set criteria standards.
➢ The institutions/universities offering programs of distance higher education but not meeting criteria for quality given by accreditation should be banned and they should be given specific time for up gradation of their programs. If they are unable to fulfill due requirement within given time frame, their registration should be canceled immediately. Different standards/criteria should be set each type of distance education courses, e.g. for correspondence courses and for online courses.
➢ The quality of the course content, instruction quality, and quality of students' holistic experiences can be measured. Accreditation council should evaluate following major areas of institutions/ universities/ universities offering distance education courses for accreditation of course:
➢ Mission statement of institution: Whether institution offering distance learning has clear mission statement about promotion and launching of distance education course?
➢ Organizational Structure of Institution: Does the institution have suitable organizational structure for offering of DE programs of quality-based?
➢ Institutional Resources and Infrastructure: Does the institution/ university has sustainable financing for continuous provision of quality distance education programs? Does it have sufficient infrastructures like latest technology
resources, expertise and equipment related to programs of distance education that it is going to offer?

- **Curriculum and Instruction:** Does the institution have appropriate and quality based curricula for offering quality based distance education programs? Whether curricula are revising regularly in order to incorporate new knowledge and technology or whether stakeholders are involved in revising curricula?
- **Faculty Support:** Does institution/university has enough and qualified faculty, and they have enough sources and facilities for dealing with distance education programs?
- **Student Support:** Whether students are provided counseling services, equipments facilities, and training in use of web-based learning?
- **Student Learning Outcomes:** Does institution/university has well defined system to evaluate the quality of distance learning through students’ outcomes?

**Student Support Services**

- An important aspect of quality DE is concerned with students support services. These services included guidance for admission in various courses, financial support, support during studying of DE courses, easily approach to faculty members, program coordinator. Sometimes it is very difficult for students to make decisions about selection of course for which they have potential. At such moment they need guidance counseling of some senior in experience and qualification. Therefore, it is necessary to institutions/universities offering DE programs that they must have students’ counseling service at the campus at the time of admission. When developing programs of distance education we have to keep in view the context of our diverse distance learners like their cultural backgrounds, knowledge background, schooling background, availability of resources of our distance students, especially resources of ICT, the time they will have for the completion of assignments.

- It is a market principle that when we launch some program, product or service, it should fulfill our customers’ needs and satisfies them and we have to make sure through continuous evaluation and monitoring that our customers are satisfying with our product or service. This principle of market should be applied towards DE programs. In DE programs our customers are out students. We have to show sensitivity towards of DE students’ needs, problems and feelings like tradition students. Distance education faculty and staff should be aware of their students’ characteristics, and the social, financial, technical background of their enrolled students. These types of concern towards our clients (students) have positive connection with the success of any program of DE. The expectation about students’ performance in distance education programs should be challenging like students of traditional programs. DE students should be provided certain motivation in the various ways of testing.

- Students should be provided adequate advertisement about recruitment for admission, admission criteria and requirement for each course of DE, counseling about selection of appropriate programs according to their needs, interest and caliber, counseling about delivery of course material attempting of course
assignments and projects, and if need they should be provided financial assistance and technical support.

- The institutions/universities offering DE programs should make it sure that they have adequate financial resources and equipment, technical expertise, other related facilities and above all qualified faculty who could plan and design instruction for distance teaching to make it possible to continuously sustain program in future.

Evaluation and Assessment

- The institution should have a comprehensive assessment system for evaluation of course offered through online or correspondence in order to evaluation the effectiveness of its programs.
- This comprehensive evaluation system should include assessment of students’ learning outcomes, number of students admitted in courses and their rate of retention, students’ satisfaction about programs offered by the institution/university, faculty performance evaluation, evaluation of course content.

