IMPROVING EDUCATION THROUGH E-LEARNING

Master's (one year) thesis in Informatics (15 credits)
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2013MAGI02

UNIVERSITY OF BORÅS

SCHOOL OF BUSINESS AND IT

Title: IMPROVING EDUCATION THROUGH E LEARNING

Year: 2013MAGI02

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Abstract:

Information Communication Technologies (ICT) are taking pace with rapid development, with the strive to impart education among learners in a way that they become highly satisfied. With a help of different electronic tools in educational technology using media and making right environments to enhance learning, develop creativity, stimulate communication, create channels for collaboration, and hence, engaging in the continued development and application to knowledge and skills. Usage of technology spans across all academic areas with the increasing popularity of information technology that is evolving rapidly towards betterment with increased capabilities every day. Educationalists are interested in knowing how technology would create a variation for the students in the classroom. The purpose of using E-Learning is to create a learning platform with combination of the existing knowledge and Information Communication Technologies (ICT). High growth in Information Technology that is user friendly, accessible, and reliable at the same time providing improved ways in collaborating in a new approach possible. Students from different units would be able to collaborate forming cross-unit teams and working on common or multiple assignments helping each other in different ways. Internet, video conferencing, and emails are well established collaborative tools for exchange of information. Investigating that why there is a need of technology in the education and which technologies would help in improving learning processes is the main purpose of this research. And also to find that what would be the necessary infrastructure required to get facilitated by this technology. The research revolves around the theory of Computer Based Training (CBT) which refers to particular part of the instructional development or educational media.

PREFACE

First of all, we are thankful to Allah (Our God the most merciful and mighty), and our parents who pray for our success. We are thankful to our supervisor, for his encouraging attitude and his competent suggestions.

We are also thankful to our supporters and helpers as they sent us their useful ideas, and research books and articles.

At last, we are also thankful to all of our interviewees for making the empirical survey possible.

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Shahid Javed

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Keywords: Educational technology, Information Technology, E-Learning, collaboration, Infrastructure, CBT (Computer Based Training

Chapter 1:   INTRODUCTION

1.1   BACKGROUND

Learning is a research for meaning and students actively try to make meaning of something while searching for it requires that the problem is broken into parts or understood as a whole. That is the reason for which primary concepts are given consideration rather the facts based in isolation. For an individual, the purpose of learning is to build up his understanding of concepts. In most countries, the valuable measure in learning process is its assessment part and education is thus made interdisciplinary to ensure that students are provided with the information on the quality in their learning.

Attention towards education is very important for the development of a society. When developing a global society, any education imparted must include a pragmatic analysis of nations and develop a desire to improve conditions locally and nationally. Teaching material is in fact scarce in all countries, and such analysis must be left in large part to individual teachers, but critical thinking is a major feature of education for a global society. Attitudes heading towards tolerance, pending judgment, and critical analysis are essential to any program for a global society. Schools, colleges and universities are famous for its leading role in progressive education for a world society (Ottoma, 1951).

Libraries are one way to get open access to intellectual property. More and more Libraries are being established for the purpose of student learning. Intellectual freedom in education is elementary mission of all types of libraries. According to universal human right intellectual freedom is there to engage student in accessing the information and ideas. Physical access is provided by libraries facilitating student with resources and services. Thus, promoting intellectual access via educational programs and enhancing essential information skills (Muhammad, 2010).

Recently education through distance learning is getting a high initiative all over the world. With that it is realized that e-libraries are also necessary for growing distance patrons in the developed world. When students are facilitated by e-education far away from their teachers and university campus, they also demand the services of e-library with the same quality as they could get on physical location.

Possibilities offered by modern era may be used in several different ways. In a global society, some areas are well developed and others are still under developed. The use of distance learning has been developed and many institutions offer courses that can be studied off campus. In some cases, the courses include some campus activities and in other cases no personal meetings are planned. One limitation with distance education is to arrange collaboration (co-design) between students and developing a solution to the tasks at hand. Some collaborative tools have been developed, and it might be possible to use them to improve e-learning with a more efficient co-design.

1.2 STATEMENT OF PROBLEM

Various educational institutes provide distance learning education, and in distance learning, students are demanding the quality of education that could match with the on-campus education. Institutes impart learning facilities using various technologies like; internet, TV, audio video

record, virtual networks and so on, but still they are unsuccessful in providing a good e-learning platform with direct collaboration between distance students and teachers on-campus.

1.3 PURPOSE OF THE STUDY

The efficiency of education though being dependent on the understanding grasped on individual basis still benefits from the use of appropriate tools. The characteristics of such tools are then most important. Now-a-days, information technology has evolved and in use almost in every field of study. Thus the purpose of our research is to improve e-learning making best utilization of ICT tools. The study also investigates such technologies and tools that help in the collaborative learning process between students and teachers.

1.4 RESEARCH PROBLEM

Our research investigates this question with emphasis:

How modern Information Communication Technologies (ICT) can be used to improve E-Learning systems?

The above main question is further divided into the following sub questions:

1)   What is the suitable approach to develop best perception of the knowledge imparted through ICT tools and techniques?

2)   Why e-education systems need to be changed with the changing ICT?

3)   What types of Information Communication Technologies (ICT) can facilitate an e-education system well, and

4)   How these technologies can be utilized to improve e-learning?

1.5 TARGET GROUPS

Many researchers can take advantages of this thesis, but the most benefited target groups are given bellow.

1.   The target group of this research is distance learning students.

2.   Universities and colleges that provide distance learning education.

3.   Teachers and educationists who will use it for developing ideas to provide best e-learning platform imparting knowledge with the latest education material to their students.

1.6 EXPECTED OUTCOMES

The expected outcome of this research is a list of best techniques to use ICT tools and the utilization of their characteristics for establishing e-education. Various institutions, providing e-education, would take benefit of this thesis, for the implementation of e-learning system. The thesis would introduce best information technology techniques for students and teachers

collaboration. The thesis investigates the demand of e-learners and the way educationists would be able to fulfill these demands.

1.7 DELIMITATION

Various research investigations could make relation to this research, but was kept limited to the research question and defined purpose. This research would not investigate problems like, making software that facilitates an e-learning process and manage e-learner student's records.

1.8 THE AUTHORS' OWN EXPERIENCE AND BACKGROUND

Shahid Javed has remained in touch with education field for 16 years in Pakistan with one year experience of teaching as a college lecturer, and has established experience about the mental model of students. As a student of Borås University Sweden, he has also gained experience of web based learning. Here the lectures are conducted physically, but most of academic work is web based.

Muhammad Shahzad has been in touch with education from his early childhood and still he is a student of Borås university Sweden. But recently, education provider organizations are trying to adopt web based learning and being a student of Boras university he gained practical experience of such education, where lectures and presentation are conducted physically, but assignments and students-teacher communication takes place through web media. Due to this, his interest increased, and decided to do a research in relation to e-learning.

Chapter 2: RESEARCH DESIGN

2.1 RESEARCH PERSPECTIVES

Any honest attempt to study a problem systematically or to add knowledge towards a solution of a problem may be regarded as research (Chris & Lan, 2010 Page 1). The character of the knowledge that would be created in our research could revolve around diverse origins. From the research the results could be normative or descriptive, giving instruction on what to be done and the values to be established. (Gilje & Grimen, 1992; Repstad, 1999) comes with a descriptive result that would be tough in justifying the course of actions (Goldkuhl, 1998). As the research aim is to improve education through e-learning, it would thus investigate information technology sources. Hence this aim could possibly be described as knowledge character that could be comprehensive and comprehensive relating to interpretation. The research aim at creating comprehensive knowledge would outline the characteristics of the specific concept and clarify its meanings. The perception of concept in this research would be in its own light (Ann, 2005).

Knowledge defined by Daniel is a organized set of statements with facts or ideas, showing an analyzed judgment or an experimental result that is communicated to other through a medium in a systematic form (Daniel, 1999). Shaping the vision on knowledge is necessity of this research. Hermeneutic and positivistic are the two main scientific research visions, but it is clearly stated above that the interpretation of this research heads towards producing a knowledge that is comprehensive. Therefore, mostly the hermeneutic approach is better for (Gilje & Grimen, 1992) interpreting and giving explanation of meaningful concepts. In order to get a clear picture of what is involved in the process of interpretation, meaning and understanding, it would be helpful to examine some examples of interpretative situations.

Taking an example of work of art, when a painter paints a canvas, basically he is encoding meaning through the lines, texture and colors that he uses in the canvas. It would be a pity if the only possible meaning that could be construed from the work of art is that which the creator intended at the time of creation. Often one hears an artist telling about the other's perception of his work as; " after hearing this interpretation there is even better understanding of what was meant at the time this artifact was created", implies that he is in fact discovering himself through the interpretations of others. One could say that this would be true for paintings, as paintings are a unique type of communication where the signs (color, texture and lines) are very unclear and open to many different interpretations.

Gadamar holds that interpretation of the text cannot in principle be limited merely to what the author intended or was understood in his own time. The text is not an expression of subjectivity of the author, rather, the text comes into real existence when the interpreter gives meaning to it as understanding of it is an important condition (Gadamar, 1988).

Emilio Betti presents a hermeneutic perspective that states that other creations can also be the medium for interpretation other than text (Benediktsson, 1989). Through this medium the thoughts and ideas held by the creator form an objective picture to be inspected by other people. Thus, the original intentions of the creator are revealed through interpretation (Benediktsson, 1989; Christensen, 1994).