Monitoring

- It has been observed that students registered in distance education course is not him/herself submitting assignments, rather their assignments are being prepared by some other person who may have got this level of education. It has been observed that sometime some other person is taking examination instead of original candidate. In the age of information communication and technology (ICT) institutions/universities offering distance higher education courses should introduced latest technology based system that can detect any type of malpractices either in submission of assignments or in taking examination.
- Institutions/universities should introduce and monitor confidential identification and password for enrolled students through identity verification technologies.

Admission Procedure

- The admission in DE Programs is advertised in national and local newspapers and through internet web browsers. The advertisement describes complete information about entry criteria, course structure, qualifying criteria for award of degree, semester duration, examination rules, fee information, etc.
- The institution/university should made mandatory the administration of an aptitude test for entry into every discipline of DE courses/programs.
- It is a fact that the purpose of distance education is to expand educational facilities for specific population of students who do not have opportunities to enhance their educational qualification through general education. However, it is essential to achieve quality in distance higher education programs. For this purpose, it is suggested that there should be at least a set standard/criteria for entry in to various distance courses of higher education level.

Quality Education in Distance Higher Education Programs and Quality Control/Quality Assurance System

- The institutions/universities offering higher education programs through distance means should never compromise on quality of education. They should
have a particular system of quality assurance in order to check the quality of all aspects of DE programs offering by the institution. This quality assurance system should have specialized personnel in checking the quality of offered programs. The end product should meet the requirements of the stakeholders.

- The universities/institutions delivering distance education programs consult quality assurance agencies in order to make their programs effective according to strategies and quality criteria provided by quality assurance agencies.

- It has been observed that students of DE indulge in unethical practices. Some examples are described here: sometimes assignments are written by another person, it may be relative, friend or some professional who write students assignments on fixed rates and students purchase these sub-standard assignments; likewise sometimes even attending mandatory workshops is taken very lightly and maximum resources are used to get unfair attendances in the workshops.

- Sometimes students directly approach respective tutors of their assignments and personally requested them for grant of marks without writing their assignments. They just fill in assignment forms and get marks only on form of assignment without writing any sort of assignment. It happened that if a tutor is found honest or strict, then a next step is adopted and it is to approach assignment tutors indirectly through his/her friend or relative for the same purpose. Another practice related to distance education is appearance of bogus candidate in place of original candidate in the examination halls.

- Keeping in view this type of situation of distance education programs, it is suggested that there should be introduce code of ethics for students completing online assignments and for appearing in online examination of distance education courses. Likewise there is need to train specifically our faculty members/instructors/tutors engaged in distance education program and we should introduce for them code of ethics for dealing with distance students. So that status of distance education programs may be uplifted.

- The institutions/universities offering online distance higher education courses should establish an expected communication etiquettes criteria and for faculty members and students for online communication online with each other and faculty members and students should adhere that protocol. It is a fact that course designing for e-learning is at the same time, difficult, it require more finance, and expertise as compare to traditional courses. Therefore, institutions/universities offering DE courses must have sufficient finance, resources and expertise available for designing coursework for electronic learning.

- In every institution/university of distance education programs, there should be a team of content matter experts, instructional designers and technology specialists who have expertise in their distinctive area.

- They should design, revise and develop courses of distance education, whether these are courses of on ground or online education.
CONCLUSION

As a conclusion, this study can be summarized on “there is need to introduce quality distance education programs. It can be done through bringing quality in the curriculum and instruction of distance education programs, providing students quality support services, training faculty members in innovative methods of instruction of distance education, provision of technical support for promotion of research culture, adopting multiple ways of assessment of distance students, developing code of ethics for distance education faculty members and students, provision of quality infrastructure and technology, launching courses of distance education only through approval of national accreditation council for distance education (NACDE) and taking measures of check at every delivery system of distance education courses through quality control agencies.”