The reader interprets him or herself in a way that is new as the reader experiences the text, and that is a hermeneutic process. As the reader listens to the text there is a dialog been established. The meaning that is being interpreted through the dialog is not limited to the intensions of the

writer but reader is giving it a new meaning to his own understanding of the subject that the text describes.

Ricoeur (1974) represented his own thoughts about hermeneutic perspective that actions could also be interpreted as text (Odman, 1994) and like text these should also be regarded as autonomous. According to him, the hermeneutic process does not aim to get insight in the mental world of creator but it exceeds the intentions and perspective of the author. Thus, the text is itself that needs to be interpreted. He has made it important to understand the structural meaning first to reach actual interpretation. In a third hermeneutic cycle, he emphasizes that explanation and comprehension interact. Natural science methodology is explanatory whereas humanistic approach is to comprehend (Alvesson & Skoldberg, 1994).

The visionary Nystrom added that text not just illustrates the meaning but it reaches beyond the author's limitations. The example could be of an interview material of which the interviewees are not aware of what it actually means. Thus, the hermeneutic researcher is there to understand the hidden meaning in the text by getting explanations of how different expressions have been developed (Nystrom, 2002).

The selection of hermeneutic vision is there to devise the research strategy. Betti's perspective outlines a more objectivistic image and it is assumed that the researcher considers the actual intensions of the creator. As this research heads towards improving education through e-learning, it is reasonable to keep text as well as theoretical and empirical material more autonomous. Demonstration of the factors and models found in the theoretical study is done through interpretation of the empirical material related to the knowledge within the theoretical framework of our research.

Research strategy is implied through the perspective in our choice of research, therefore, to reach the goal either a quantitative research method is selected or a qualitative research is carried out. And, here the qualitative research is done as it involves the researcher in describing the characteristics of people and events, without measuring them in terms of amounts. Whereas the quantitative approach as its name suggests, focuses on the measurements and amounts (large or smaller, more or less, often or seldom, similar or different), of the kinds displayed by the people and events (Thomas, 2003).

In qualitative research, there is mostly textual data involved but can be visual or art-factual. This data can be transformed to numerical form for the purpose of using a qualitative method. Qualitative data analysis, thus, employs procedures to interpret data. Conductive and rigorous research is involved in qualitative approach in natural settings. A researcher might be investigating how the health information is made available to people through websites and the reasons for their preference over other sources. This study would need a natural setting where people actually use websites as in homes, libraries, or offices (Deborah, 2005).

2.2 RESEARCH STRATEGY

As hermeneutic perspective is used in the research therefore the characteristic of research would be explorative because it investigates the knowledge which is based on latest interest, as new technologies are discovered and thus such technologies are investigated to improve education. When moving into new territories, explorative studies are important where they can create new knowledge of the research area (Babbie, 1995).

In this research investigation the debates are more general rather being specific forming

inductive mode of thinking. So the data is collected through theoretical and empirical study, and then it is generalized. Several books and academic websites have been analyzed for this research to find opinions from existing theories. Attempt is made in developing new ideas through analyzing available theory and explanation. After getting results from this step, empirical research would start to prove the findings from theoretical research.

2.3 DATA COLLECTION PROCEDURE

A well formed research depends directly on the quality of data collected. Qualitative research is conducted in this research investigation. In qualitative research there are several types of data collection procedures but mainly it is categorized into two; the empirical research and the theoretical research. For empirical research, interviews are conducted and theoretical research involves text analysis.

By text analysis it means reading a written material and analyzing it. Researchers gather information through text analysis and realize how other human beings make sense of the world. It is a methodological data gathering process in research that is done to understand the way of members of different cultures and subcultures realize who they are, and how they live in this world. It is useful when researching on cultural studies, mass communication, and media sciences. Through textual research, an educated guess is built about interpretations that is most likely related to that text. Text analysis has advantage for summarizing the opinions of several authors and reaching a standpoint that is relevant to the research. That is the reason it is being used here. Study is done, going through different author overviews over E-Learning, and try is made to find relevant solution to the research questions.

2.3.1 EMPIRICAL DATA

Empirical research is used to test theoretical data. Observations and interviews are general tools for collecting empirical data.

Interviews answer 'whys' and 'hows' for students and professionals involved in wide variety of areas. Students prepare themselves for interviews by conducting mock interviews themselves and utilizing the best practice examples (Steinar & Svend, 2008). These are the conversations with one or more people in a group. Questions are asked during the interview by the interviewer from the interviewee to obtain information. Finding out the concept of e-learning and the use of technologies in education is the main aim of these interviews.

Several interesting questions are answered by means of this research. It is possible to go deeper in the respondent's cognitive state about the problem area and sometimes even the researcher finds a new idea related to his research investigation.

By observing, researcher gains knowledge visually or through other active senses. Types of observation can be active or passive (Repstad, 1999). Observation is done over how the members interact in distance learning. Observation is an approach where you can get deeper and more solid contacts with people and situations (Kathleen & Dillie, 2002).

2.4 DATA ANALYSIS PROCEDURE

Analysis is an important part of any research. During the analysis phase, researchers try to go deeper into the meaning extracted from the collected data. Above it is clarified in the statement that the research data collection methods consists of text analysis (in the theoretical research) and interviews (in the empirical research). In data analysis procedure both of these kinds of data are analyzed. The theoretical analysis is done on the bases of research questions, and then verified through empirical research.

2.5 STRATEGIES FOR VALIDATING FINDINGS

Data gathering is basically a research activity. The most important factor of research finding is data gathering. Validity and reliability of gathered data also matters. Quality of research instruments are there to ensure valid and reliable data is gathered. The correction of research instrument is when it measures what it intends to measure. Collected data should serve the purpose for which it is gathered (Ariola, 2006).

Accuracy of finding is termed to be valid data. Reliability is closely related to it. As quantitative instruments need to be valid and reliable, qualitative research should also be reliable as a necessary precondition for validity. Threats to reliability also threatens validity (William & Laura, 1996).

Measurement validity and design validity have their differences. Firstly, by measurement validity it is estimated that the instrument would measure what it is supposed to measure. Secondly, design validity is composed of internal and external validity. Measurement validity falls under Campbell and Stanley's "instrumentation" (1963). The extent, to which the dependent variable having a casual difference can be attributed to the independent variable, is internal validity. And, the extent to which the results of research study can be generalized to other settings or groups, is external validity (Isadore & Carolyn, 1998, page: 33).

Types of validity include; convergent validity, internal or external validity, and criterion-relative validity (Huberman & Matthew, 2002). Positivistic assumptions form its basis underlying experimental and quantitative research design. Denying the relevance of quantitative or scientific paradigm, qualitative researchers argue that qualitative research has its own techniques for getting valid results.

Wide range of terms is used to define the concept of validity in qualitative research. It is not declared as a universal concept yet. While realizing the need of valid qualitative research some researchers still argue about the non-applicability of validity in qualitative research. In result, many researchers therefore decided to develop their own ideas about validity and adopted what were appropriate terms, like; rigor, quality, and trustworthiness (Nahid, 2003). Therefore, as this is a qualitative research, the very own validity for data finding is defined. Collection of various theoretical materials from different sources is done, and then verified through previous literature. The relevant material written by previous authors is used as a basis for the argument. After completing theoretical research, there would be empirical research, and then sampling method would also be defined.

2.6 RESULT PRESENTATION METHOD AND REFERENCING TECHNIQUE

The result of the thesis would be in written form. In presentation, slides used consist of text, but there would be the use of figures and videos to get hold audience interest.

In the thesis, Harvard system for reference is used, which means indication of brackets including author sir name and publication year when referencing source in the thesis. References come before the period in a sentence. When it is placed at the end of the paragraph, it concerns last sentences of the paragraph or the whole paragraph, while when it is placed before the paragraph it concerns the starting sentences of the paragraph.

Chapter 3:   THEORETICAL STUDY

Synchronous (place-independent but time-dependent) and asynchronous (place and time independent) functions are classifications of communication functions. To facilitate individuals asynchronous courses are designed that are available at any feasible time student prefers. Self-paced learning is such triggered through CD-ROM-based, network-based, internet or intranet-based. Online discussion groups and emails are there to access instructors. Its features include; mailing lists, mail, forums, discussion, question answers dialogs, news ticker (one way for information distribution).

Live instructor is made available in real-time for synchronous training. 'Virtual classrooms' are where the instructor teaches virtually like in instructor-based training. This training can be based over a single session to several weeks, months, or even years through individual logins where everyone communicates with each other and with the instructor at a set time.   Websites, audio video-conferencing, internet telephony, or even a two way broadcast to students in a classroom are the platforms for these trainings using instant messaging, text and voice chat or video conferencing, shared whiteboard or application sharing, and group browsing.

Table 1 Synchronous vs. Asynchronous Learning

Synchronous	Asynchronous
Student's interaction with other students and on-site coaches.	Students learn in isolation independently
Learning is scheduled & has a fixed time start and end time.	Potentially learning is available anywhere anytime
Learning is learning	Learning may be freeform or linear

When comparing, traditional learning is found to be the best way of forming learning process where other models are considered to be less efficient. Hence, this phenomenon is not proved and research shows that e-learning is atleast as efficient as traditional learning.

3.1 KEY CONCEPTS

The key concepts of the research are focused on the learning in the class rooms with the help of technology. Text analysis is used (as discussed in chapter 2) in the form of Interpretation, and the main resources are discussed for the access of e-learning i.e.; Infrastructure of the e-learning, Collaboration, Awareness in less developed areas with – Education and Telecommunication, Learning and Tutoring Support Management, The ideal e-Learning system and Behaviorism.
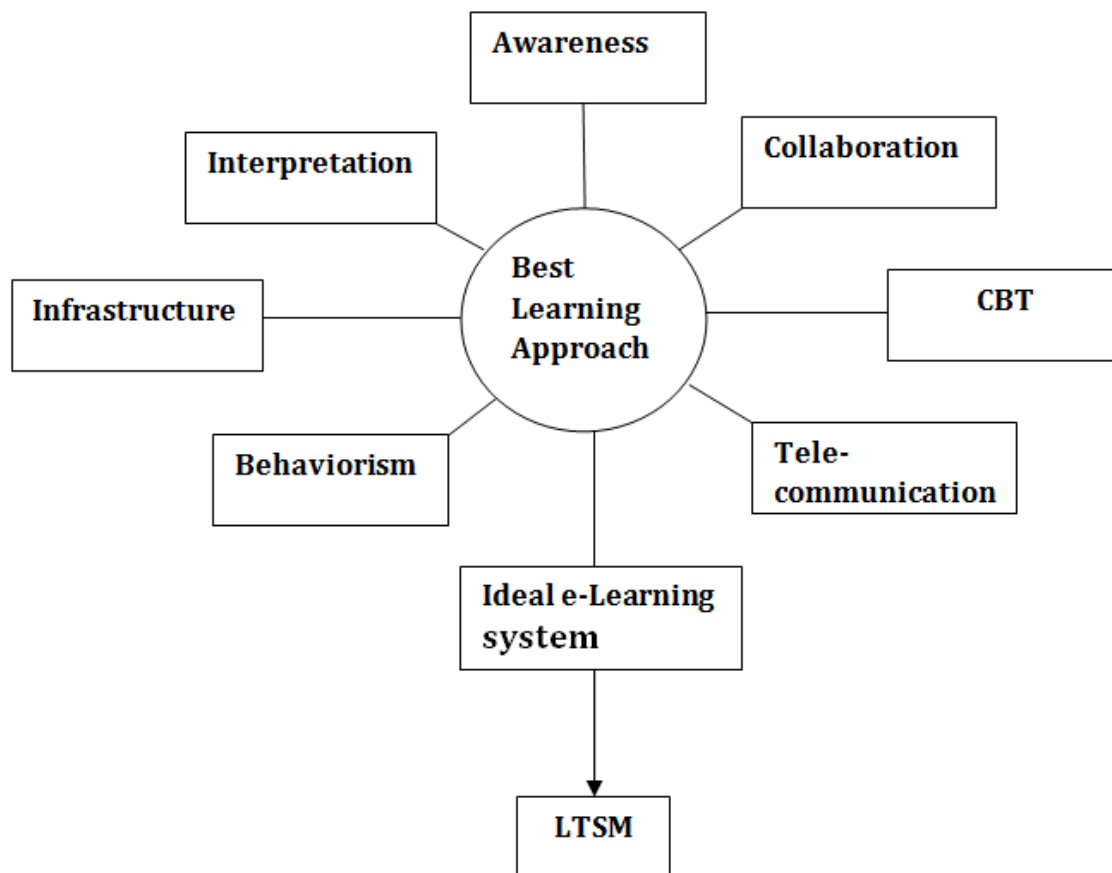
Figure 1 Resources for approaching E-Learning system

Interpretation: Hermeneutics is the main concern about meaning of similar passages of text (for example, a simulation of text is an organization, it is a research done by oral or written text for understanding). In hermeneutics the question asked is: what does the text means? (Radnitzky, 1970, p.20). Taylor states:

"Interpretation, in the sense relevant to hermeneutics, is an attempt to make clear, to make sense of an object of study. This object must, therefore, be a text, or a text-analogue, which in some way is confused, incomplete, cloudy, seemingly contradictory – in one way or another, unclear. The interpretation aims to bring to light an underlying coherence or sense" (Taylor, 1976, p.153).

This is thought to explain or to translate the meaning hidden in the clear literal sense. Everyone has learning needs and the efficient way to enhance learning is e-learning that tells us e-learning is a solution.

Infrastructure of the e-learning: In the 'big picture', if technology has been adopted to promote learning then there needs to be a plan of how that is going to happen. Through a given outline, teachers would be able to effectively integrate technology into their classrooms. Teachers have to consider the positive impact of this tool and how to use it effectively.

Learning Management Systems (LMS) are considered to be e-learning systems as they focus on

administrative aspects of learning, delivery of contents, support drilling and behavioral approach to practice.

Computer Based Training (CBT), introduced the learning material with the course outline and student management system to organize who should learn what and when. This type of LMS is there to offer support in planning, organizing, and managing through providing course catalogues, registration, event schedules, keeping learner's records, assessment services, organizing groups and individual learning paths.

Figure 2 E-Learning Flow Chart
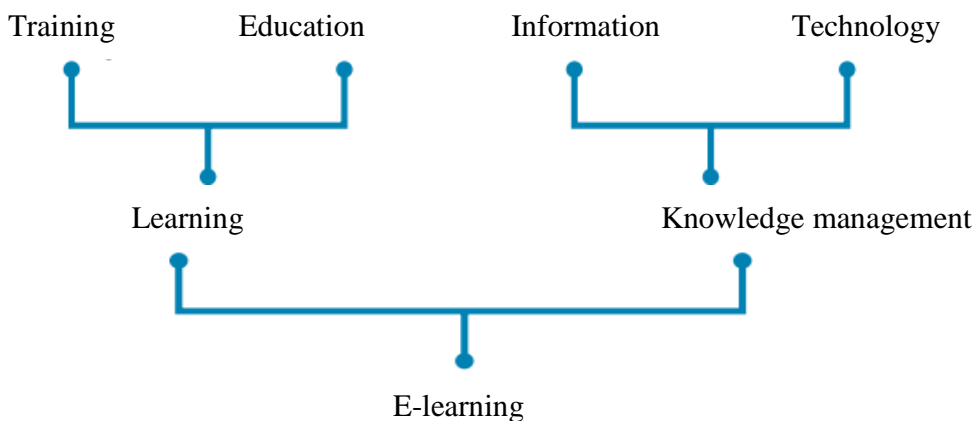
Awareness in less developed areas: Students can use the system for communication support and enhance learning. Basic knowledge and a Web browser with the experience needed to deal with.

Here, learners would find a recommended sequence of courses and the possible list of candidates enrolled in mutual courses. In addition, learners can have access privately or in a shared work space having their personal characteristics such as; name, department, grades, progress, etc. The system provides in detail:

- Course content in hierarchical form,

- The information regarding course objectives, requirements, contents, previous exams, trainer personnel, etc. and broadcasts on the time of next exam etc.,

- Assessments and exercises,

- Background library and glossary

Collaboration: for supporting the cognitive and constructive approach an e-learning system is required. Web Based Technology (WBT) integrates collaborative learning with knowledge management in the process of creating knowledge via channel of learning activities, knowledge propagation, and knowledge structuring processes in organized form. Collaboration denotes:

- Shared workspace, General workflow services

- Team forming, Participant list

- Submitting, review, and exercises and assessments

- The personal contacts with the environment and do communicate

Distance Education and Telecommunications: Synchronous in nature, to interact, individuals all over the world are utilizing telephone. Asynchronous communication includes; emails and fax machines as recent developments that is participants being separated in time if not by distance.

Telecommunication standardizes and increases the capacity of electronic communication media resulting in widespread of satellites for long distance communication with gradual implementation of Integrated System Digital Network (ISDN). ISDN carries all types of audio, video, text or computer data messages through the same channels in same digital format.

Learning and Tutoring Support Management System (LTSM): tutoring supports the process of learning in it. There is peer support, communication and collaboration between students and tutors through simple email to forum posting and virtual classroom. Learning and tutoring support management system largely depends on communication functions.

Virtual classroom learning is termed as a hybrid tool by Clark and Kwinn (2007), that incorporates some of the functions of both asynchronous instructor-led face-to-face and virtual classrooms. The virtual classroom in e-learning uses on screen medium to communicate content and instructional methods. Benefits of virtual classrooms are frequent learner interactions for gaining attention and promote learning. They are virtually designed to group study while typical e-learning is designed for self study.

Figure 3 A Screen Capture from an Asynchronous Excel Lesson

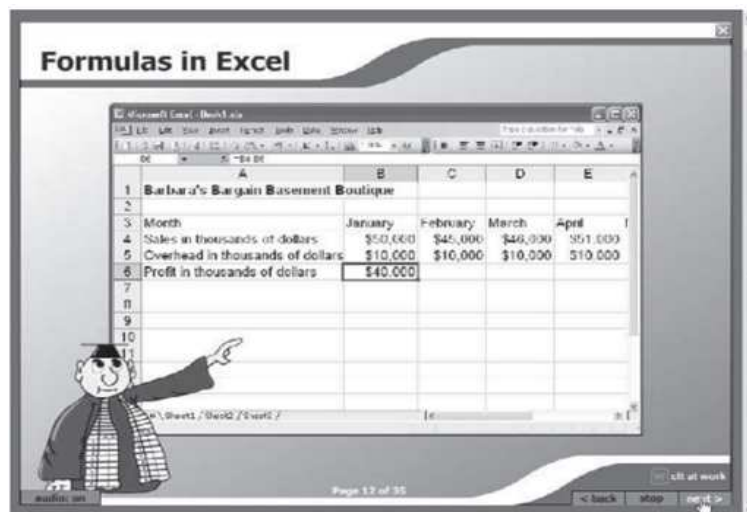From Clark, Nguyen, and Sweller, 2006.