BIODATA and CONTACT ADDRESSES of the AUTHOR

Dr. Sufina Khatoon MALIK is Assistant Professor at Education Department National University of Modern Languages (NUML) Islamabad, Pakistan. She is an experienced teacher and has more than 28 year experience in the field of educational administration, educational research and teaching. More than 37 research articles have been of Dr. Sufiana Khatoon MALIK is published in national and international journals. In addition, she is author of three books. She has worked a lot for expansion of female education and providing free education opportunities for orphan children in the underdeveloped area of Pakistan (Isa Khel, Mianwali). Her areas of interest are: Curriculum and instruction, Teacher Training and Development, Professionalism, Reflective Practice, Female Education, Teacher Leadership, Students’ Learning in Information Communication Technology (ICT) Era.

Dr. Sufiana Khatoon MALIK
Assistant Professor
Education Department
National University of Modern Languages (NUML),
Islamabad, PAKISTAN
Email: skhatoon@numl.edu.pk

REFERENCES


Sufiana, K. M. (2010). Role of Distance education in the Expansion of Female Higher Education in The country- A Review. Published in Turkish Online Journal of Distance Education-TOJDE January 2010 ISSN 1302-6488 Volume: 11 Number: 4 Article 10


Sufiana, K. M. (2011). Nature of Teacher-Students’ Interaction in Electronic Learning and Traditional Courses of Higher Education- A Review. Published in Turkish online Journal of Distance Education-TOJDE October 2011 ISSN 1302-6488 Volume: 12 Number: 4 Article 9
POTENTIALITY OF DISASTER MANAGEMENT EDUCATION THROUGH OPEN AND DISTANCE LEARNING SYSTEM IN BANGLADESH OPEN UNIVERSITY

Saima AHMAD
Assistant Professor
School of Social Sciences Humanities and Languages
Bangladesh Open University, BANGLADESH

Dr. Sharker Md. NUMAN
Associate Professor
School of Science and Technology
Bangladesh Open University, BANGLADESH

ABSTRACT

Bangladesh Open University (BOU) is the only public educational institution in Bangladesh, where, a dual-mode method of learning system has been introduced. Established in 21st October, 1992, the University now accommodates 1,74,459 learners in 2012. The wide range networking of this university provides it a great prospect to execute a broad spectrum of activities to accomplish its social responsibilities.

Despite the aims of BOU at continuous quantitative improvement and greater equity in the society, like most of the ODL method universities in the world, BOU framed a limited objective to create awareness and preparedness about the contemporary global disaster proneness among its learners. Bangladesh for its geographical location, experiences several natural disasters like annual flood, heavy rainfall, cyclone and tidal surge, earth quake, river bank erosion, drought, etc. Lack of awareness of the sustainable use of the natural resources, and the consequences of the heedless consumption of them by the inhabitants enhanced the degree and frequency of these natural disasters during the last decades. The present study emphasizes on the role of Bangladesh Open University in creating awareness among its learners about the causes and pattern of disasters, pre and post disaster management strategies, etc. The study proves that BOU is a unique educational institution which, through the ODL method of teaching, using various educational medium like, tutorial support, printed study materials, electronic media, internet, and cellular phone, etc. can provided a wide range of knowledge about the disaster vulnerability, risk reduction and management strategies to its learners.

Keywords: ODL, natural and man-made disaster, Vulnerability, risk reduction, disaster management.

INTRODUCTION

Bangladesh Open University is a public educational institution where open and distance learning method has been introduced as a method of learning. The university has six schools which cover multidisciplinary 24 formal and 19 non-formal programs those are from certificate
to master’s level program. A total of 1,74,459 learners were enrolled in 2012 at different programs.