Figure 3 demonstrates the screenshot of an asynchronous course telling how to make formulas in Excel. Whereas figure 4 presents a screenshot of a virtual classroom instructing on how to construct formulas in Excel.
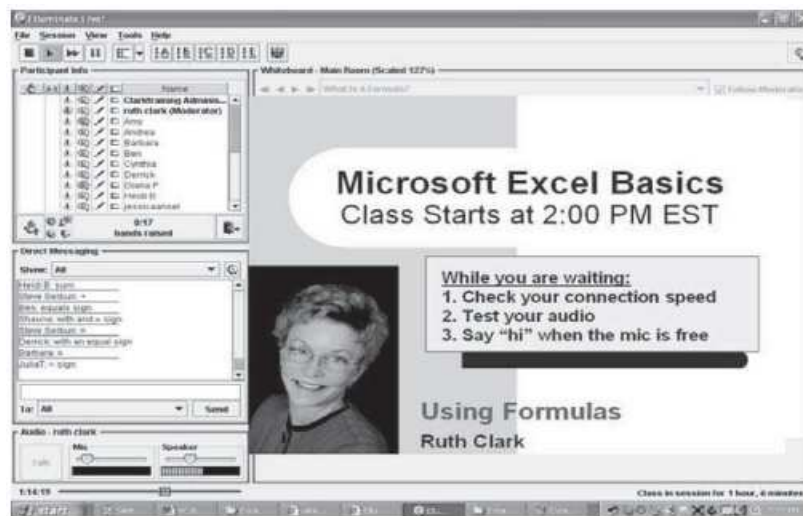
Figure 4 A Screen Capture from a Virtual Classroom Excel Lesson

As audience takes closer look at Figure 4 they would get a feeling of the virtual classroom. WebEx to Live meetings, all incorporate similar functions even if the interfaces differ.

As you can see on the screen (figure 4) most of the portion is devoted to the instructor projecting slides on the whiteboard. The names of everyone attending the session are displayed to the upper left of the whiteboard. A portion at the bottom of the participant window is given to chat box where candidates can type text messages.

An audio control box is at the bottom left of the window where instructors and participants can speak. During the training, instructors and participants wear headphones so that they can speak and listen at the same time.

The ideal e-Learning system: mostly e-learning systems are made up of several parts and functions; administration, communication, runtime environment, etc. Where in a pure virtual environment the learners largely have total control over when, where, and how they get their lessons. Thus, the students are guided into selecting the tutors and content, when interacting with the system so that they are not distracted. Distance education and flexible learning are interrelated to e-learning historically. When providing distance education various technologies are there to link instructors, learners, and resources independent of space and time (what is e-learning).
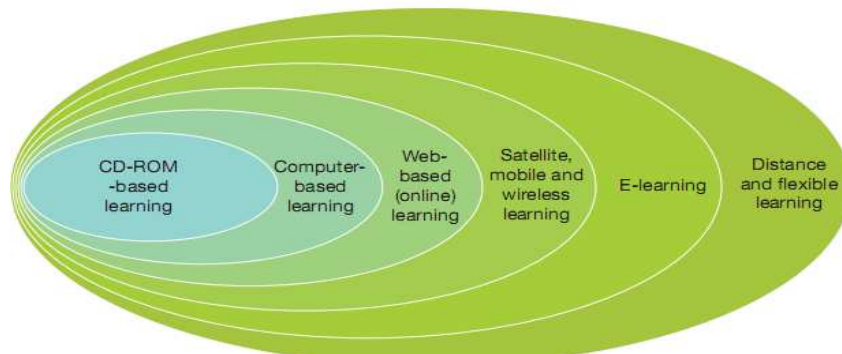
Figure 5 Different E-learning approaches

E-learning encompasses a wider field of endeavor (figure 5) and build relationships overlapping many different approaches (what is e-learning).

Behaviorism exclusively concerns itself with measured and transparent data and excludes ideas, emotions, and the experiences and activities of inner mind that are unambiguous. "Black box" is a term given to the brain that receives certain stimuli (input) and acts in a deterministic way. According to behaviorist thinking, learning through the responses of a learner is a vital point. Researching on the appropriate stimuli and implementing the correct behavior having satisfactory feedback comes into the theoretical and didactical problem.

In **"The law of excercises"** as stated by Thorndike, the bonds within the stimuli and responses are strongly binded through being implementing frequently. Whether a correction is made depends on how often it is executed, and that is called behaviorist learning. This was later superseded by Thorndike in "**Law of effects**" that stated about the responses that are likely to be repeated and learnt which occur just prior to a pleasant moment, unlike to the responses that are just occurred before an unpleasant event and thus forgotten.

Figure 6 Behaviorist Model of Learning
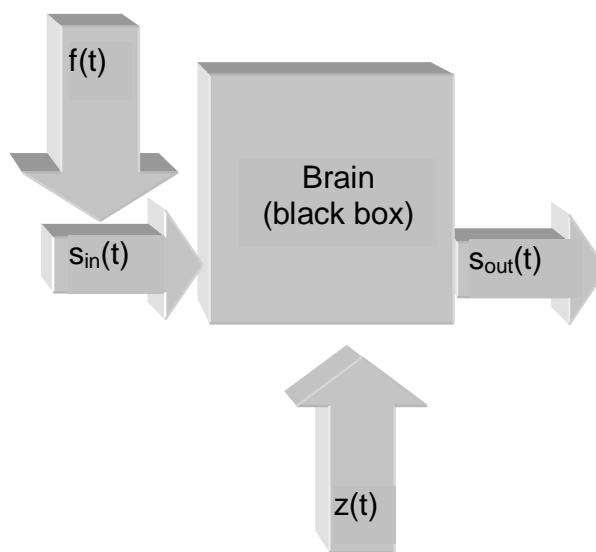
The graph shows the behaviorist model of learning. In learning activity, the learner uses sensory input and develops a meaning out of it. In a traditional learning formulation the learners engage with the world (Edward Lee Thorndike, 1874-1949).

Where:

- Sin(t) means the signal input
- F(t) is used for external feedback
- Sout(t) is the signal output
- z(t) are variables and not directly observed events

3.2 SUBJECT AREAS RELEVANT FOR THE RESEARCH

On this planet, the most interesting learning creature is human – having wonderful built-in intelligence, an extraordinary sensation, and wealthy in experiences every day. Following are the subject areas listed as would be discussed in the thesis for finding answers to research questions.
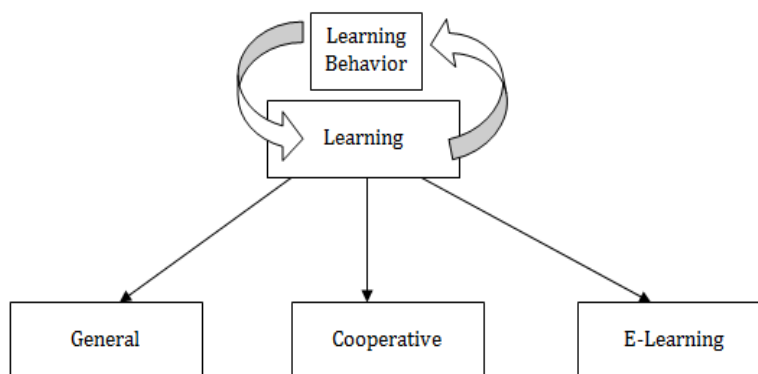

Figure 7 Subject areas of learning

1) General Teaching Methods

a) learner-centered and curriculum-centered classrooms
b) Lesson Methodologies
c) Standards of Teaching
d) Authentic Assessment
e) Textbooks Advantages and Disadvantages

2) Cooperative Learning
a)   Teaching with Cooperative Learning
b)   What Is Cooperative Learning, and What Does It Do?
c)   Stages to Technology Integration
d)   Integrating Technology

3) E-learning Technologies
a)   Content creation and management
b)   Web learning /Web based training
c)   Learning management
d)   CBT activity system &Learning Activities

3.2.1 GENERAL TEACHING METHODS

Teaching styles can be of many styles. Researchers have classified it as the students prefer – visually, auditory (hearing), tactile (touching), or kinesthetic (moving) you can learn.

Visual: diagrams or pictures are means of visual learning. They can be in charts, films, written directions, wall displaying posters, graphic organizers, and flash cards, etc.

Auditory: Verbal instructions through audio tapes and videos, story telling, songs, memorizing, and drills allow learners to act. Memorization is done when in dialogues, discussions and plays, solving problems through talking about them, and using rhythm and sounds. Interest and attention is maintained through body language.

Kinesthetic: is feeling, touching, and experiencing the material at hand, that is, intersperse activities, physical activities, and competitions. It is a fastest way of getting information whether participating in drama, science lab, field trip, skit, dance or other such activities.

Tactile: Board and card games, writing and drawing. They use movements while reading and listening. For example, labeling a diagram or asking students to fill in the table while listening to a talk. These are tactile approaches when learns are trained on new skills.

The focus of learner-centered classrooms is mainly on individual learning. The teacher utilize the interest and need of students to facilitate learning with meaningful instructions. There are curriculum-centered classrooms that focus on completing the curriculum effectively. It is in control of instructor to decide what ought to be taught, when and how and in how much time.

3.2.2 COOPERATIVE LEARNING

Johnson and Holubc, (1994) stated that cooperative learning is through the instructional means in small groups where students work together maximizing each other's and self learning. Students present their ideas in group discussions, arguments, and many other forms of conveying information and articulating knowledge. Course's curriculum is organized according to subjects in a serial

manner.

For finding the solution to the first question of this research, study is made on the human behavior in different basic areas because the development of system of thinking depends on these areas.It would support in finding the answer to second question as well. *What is the suitable approach to develop best perception of the knowledge imparted through ICT tools and techniques?, and Why e-education systems need to be changed with the changing ICT?*

3.2.3 E-LEARNING TECHNOLOGIES

Technology plan is moving education ahead using new technology hardware and software. The very idea and purpose of this plan is wonderful. Comparing the use of technology as a learning medium in seventies and eighties gave signs of slight improvement in student's achievements. Government agencies, educational institutes, business enterprises, research centers, advocacy groups, and libraries have rushed to connect to the Web (Johnson, 1999). It is observed that the Web has influenced the society in general and institutes specifically. The rapid growth in technologically enabled distance learning at the higher education level has turned in the tremendous surge in online communication.

Studying the relative community area would help in finding the solution to another question focusing on *(how these technologies can be utilized to improve learning?)*

3.3 RELEVANT LITERATURE SOURCES

The investigation of different existing teaching technologies in community softwares in the form of prototypes of LMS would be included in the research study because those aspects are to be found which are considered to be relevant for improving education through best electronic process. It would help to find out *(Can the use of technologies be the best way to improve education?)* arguments would be based on additional subject areas. Research focuses on mainly two subjects:

- Dual communication between teachers and students
- And learners also communicate among themselves

A host of learning methods were picked up by people along the way – e-learning, internet-based training (IBT), web-based training (WBT), computer-based training (CBT) and others (Lee Ann Obringer, How e-learning works). Learning a new skill can very well be gained through immersing into a 3D environment or interacting with characters or objects on the screen. Online training became popular since early 1990s.

(Pailing, 2002) the way educational material is designed the blended learning would do significantly well to bring changes when developed and delivered to students wanting to learn even in tough constraints.

Error! Reference source not found. (Dietingeretal, 1998c) today man is incharge of highly dynamic knowledge structures. Users are getting overloaded by junk information as well as electronic journals and electronic books form a reliable source of information. Such highly dynamic knowledge systems should be considered when obtaining current and relevant information.

(Garrison and Kanuka, 2004) basic level of blended learning is the thoughtful integration of classroom-led learning experiences with online experiences. The model adopted by most educational bodies as researched by higher educational institutes is "stretching the mould" often

termed as "blended learning".

3.4 PREVIOUS RESEARCH

In 1969, the Open University in United Kingdom was the first to offer undergraduate degrees through "virtual classrooms" and since then many universities followed in the similar direction (Educom Staff, 1996). The classic examples include; the Western Governor's University, a consortium of 18 western states in the US, and the California Virtual University, listing 1,000 distance education courses, formed the partnership to promote distance education as a viable alternative to classrooms (Koss-Feder, 1998).

In conclusion, analyzing the situation of the specific institute for e-learning, each quality assurance system needs to be careful. Being flexible, the combination of process and technology has to be considered carefully, and a precise view of issues of cultural change would influence the methodology taken in assuring the quality of web-based learning.

The learning process should move beyond the boundaries of classroom as students teachers get accustomed to computer networks. It is stated in a survey (Valentina Garoia, 2011), that pure utilities are more privileged in the real world than the virtual ones, a remarkable virtual world is set to meet the demand of any person of any kind.

As there is increase in the use of technology facilitating and delivering distance learning courses, new challenges have come up for the administration., staff, faculty, and students of universities adopting distance learning programs (Drazdowski, 1998; Fulford, 1993). Many faculties are afraid that distance learning is just to lower their ranks, or to solve budget problems. Also, a risk of dehumanization and alienation of learners is feared with loss of critical thinking and social skills (Novek, 1996).

10 years since the Web was implemented by Tim Berners-Lee in Switzerland and Wide Area Information Servers was the first tool for surfing the net.

Students from distant locations, New York, Canada, Australia, and other locations, researched and shared stories about their community heritage. Students received the information from their distant partners and then worked on it by analyzing, evaluating, synthesizing, and publishing their work in a cooperative learning circle publication. It is stated by Wright (2006) that for finding unique solutions to complex problems collaboration was an effective strategy. An example of Computer Supported Intentional Learning Environment (CSILE) is presented that is a software supporting a networked multimedia environment for learning activities.

Project Zero developed Immigrant (1850) at Harvard University that encourages students to identify the experience of Irish immigrant in mid 1800s by getting into the role of one leaving Ireland to go to Boston facing difficulties in starting a new life. Everyone looks at the world in number of different ways depending on the level of detail. Importantly it is the viewers who design the views, as the activity is done by an individual. In computer-based system students adopted an immigrant family and lived through the complex decisions it took to find shelter and job, managed their finances, and done shopping with that.

3.5 SUMMARY OF THEORETICAL FINDINGS

Researches on e-learning technologies, general teaching, cooperative learning, and the effect of technology on community over society and people is an important aspect to the theoretical study of this research. Educational techniques are improved as the central scientific area of study facilitates.

The answer of research questions is best analyzed through theoretical research. Understanding the occurrence of pedagogical processes when learning is necessary as emphasized by Chinese proverb, attributed to Confucius (450 B.C.):

"Tell me, and I will forget, show me, and I may remember, involve me, and I will understand"

E-learning is network-based, CD-ROM-based, internet-based, or intranet-based. It includes video, audio, text, virtual environments, and animation. It is a self-paced, hands-on learning giving a very rich learning experience that even exceeds the level of training.

To encourage the user active participation the passive objectivity should be appreciated as a strategy, in the generation of learning context. The Internet is a wonderful creation of human world and it brings change in environment and strategy that has a profound effect on human behavior. Thus, it is sensed that there is need of technology in the learning process. The collaboration activity has greater effect on learning efficiency and networking provides collaboration, thus increasing the collaborative efficiency.

Blended learning empowers the learning experience of learners and help promote the experiential learning experience. Without forming a close physical connection people can collaboratively work in groups through networking and share information. Information from any where in the world is easily available in local schools, library, institute or a classroom through computer networking.

Finding appropriate answers to research sub question three (3), different Learning Management network systems are sought in order to find which technology of e-learning would be appropriate for improvement in education. Through theoretical research, we have studied two different Learning Management systems.

3.6 ARGUMENTS FOR AN EMPIRICAL STUDY

Several different agencies have developed guidelines, principles, or benchmarks to ensure quality in distance learning and that's possible with the growth of technology-mediated learning in higher education. The organizations are – the National Education Association, American council on Education, the Southern Regional Electronic Campus, Global Alliance for Transitional Education (GATE), the Western Cooperative for Educational Telecommunications and Higher Education Commission for the Middle States Association of colleges and schools. Benchmarks regulated for quality assurance tasks by these organizations are to be applied in wide variety of institutional contexts and consist of fairly broad statements.

The type of questions asked in interviews and the chosen prototype for observation should be categorized into forming the evidence of solutions to the research questions in theoretical research in empirical study. The sampling pattern is also selected for use during interviews. The research investigates that the education could be improved with the use of technology. Virtually there are strategies for faculty training, course development, infrastructure, learning resources, student

services, and assessment of outcomes. Therefore, such sampling is used for empirical survey. There are some common advantages of network communication in learning process.

- Easy exchange and advantages of supplementary knowledge
- Getting attention of new members is easy
- Participation is worldwide eradicating distance problems

Student exploration, engagement into complex collaborative work, and multidisciplinary tasks, is supported by technology applications. It is argued by Buur & Bagger (1999) that sometimes a passive behavior towards direct dialogue in groups impedes better understanding of the users' context.

Chapter 4: EMPIRICAL SURVEY

4.1 PURPOSE

Systematic and scientific approach helps finding responses to worthwhile questions in all kinds of research studies. Specifically there are two main approaches among different ways of carrying out research – qualitative and quantitative. Hermeneutics form the bases of this research as it is theoretical as well as empirical (Ricoeur, 2004, 3-4). It is an approach that has origins in exegesis that lies within the framework of a discipline which is for understanding text. [1]

Qualitative approach aims at capturing the rich and complex human experience by focusing mainly on words and their meanings, on other hand quantitative approach enables statistical analysis by gathering numerical information from the participants and generalize those findings for the whole population. [2] Therefore empirical work or information is obtained through interviews, experiences, observation, or experimentation doing theoretical research for collecting data (Houghton Mifflin, 2000) that can be tested using the results..

Hermeneutics study answered the research questions, these answers are verified with empirical work by the help of some prototypes. Suggestions are expected about this research from different people and it would guide the analysis of the proposed idea. The importance of e-learning in education field is thus emphasized.