The School of Social Sciences Humanities and Languages (SSHL) is one of the leading schools of BOU where totally 51,185 learners were enrolled in 2012. SSHL is one of the biggest and leading school of BOU, which offers three years BA/BSS program where a huge number of learners are enrolled each year. This school also offers four years Honors graduation program as well as some certificate level program like BELT, CELP, CALP. These programs facilitate the learners to extend their life and skill oriented knowledge to achieve an improved livelihood. The extensive network of this university gives it a great chance to contribute to the society in many ways. For example, working people along with the general full time students can obtain an opportunity to study for higher education acquire more educational qualification in productive sectors as here; the educational programs are effectively linked with the needs of the people, employment, and development. However, besides the advancement of socio-economic and cultural status, awareness about the occurrence of disasters in an escalating frequency in Bangladesh is now a prime concern.

Needless to say, Bangladesh is in such a geographical position, where she experiences a number of natural hazards like annual flood, heavy rainfall, cyclone and storm surge, river bank erosion, deforestation, droughts, etc. (Table 1 and Fig.1). The degree and frequency of these calamities has accelerated in number during the last decade as a consequence of the global climatic change and environmental deterioration of the whole country. Every one now realizes that a slight more awareness, co-operation, and motivation in the local societies will definitely decrease the rate of fatalities in any category of disaster. Taking proper safety measures and rehabilitation programs to mitigate the losses in pre and post disaster situation is the main concern of the mass people rather than cursing the fate. Unfortunately, the general people do not have adequate knowledge about disaster management strategies. This study has given emphasis on the role of the Open University of Bangladesh to develop awareness among its learners at grass-root level. The different methods of teaching like open and distance education system through variety of media like printed materials, electronic media like TV and radio, CDS and VCDS, internet, and cellular phone etc. have given a great access to Bangladesh Open University to spread the knowledge about the recent geo-environmental situation of Bangladesh to its huge number of learners and huge number of vulnerable citizen. BOU is the only educational institution which has diverse opportunities to use different types of study materials to train up the mass population about the pre and post disaster management to mitigate the total socio-economic losses in Bangladesh. The present study shows the proposed ways to train people about the natural and man-mad disaster occurring in the country and the ways forwards to integrated the disaster management strategies.

Objectives of the Study
The general objectives of this study are as follows –

- To educate the BOU learners on disaster management issues.
- To gather specific knowledge about the characteristics and types of disaster from local people to enhance the implication of disaster management strategies.
- To use the BOU’s learners as a resource person to disseminate preventive methods for the local area people about the forth coming disaster.
- To integrate the local area people with the policy makers for a local area participatory disaster management process.
Justification of Disaster Management Training through ODL Method
Like any other country in the world, coping with the rapidly increasing frequency of disasters necessitates an integrated disaster management strategy and action plan at individual, community, local, and national level in Bangladesh.

The disaster management experts are emphasizing on the necessity of capacity building enhancement of the local people by changing their perception about the causes, precautions, and reduction and management strategies of disaster occurrence, as the old and traditional concept of pre & post disaster relief and rehabilitation paid no contribution towards the development process of Bangladesh. This study focuses upon the role of ODL method of teaching and learning to achieve this goal through some steps as following:

- There is a good opportunity for SSHL to develop disaster management capacity of its huge number of learners and thus create awareness among mass people through the huge network of the BOU administration.
- The support of the media division of BOU is a vital way to create public awareness by educating the learners about disaster management.
- Training up and educating the learners of BOU, through the ODL system will strongly contribute the mainstreaming of the grass-root level participation of the backward section of population in Bangladesh.

Concept of Disaster and Disaster Management
Before discussing the potential disaster management training and education through ODL method, some key concept about climate consequences disaster and its management should be described in a nutshell.

Disasters, both natural and man-made, are the events which affect large number of people in an affected community. The Asian Development Bank (ADB, 1991) stated that a disaster is an event, natural or man-made, sudden or progressive, which impacts with such severity that the affected community has to respond by exceptional measures. According to The Center for Research on the Epidemiology of Disasters (CRED) in Brussels, Belgium, “A disaster is a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance.”

Definition of Hazard:
According to EM-DAT (CRED, 2012), Hazard is the threatening event, or probability of occurrence of a potentially damaging phenomenon within a given time period and area.