4.2 SAMPLING

Group of people, items or objects form a sample in research terms collected from a large population for collection of empirical data and measurement. Samples are made up of subsets or small parts of an original data to be studied.
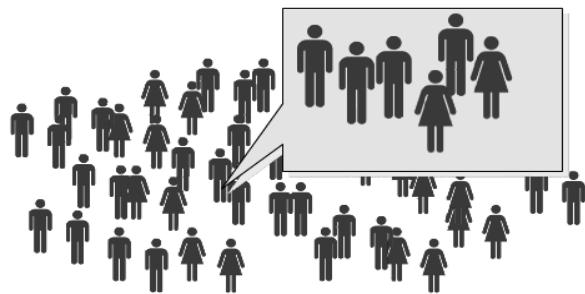

Figure 8 What exactly is a "Sample"

As a representative of population at large sample ensures the generalization of research findings to the whole population. Determining the characteristics of population, and drawing conclusions about it is geared through sampling. [3]

Taking an example of studying homelessness, you do not have any list of homeless people nor you are going to create it, however, it would require you to collect a sample of respondents on which to conduct the research. There would be use of some kind of non-probability sampling. [4] Quick tests are conducted to help saving the situation. In the survey, you consider the affected population only. A small portion of this infected population is thus utilized to obtain information.

as discussed in Chapter 2, that for research investigation qualitative approach is used that is based on hermeneutic aspects and its also been argued that the validity measure is creation of researchers themselves for qualitative research finding.
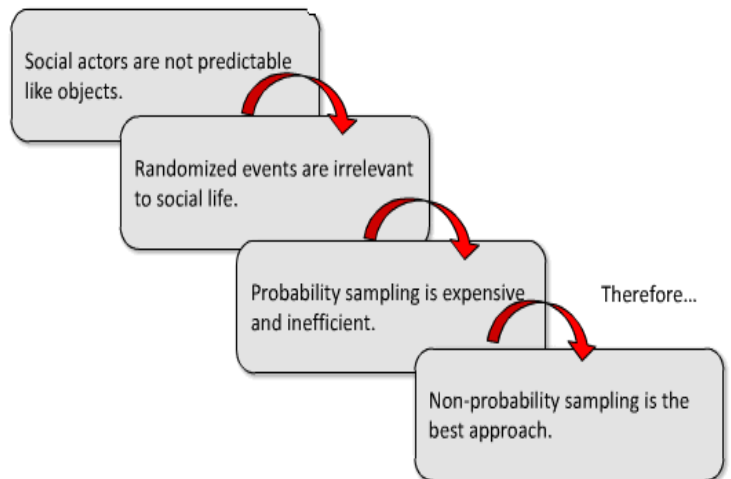
Figure 9 Assumption of Qualitative Sampling

Thus, qualitative sampling method is used for achieving empirical data. The research investigation would give value to an existing technology. Many aspects of the todays world are permeated by the Web. Because of the recognition of Web in the society gained popularity, thus, education sector could not be left behind in incorporating it into itself.

As the students and instructors are the two key players of web-based learning their views and perceptions of the significance of the system should be taken into account when establishing the e-learning. Therefore, reliable instruments are required for validating its importance. [7] to collect empirical data observations, surveys and interviews are thus conducted.

4.3 THE INTERVIEWS

Interviewing is done to sought out material for a newspaper story or a television broadcast, in a meeting or conversation in which writer or a reporter asks for opinions to their questions from one or more people, to consult and evaluate, etc. This technique also belongs to empirical research. The interviewer gets to meet with many people to interview them. Proper preparation and communication is highly important.

So it is necessary for interviewer to plan their meeting and speaking style, setting a goal. The pilot study involved candidates from teachers, students, other staff from various institutes to measure their views, attitudes, and behaviors about the role of e-learning. So in planning, first

questions were made according to the research questions for interviewees and prints were taken, secondly a questioner was appointed to prepare our survey report.

Then the interviewee sample was made. Questions were asked from those common persons having knowledge of E-Learning and educationalists that use modern technologies to teach students or at least one of these two.

Interviews of students were also conducted who were easily accessible to us. The interviews took a start from a famous university (Virtual University) of Pakistan which is famous for distance education in Pakistan and comments were noted. Mostly student's participation helped to find relative material for this research. As this research is about improving education, many participants were related to the field and had clear information. Some urban areas also became part of the sample, where people follow traditional and "old-fashioned" ways to teach students. In this situation, the concept was introduced to them as a new idea of learning and was explained its main objective— arming Education with modern Technology.

For developing interest of interviewees in urban areas, some PowerPoint slides were prepared related to some social issues, mentioning their problems, and finding solution accordingly using E-Learning. This was a very successful attempt consequently everyone took interest in the discussion. During this activity some new question aroused.

Before starting the every new interview, documents of the interview were managed. The results of each interview were kept in the documents' file for the analysis.

4.4 THE FIRST INTERVIEW

A group of students were interviewed. Everyone was already familiar to E-Learning through internet media. They told that use of E-Learning techniques in educational workshops always initiated particular courses or project, and the participants found it to their interests.

It was understood that the People who live in urban areas and far away from cities could not use e-learning in their education because of different reasons. Many people did not have the facility of Infrastructure i.e,; communication or internet. And, transport is also a major problem for the students.

For removal of such difficulties interviewees gave suggestions; setting up a virtual network and train them on it. So these people could easily take advantage from this process. They suggested to create a network infrastructure like; Virtual University & Allama Iqbal Open University ─ with remote tutor guidance connecting many people at the same time, and proven efficiency. For sharing, audio, video, and text communication is found excellent; changing it further to adapt with various other platforms.

institutions should run "computer in homes" scheme to support the gateway that enables all learners and their families to have access to internet and learning gateway at their homes.

Parents are more concerned about their children education and praises to the online guides for families that make them able to assist their child to learn and stand up like never before. It would give a successful journey for a pupil. [5]

4.5 THE SECOND INTERVIEW

Another student took an interesting interview. Showing keen interest in E-Learning Education system he described precisely the problems, and the way of accruing education through Web and other multimedia techniques of E-Learning. He told that people wanted to learn modern technology for their own purposes but they had technology fear.

According to Ray Kurzweil who is an artificial intelligence researcher and inventor, technology had always been a double edged sword. [8] Providing a new environment e-learning has lots of advantages to offer.

4.6 THE QUESTIONNAIRE

The Questionnaire Development:

Development of the initial questionnaire went according to research objectives and by reviewing relevant research Acquiring participants' biographic information was the first section of the questionnaire. The second section was composed of questions on getting information about the candidates' views and attitudes on e-learning and then an open-ended part.

Below are the questionnaires that were designed for public survey and for gathering information from the community.

The former is Students/Teachers Questionnaire and the later is Public Survey Questionnaire.

Improving Education through E-Learning:

An Empirical study in Education Sector in Pakistan

Survey Questionnaire

Respected sir/madam,

We are students of MS, School of Business & Informatics, and University of BORAS of Sweden. As part of our study we are conducting a survey regarding "Improving Education through E-Learning: an Empirical study in Education Sector in Pakistan". This study will provide an understanding about E- practices and the mediating factors affecting the Education in Pakistan which will make significant practical and theoretical contributions to the literature.

Would you please be kind enough to take some time from your busy schedule to fill out given questionnaire? The questionnaire does not require any name so you can be sure of complete confidentiality of your response. The data analysis of this study will also be performed on all the respondents and will thus, produce aggregate results.

Thank you very much for your time and cooperation.

Yours Sincerely, ☺☺

Muhammad Shahzad & Shahid Javed
Cell Number: 00 92 3335812236   e-mail: mshahzad38@yahoo.com

Name: _____   Occupation: _____

Location _____

Main Place of study:
Home/student residence ☐   Home/residence using a computer connected to the Internet ☐
Workplace ☐   College/University/Learning Centre ☐

Other (please state) [   ]

Background Information: Please tick (✔) the relevant box.

## Section I			
Please indicate your gender	☐ Male		☐ Female
Please select the category that includes your age	☐ Less than 20 years	☐ 20-39	☐ 40-49	☐ 50 or above

Background Information: Please tick (✔) the relevant box.

Please select the category that describes your employment status	☐ Student	☐ Head of Department	☐ Staff	☐ Common person
	☐ In full time education	☐ In part time education	☐ Not in education	
Please indicated the level of Education you have completed	☐ High school Graduate	☐ College graduate	☐ Master degree	Others please Specify_____

Did you ever hear about any one class room technology of E-Learning?	☐ Visual Screen	☐ Video Conferencing	☐ Mobile Learning /digital games	☐ Online Media

Question: Which are major e-learning recourses that you use frequently?

1). CD-ROM-based.   2☐ ntranet-based / Internet-based   ☐   3). Video Conferencing ☐
4). Websites/Blogs   5☐ rtual environments.   ☐   6). Digital games. ☐
7). Mobile Learning   8☐ nimation. ☐). Audio.   ☐   10). Video ☐

I normally use a computer: *(please tick one)*   **& Type of computer access**

a) What's a computer?	☐	a) Desktop PC	☐
b) Very rarely, if ever	☐	b) Laptop PC	☐
c) Occasionally	☐	c) Handheld Computer	☐
d) A few times a week	☐	d) Internet enabled mobile phone	☐
e) Every day, I'm addicted	☐	e) No PC	☐

Part A: E- Practices

Please think about and read each statement carefully and encircle the number that indicates the degree to which you agree or disagree with each statement.

Rating scale: **Strongly disagree**   **Disagree**   **Neutral**   **Agree**   **strongly agre**

1   2   3   4   5

Suggestions / Thoughts

Section II		Strongly Disagree	Disagree	Neutral	Agree	strongly agree
1	Learners should have some basic IT knowledge before embarking on Electronic-based learning?	1	2	3	4	5
2	The E-Web provides powerful resources for gaining academic knowledge.	1	2	3	4	5
3	E-Learning help you to enhance your qualification abilities	1	2	3	4	5
4	The E-Learning method provides an opportunity for collaborative learning?	1	2	3	4	5
5	The E-Technology is helpful in developing students' problem-solving skills?	1	2	3	4	5
6	E-Technology can enhance independent learning.	1	2	3	4	5

7	Using the E-learning resources saves a great deal of time on finding learning resources.	1	2	3	4	5
8	E-Learning can encourage learners to take an active part in learning	1	2	3	4	5
9	Every course should includes E-Learning techniques in teaching and learning.	1	2	3	4	5
10	The computer -based learning enhances interpersonal relationships between lecturers and students.	1	2	3	4	5
11	E-Learning can provide useful ways of assessing students' feedback.	1	2	3	4	5
12	Getting access to an internet-connected computer is a problem for us.	1	2	3	4	5

Comments

Section III		Strongly Disagree	Disagree	Neutral	Agree	strongly agree
1	Are you satisfied with the e-learning method?	1	2	3	4	5
2	E-learning can accommodate learners having different learning styles	1	2	3	4	5
3	Online communication among students and lecturers is more effective and motivating than face-to-face communication.	1	2	3	4	5
4	Our college/ university is not very smart in the way it uses E-Learning	1	2	3	4	5

Students University of BORAS.

School of Business & Informatics.

Sweden. ☺☺

Students expressed higher satisfaction and rated computer-based learning as best when compare learning in a traditional system to a computer enhanced learning framework.

E Learning also includes advantages such as: information digest time and respond time, increased learner communication, transfer of knowledge among pupils and acquiring meaning through it, accessing information through discussions, higher level of motivation and involvement on part of pupils.

4.7 OUR SURVEY:

World is ever more encompassed of virtual communication for student, thus, they are required to master skills in e-literacy and critical thinking – the task where schools played an important role. Asian and European educationists are interested to present electronic Education and Electronic games in schools across Europe and Asia to develop the sense of importance of E-Technology. The Survey is organized by the help of some teaching professionals (Professor Dr. Shahzada, Assistant Professor Syed Yasser Arafat & Ms. Qurrat-Ul-Ain.) and some members belonging to the E-Learning Environment Society – to gather public opinions and comments and to know what sort of problems they were facing.

Dissemination of realistic and authentic information about CBT and its career through public-private partnership and collaborative activity helped changing perception of society. Though the existing system used in educational institutions for E- Learning is well developed but still there is need to improve the methodology of learning. There are many problems and hurdles that are associated with it. Not only the information was gathered from the educated community but also from the rural areas and try was made to know the extent of problems that less developed people face. It was also found out what type of the Infrastructure is in connection with in these areas, as learning from the Technology can be only possible if the infrastructure facility must be approachable to the territories.

In particular, closer cooperation of education environment policies ensured teachers, parents, and their children to get accurate information regarding CBT. Launch of numerous initiatives have taken place but streamlining these initiatives is required to have a positive impact. The study focus remains on development of indicators and collection and analysis of data of students' use, competence, and behavior towards CBT. Investigation of teachers, school, college, and university level have been done to regard the impact on students learning. Areas of investigation were:

- Use of CBT in classrooms by students
- Use of CBT in classrooms by teachers
- Attitudes of teachers to instructive use of CBT
- CBT access through connectivity and school infrastructure
- Students' digital competence and attitudes towards CBT

A question that arises here is that if the E-Learning methodology is performing its part well then how people face a problem of unawareness from the technology. There must be some shortcomings regarding the system infrastructure that could not overcome or cope with lack of

facilitation.

Hence it is revealed that the E-Learning methodology process could facilitate education properly in educational institutes. As suggested by Swalec (1993), rather than feeling threatened faculty should accept distance learning to form a path for students in accessing their courses, that would result in greater intellectualism and also the course would not be cancelled due to less enrollement.

Questionnaires were provided which were designed for public survey and for gathering information. Those questionnaires are given in the following pages. The former Part A & Part B are Public Survey Questionnaire and the later Part C is for community suggestion/comments Questionnaire.

4.8 QUESTIONER PRESENTATION

RESULTS:

The institute of Higher Education Policy carried out a survey in order to answer the research question, in 2011. As a result there are some graphs and a list of quality benchmarks for Web-based distance e-learning.

The questionnaires provided different views from people regarding the use of E-Learning and problems and levels of satisfaction related with it. Following are given tables of benchmarks to give an overview of that importance and comments/Satisfaction about the E-Learning teaching system.

Table 2 Survey statistics on the importance of the E-Learning/ Teaching Process benchmarks

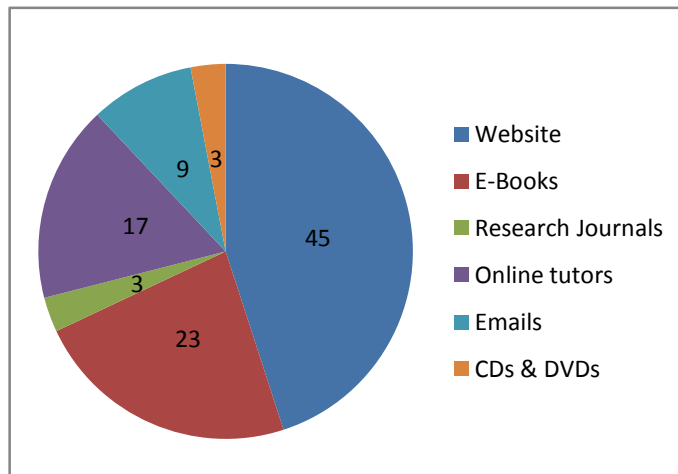|	Not Important	Somewhat Unimportant	Not Sure	Important	Very Important
Q1	0%	0%	8.8%	67.6%	23.6%
Q6	0%	0%	5.9%	55.9%	38.2%
Q8	0%	8.8%	14.8%	52.9%	23.5%

Figure 10 Survey statistics a graphical representation of using e-Learning Resources for Education

4.9 OBSERVATION PROCEDURE

Preliminary investigation reportedly showed that observation has an important role in this study. During the whole research observation remained the key factor. In the analysis phase selection of subject area was done through theoretical study then every point was observed doing empirical research and hence, answers wer found for the research questions.

To observe it is necessary to keep in touch to some institutes which have setup for Distance Learning and some which run setup as regular learning, to serve this purpose a number of videos of e-learning workshops were collected through the Web. Each video was watched many times and a strategy was made to keep the students of both kinds (traditional & technology users) under observation to get results for this research.

Some workshops were arranged that included PowerPoint slides presentation for introducing the basic aim. Few of the candidates included children from school, this workshop was meant to provide basic introduction guide of system for facilitating children to develop the interest and awareness of using e-learning.

Some workshops were arranged for providing infrastructure and the participants of such workshops were experienced persons. It was observed that the participants showed interest in the E-Learning Education. People were happy to give their views and ideas, and these suggestions were noted down on the boards to be clear to all participants and they became informed of each other's opinions. It was also observed that mostly participants were about the age of 20s and 30s.

In the workshop, participants shared their experiences that often they had different and new thoughts about structuring but when they would attend a workshop they had difficulty expressing their views (Pointless Hysteria, 2007).

Table 3 Survey statistics on the presence of the E-Learning/ Teaching Process benchmarks

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
Q8	0%	11.7%	26.5%	50%	11.8%
Q9	0%	5.9%	17.6%	64.7%	11.8%
Q10	0%	17.6%	20.4%	41.2%	20.8%

It was felt that there would still be many students working in offices wanting to participate in such activities, to express their ideas but due to lack of time were not able to attend the workshop.

There were opinions that if local people found it difficult to attend the workshop they could connect via modern technology to the network for training. Thus, participants could easily express and convey their ideas. So, when modifying an existing virtual network, the importance of grouping (of predictors) was observed.

Table 4 Overall Observations

S r.	Questions?	Yes	In between	No
1	Awareness of technology	66.3 %	0.4% Lack of facility	33.3 %
2	Showing Interest in E-Learning	20%	40% (having no access)	40%
3	Institutions used E- Learning technology	26.6 6%	6.67%(can't afford)	66.6 7%
4	Encouragements of learners by E-Learning	23.3 3%	28.23% want training	48.4 4%
5	Satisfied with Regular learning procedure	44.4 9%	22.18% want improvement	33.3 3%
6	Satisfied with E-Learning system	26.6 7%	40.0% Want improvement	33.3 3%
7	Infrastructure & Access facilities in Cities	70.5 4%	14.55% Poor community	15%
8	Infrastructure & Access facilities in Rural Areas	26.6 5%	11%(Literate of E-Learning)	62.3 5%

4.10   EMPIRICAL RESEARCH RESULT

Institute for Higher Education Policy formed the basis from the results and it was clear that the major areas to concentrate were: Course development and structure, Teaching/Learning Process, Institutional Support, faculty support, student support, and assessment and evaluation to ensure quality web-based learning.
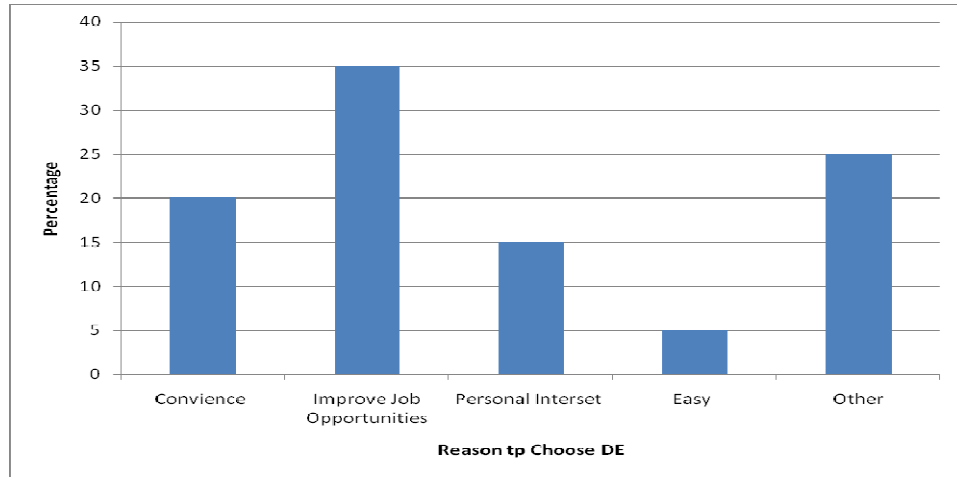

Figure 11 Graphical representation of usage of Technology

The solution to research problem 1 and 2 – Why there is need to build e-education system with best perspective for learning? was found through interviewing and observing. People stated in the interviews that they wanted to get facilitated from modern technology and wanted to participate but could not due to some constraints.