Types of Hazard:
According to IFRC (2012), hazards are of two types, such as-

- Natural hazards, which are naturally occurring physical phenomena caused either by rapid or slow onset events which can be geophysical (earthquakes, landslides, tsunamis and volcanic activity), hydrological (avalanches and floods), climatological (extreme temperatures, drought and wildfires), meteorological (cyclones and storms/wave surges) or biological (disease epidemics and insect/animal plagues).
- Technological or man-made hazards (complex emergencies/conflicts, famine, displaced populations, industrial accidents and transport accidents) are events that are caused by humans and occur in or close to human settlements. This can include environmental degradation, pollution and accidents.
Besides the major causes, there are a variety of environmental and social challenges, such as climate change, unplanned-urbanization, under-development/poverty as well as the threat of epidemics, shape humanitarian assistance in the future as well. These exacerbating factors will result in increased frequency, complexity and severity of disasters.

Disaster management is a specific type of emergency management. It is an applied science, which seeks by the systematic observation and analysis of the disaster to improve measures relating to prevention, mitigation, preparedness, emergency response and recovery (Rahman, 2001).

The overall disaster management procedure is performed in a cyclic procedure shown in Figure 1.

In the disaster management procedure, disaster preparedness is the prime phase. Forecasting about the forthcoming disaster, minimize the effects of it by taking measures, to expedite emergency action, rehabilitation, and reconstruction by the people and the concerned organization, etc. is the main concern of this stage.

Secondly, disaster response means to integrate actions like warning, evacuation, search and rescue, emergency relief, trauma management, security, communication and information management, rehabilitation and reconstruction, taken by the local people and the concerned authority.

Thirdly, disaster assessment reveals the socio-economic losses of the disaster affected area. The assessment includes, identification of information needed, collection of data from reliable sources, analyzing and interpreting the data, and forecasting for decision making in the report.

Fourthly, disaster mitigation encompasses all pre-disaster measures for the long-term situation. The main objective of the disaster mitigation is to reduce the impact of the disaster by training or educating the grass-root level population for enhancing the capacity to face the disaster.

This process includes measures, such as, construction of tremor resistant infrastructures, resettlement of hazard prone area, educating and training people to create professional experts, and creating public awareness, etc.
Disasters in Bangladesh

The disasters occurring in Bangladesh throughout the decades can be identified as the natural disasters, occurred in a certain season while the type of these differ depending on the location, nearness of hills, rivers, or ocean etc. On the other hand, man-made disasters are the resultants of the unplanned ignorant activities of the local inhabitants.

Table: 1

<table>
<thead>
<tr>
<th>Natural Disasters</th>
<th>Man-made Disasters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. River Flood</td>
<td>1. Water-logging</td>
</tr>
<tr>
<td>2. Rainfall Flood</td>
<td>2. Water pollution</td>
</tr>
<tr>
<td>3. Storm surge Flood</td>
<td>3. Air Pollution</td>
</tr>
<tr>
<td>4. River Bank Erosion</td>
<td>4. Loss of land fertility</td>
</tr>
<tr>
<td>5. River fill up and char lands</td>
<td>5. Deforestation</td>
</tr>
<tr>
<td>7. Seismic Hazard (Earth quake)</td>
<td>7. Arsenic Contamination</td>
</tr>
<tr>
<td>8. Global warming impacts</td>
<td></td>
</tr>
<tr>
<td>9. Drought</td>
<td></td>
</tr>
</tbody>
</table>

Over extracting of natural resources, polluting the land, water, and air by different factors such as-industrial waste, chemical fertilizer, smoke and fumes, CFC gases, non-degradable and non-recyclable products disposal, etc. are the main reasons of man-made pollution (Nizamuddin, 2001).

The natural and man-made disasters in the context of Bangladesh have been described for the convenience of the study the disaster of both categories has been listed in Table 1. A spatio-temporal overview of the natural disasters which occur in Bangladesh is shown in Table 2.
Table: 2
Spatio-temporal State of Natural Disasters in Bangladesh

<table>
<thead>
<tr>
<th>Type of Disaster</th>
<th>Spatial Distribution</th>
<th>Season of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Flood</td>
<td>The over flown river banks of the major rivers like the Padma, the Meghna, the Brahmaputra along with their tributaries and distributaries. About 30% of the total land area is prone to river flood.</td>
<td>Rainy Season (June – September)</td>
</tr>
<tr>
<td>Rainfall Flood</td>
<td>Rainfall with high intensity and prolonged duration causes this type of flooding at the catchments area of the over flown rivers.</td>
<td>Rainy Season (June-September)</td>
</tr>
<tr>
<td>Storm Surge Flood</td>
<td>South and south east coastal area (12,000 sq.km.) of Bangladesh. Inland intrusion of surge water is from 15km (Chittagong area) - 55km (south-west region).</td>
<td>During cyclone and Tornado in Summer &amp; Monsoon Season (April-June &amp; September-November)</td>
</tr>
<tr>
<td>River Bank Erosion</td>
<td>On the banks of the extensive flow rivers, like Tista, Jamuna, Padma.</td>
<td>Rainy Season</td>
</tr>
<tr>
<td>River fill up and char (Choking)</td>
<td>The braided rivers like Padma, Meghna, etc. in the northern region of Bangladesh.</td>
<td>Dry summer &amp; winter season</td>
</tr>
<tr>
<td>Cyclone, Tornado and Nor’westers</td>
<td>The Bay of Bengal, which is in the humid tropical area or at Inter-tropical Convergence Zone (ITCZ) of the globe, is the ideal breeding ground for tropical cyclone.</td>
<td>April-June or September-November</td>
</tr>
<tr>
<td>Seismic Hazard (Earthquake)</td>
<td>The significant zone of earthquakes hazard are - (i) Assam fault zone, (ii) Tripura Fault zone, (iii) Sub-Dauki Fault zone, and (iv) Bogra fault zone.</td>
<td>Major earthquakes affected Bangladesh were in the month of January, June, July and August</td>
</tr>
<tr>
<td>Sea-level Change</td>
<td>Coastal Area and low-lying areas.</td>
<td>Whole year</td>
</tr>
<tr>
<td>Climate change for global warming</td>
<td>River banks and low-lying areas.</td>
<td>Whole year</td>
</tr>
<tr>
<td>Drought</td>
<td>Several districts like Naogoan, Chapainawabganj, Nilphamari, and Thakurgan of northwestern Bangladesh.</td>
<td>March-May</td>
</tr>
</tbody>
</table>

Source: Ahmad, Nizamuddin, Choudhury, Ali & Choudury, Elahi, 2001

There are numerous man-made disasters occurring regularly in an accelerating rate in Bangladesh. Table 3 shows the spatio-temporal distribution of the different category of man-made disasters.
Table: 3
Spatio-Temporal Situation of Man-made Disasters in Bangladesh

<table>
<thead>
<tr>
<th>Type of Disaster</th>
<th>Spatial Distribution</th>
<th>Season of Occurrence</th>
<th>Causes</th>
</tr>
</thead>
</table>
| Water Logging          | Urban centers                            | Rainy Season         | 1. Clogging of natural drainage and sewerage  
2. Lack of water retention space |
| Water Pollution        | Industrial and agricultural areas        | Whole year           | 1. Disposal of chemical wastage  
2. Disposal of Hospital wastage |
| Air Pollution          | Urban centers                            | Dry Summer and winter| 1. Exhaust from vehicles  
2. Exhaust from industries  
3. Exhaust from Brick fields. |
| Loss of land fertility | Urban agricultural land areas            | Whole year           | 1. Use of chemical fertilizer  
2. Disposal of non-degradable products |
| Deforestation          | Whole year                               | Whole year           | 1. Cutting down trees for logs, furniture, etc.  
2. Clearing land areas for presidential purpose  
3. Polluted water and plant disease. |
| Arsenic Poisoning      | Whole year                               | Whole year, more in dry winter | Arsenic Contamination |
| Bio-Diversity Loss     | All over Bangladesh especially in Sunderban and Chittagong hill tracts | Whole year | 1. Loss of vegetation.  
2. Loss of food & Shelter  
3. Killing of birds and other animals for various purposes. |

Figure 2: Normal Flood, Annual Rainfall & Major Natural Disasters in Bangladesh

Map 1(a): Floods (Normal) in Bangladesh, 2007

Map 1(b): Mean Annual Rainfall, 2000

Map 1(c): Drought Situation in Bangladesh, 2000
This study accentuates to identify and measure the vulnerabilities of the people in reference to a certain disaster.

1. The landless village people,
2. The riverbank, char and coastal area residents,
3. The farmers, fishermen, and fisheries processing laborers,
4. Cattle, poultry and dairy farmers and business men,
5. Female, children and aged people of the community,
6. Slum and squatter dwellers in the urban areas,
7. Unskilled and illiterate people population,
8. Disabled and diseased persons,
9. People with less hygienic concerns.

All the natural and man-made disasters in Bangladesh cause a great amount of loss in the total infrastructure of a country which sometimes exceeds the limit to cope and bear. In these cases, financial and other kinds of aids and reliefs from other countries are offered. However, the domestic or international aid and reliefs can only ease the pain and cover the loss temporarily.

The basic need for a disaster prone area is the long-term planning strategies taken by the government confirming people’s participation at grass-root level, along with educating the local people and creating awareness about the probable type and magnitude of disaster is a need of time. Moreover, enriching knowledge of disaster management and formation of data base for the vulnerable population, should be emphasized by the planning bodies of disaster management (Islam, R, 2008). To reduce the vulnerabilities, at least four to ten people of a locality should be trained about the pre and post disaster management strategies. This will definitely mitigate the loss of life and property during a natural disaster occurrence. On the other hand, creating awareness among the locality about the precaution to avoid the resultant of man-made disaster should not be ignored anymore.

**Suggested Method Of Training Through SSHL, BOU**

Some suggestions has been given here as the process of disaster management training and education through ODL from the SSHL of BOU. These include the medium of teaching, phases of teaching, evaluation of teaching.

**Medium of Teaching in ODL Method**

1. Study materials,
2. Broadcasting media like, educational television and radio channels,
3. CDs, Cassettes, and flyers,
4. Ensured teaching facilities at study center (SC) and regional resource center (RRC’s), and
5. On campus lecture classes (optional).
Phases of Teaching and Method of Evaluating through ODL System

<table>
<thead>
<tr>
<th>Semester</th>
<th>Topics to Learn</th>
<th>Method of Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st - 2nd</td>
<td>1. Include the primary concept of disasters occurring in our country. 2. Teach the difference between natural and man-made disaster.</td>
<td>1. Mid-semester assignment can be given for evaluation of the learning process. These assignments should be evaluated by the concerned tutors or teachers.</td>
</tr>
<tr>
<td></td>
<td>1. The spatio-temporal distribution pattern of the disasters. 2. The characteristics of disasters. 3. The most common natural and man-made disasters occurring in Bangladesh.</td>
<td></td>
</tr>
<tr>
<td>3rd - 4th</td>
<td>1. Include the pre and post disaster management strategies for both type of disaster. 2. Teach the preventive measures for the man-made disaster.</td>
<td>1. Seminar can be arranged with the tutors of the SC’s at RRCs to evaluate the progress of learning of the students. 2. Tutors can give valuable opinion to make the program more effective.</td>
</tr>
<tr>
<td></td>
<td>1. The pre disaster management. 2. Identify the disaster vulnerable group and ways to help them during any disaster. 3. Teach the post disaster management. 4. Teach the method of rehabilitation of the affected locality with the available resources and local people’s participation.</td>
<td></td>
</tr>
<tr>
<td>5th - 6th</td>
<td>1. Teach more precisely about the types, characteristics, and management to the group of students who will be interested to work as disaster management personnel.</td>
<td>Evaluation can be done by assigning learners in small groups for demonstrative classes in the tutorial classes, and or seminars.</td>
</tr>
<tr>
<td></td>
<td>1. The preventive methods about the frequency and magnitude of man-made disasters. 2. Behavioural lessons to motivate and ensure the local people’s participation by their positive attitudes and cooperativeness. 3. Teach the students to work as professional to handle the emergency situation which may arise during pre and post disaster time.</td>
<td></td>
</tr>
</tbody>
</table>

All the above mentioned lessons can be taught in all the subjects and courses offered by SSHL from their own perspectives. However, Geography and Environment as a mainstream subject of these geo-environmental issues can play a vital role to propagate the knowledge of disaster vulnerability and the management strategies.

CONCLUSION

Bangladesh Open University is the most potential university, which has strong prospect to exploit all its resources like, the Regional Resource Centers, Local Centres, Study Centres,
Media center and School to carry out numerous core programs and certificate or training program to teach the mass people of Bangladesh. Moreover, all the schools of BOU, such as the School of Agriculture and Rural Development, the School of Science and Technology, Open School, School of Social Sciences, Humanities and Languages, have high potentiality to become the leading educational school to offer knowledge and create awareness about the disaster management strategies in Bangladesh. This will not only minimize the loss of life and property, but also prevent from further destruction and damage. The whole world is aware and anxious about the gradual destruction of nature which ultimately enhanced the frequency of disaster occurrence. Bangladesh cannot keep herself aside from these global problems anymore. Proper knowledge about the disaster in the context of our own country is needed urgently, as this is the only gateway from the huge loss of life and property, and the damage of the total infrastructure of the country.

BIODATA and CONTACT ADDRESSES of the AUTHORS

Ms. Saima AHMED is an Assistant Professor (Geography & Environment) at School of Social Sciences Humanities and Languages of Bangladesh Open University, Bangladesh. She received M. Phil from University of Dhaka, Bangladesh, in 2008. She has vast experience in the field of geography and environmental science and presented research findings in many international conferences/symposium as well as attended training programs/workshops related to distance education. She is responsible for Geography and Environment related courses and conducting all the academic activities for the BA/BSS Degree and Honors Program at Bangladesh Open University through both distance and On Campus mode. Ms. Ahmad also created maps and performed analysis in the GIS environment. She has published 4 research papers in national peer-reviewed journals.

Ms. Saima AHMAD  
School of Social Sciences Humanities and Languages, Bangladesh Open University, Bangladesh  
Phone: +8801715068585  
E-mail: saima_ahmad68@hotmail.com, saima.ahmad68@gmail.com

Dr. Sharker Md. NUMAN is an Associate Professor of School of Science and Technology of Bangladesh Open University (BOU), Bangladesh. Dr. Numan is physician by profession, passed MBBS from the University of Dhaka, Bangladesh in 1993. He has completed Masters in Sciences on Epidemiology in 2005 from the University Putra Malaysia, Malaysia. He has participated in many national and international workshop and conference. He joined Bangladesh Open University (BOU) in October 1997 as a Lecturer. He played a significant role in launching the Post-basic Bachelor-in-Nursing program in Bangladesh Open University through distance mode. He has 32 publications with 06 books at University level.

Sharker Md. NUMAN  
Associate Professor, School of Science and Technology  
Bangladesh Open University, Bangladesh.  
Phone: +8801727210110  
E-mail: sharkermd_numan@yahoo.com
REFERENCES