On observation it was seen that people wanted to share and translate their conceptual ideas but could not find the right place or time. There were many experienced employees who also wanted to attend the workshop to contribute to the society.

Hence, there were lots of questions still remaining to be straightened through previous research for ensuring quality in e-learning system. Research carried out by Institutes of Higher Education Policy seemed to be a useful approach to study the issue locally and would guide exploration of contributing factors in creating a reliable quality assurance model for e-learning. As a result, it was concluded that there needed to be an infrastructure and awareness workshops so that above problems were solved to some extent.

Chapter 5: ANALYSIS AND RESULT

Analysis is performed to illustrate the effective and precise meaning from gathered data. E-learning brings change and reform in higher education and is considered as a transformative vehicle. Because of this reason, education policy makers focus on analysis of quality assurance in e-learning. Identifying an effective model for assuring quality delivery of e-learning tools and techniques that fits the expectations of various stakeholders is seen as a common problem in the higher education sector. To resolve this issue, firstly, there is need to identify the critical success factors that contributes to quality assurance in e-learning process. Focus of this research is on the academic staff who manage, develop, monitor, or teach web-based courses in local institutions.

The study objectives examined students' attitude to Computer base technology and CBT careers in secondary schools /colleges/universities. The differences are verified in perception and/or aptitude between the studies using E-Learning System or Regular Learning System – understanding the reason students might get off track from studies and careers in CBT by analyzing the impact of role models in studying and choosing career and assessing the extent to which e-learning stereotypes affect students in choosing career in relation to CBT and also gave recommendations on the research basis.

France, Italy, Poland, Netherlands, and United Kingdom that are representative of various levels of ICT incorporation in both education and wider society got chosen in which pilot schools were identified. Students, parents, and teachers were targeted for adhoc surveys. Methods chosen for data gathering were document analysis, interviews, surveys, and participant observation.

In our study focus remained on students' education through e-learning techniques. Secondary school students need to go through 'pre-university' phase. During this period the decision about subject specialization at upper secondary and university level starts building up.

This chapter is about comparing data received through the theoretical techniques with the data received by empirical method, and a comparative analysis of the territory findings pinned on relevant answers to research questions.

5.1 RESEARCH SUB QUESTIONS

Sub question no 1 and 2

1) *What is the suitable approach to develop best perception of the knowledge imparted through ICT tools and techniques?*

2) *Why e-education systems need to be changed with the changing ICT?*

Students tend to more easily present their ideas when online that leads to great debates that would not occur in the traditional classroom environment. Thus, research on Innovation and Technology is an ethical practice to facilitate learning and efficiency by using, managing, creating appropriate technological systems and resources. A detailed discussion has been discussed about our question #1 in chapter (3). It is understood that passive communication is better than active communication. The wonderful innovation in Informatics has changed the environment. And, this

change has transformed the human behavior too. There is no doubt that Internet is a best creation of our time. Additionally, it has been analyzed that for development and improvement in critical thinking and writing skills online participation into mediums such as; blogs, chat rooms, message boards, etc. helps a lot.

Following are some common advantages of E-Learning in education:

1. You get advantaged of others' knowledge through sharing

2. It easily attracts new members

3. Brings everyone closer to each other internationally

Sub question no 3

1) What types of Information Communication Technologies (ICT) can facilitate an e-education system well, and

Strengths and weaknesses could be found in all learning techniques. "Knowing your audience" generally applies in various forms of e-learning methods today.

Knowing versus doing: From this perspective, education is focused on acquisition of knowledge while training is focused on application of knowledge; in other words, education is about knowing and training is about doing.

From the training perspective, it's easy to see that no retailer, swim coach, or army general will be satisfied if his people could answer to multiple choice questions about doing their intended tasks but would do it awkwardly. Accuracy is known to those people who do the right things at right time and not just by knowing what should be done.

Technology is derived from "applied sciences" that means a valid and reliable system or process that uses basic research and it is investigated through proposed research that collaborative communication is only possible through networks by using famous connection like DSL, Land Line, Broadband, Wireless and Wi-Fi connections etc.

This verification is done during surveys and observations which have been discussed in chapter four (4). Some researchers proposed that social websites like Facebook, Orkut, LinkedIn, Twitter, Blackboard Collaborate, Class web Pages, instant messages, and Yahoo groups are also used to share and to communicate with others in education system. I was told by few people who were using video conferencing, forums, and skype that they used these mediums for collaborative communication in distance learning.

In the end, Traditional classrooms rely on papers and videos but an increased use in e-tutoring through Computer Based Technology is found. Training and education are not differentiated by an exclusive interest in either knowledge or performance; rather they each share the purpose of enhancing both. Education is, perhaps, focused on broader areas of outcome performance abilities.

It is concluded that one design approach would fit the need of both. The purpose of technology use according to empirical research is to get knowledge about the progress of the world. The course is designed as such that they mix distance activities with presence and uses various exercises, practices and projects in a hybrid environment. To achieve excellent performance education-led and training need programs are there that increase learner motivation, give behavior improvement learning experiences making those experiences worthwhile and meaningful.

Sub question no 4

How these technologies can be utilized to improve e-learning?

in the traditional classroom computer is an asset to any teacher for demonstrating new lectures, presenting new material, illustrating how to use programs and showing new websites.

Class Website: create a website to display work of your students in a class – when a web page is ready, it can be used for posting home assignments, famous quotes, students' work, trivia games and so much more.

Class blogs and Wikis: dialogues can be maintained through blogging by students in journals, sharing thoughts, ideas, and assignments that are used by to comment and reflect. Wikis are used where documents are produced in a collaborative manner within groups that is allowed to edit a single document and carefully come up with a finished product.

Wireless Classrooms Microphones: with the aid of microphones students can hear their teachers clearly in a noisy classroom.

Interactive Whiteboards: touch control of computer applications is provided in interactive whiteboards. It enhances the learning experience when anything can be shown that is on computer screen. This is not just a visual learning aid, but students draw, write, or transform images interactively on whiteboards.

Online media: classrooms lessons are enhanced through streamlined videos.

Digital games: there is growth in the field of series games and educational games. These digital games act as tools in classroom and get loads of positive feedback including increased motivation in students.

Simulations or virtual laboratories: learners are permitted to work in teams to construct projects completing them in the preferred time.

Mobile devices: clickers or smart phones enhance the classroom experience by helping instructors to get feedback.

Podcast: it allows anyone to publish and receive new files from people on the internet through subscribing. Teachers can reach their students easily as pert of daily life.
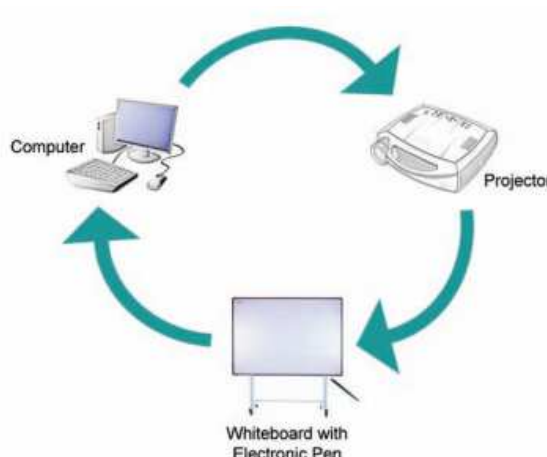
How can the available technologies help in the best way process for the improvement of education? How it can work?

To determine the structure and content of the successful e-learning technique a study was proposed. Survey instruments were utilized for our goal to:

- Outline the targets set by instructors to be achieved by students entering online study course.

- Measure the student's expectations on what they would entail through online study.

- Measure if gaps exist between students and instructors expectations through learning online

- Classify the key problem areas in traditional teaching and online system for students

Podcasting requires a computer, internet connection, and microphones to offer the capacity of advancing students' education beyond the classroom. As students listen to other students' podcasts with their own they can easily identify and define quality.

It can act as a remarkable tool for developing literacy and learning inside and outside classroom helping students sharpen vocabulary, editing, writing, presentational and public speaking skills.

Students also develop skills like; time management, problem solving, and communication.

Evaluation and Assessment

Table 5 Survey statistics on the importance of the Evaluation and Assessment benchmarks

	Not Important	Somewhat Unimportant	Not Sure	Important	Very Important
Q10	0%	2.9%	20.6%	50%	76.5%
Q1	0%	20.6%	14.7%	55.9%	8.8%
Q8	0%	2.9%	8.8%	41.2%	47.1%

High rating was received to the importance of evaluation and assessment through benchmarking. The evaluation process (No. 10) scored (76.5%) through benchmarking on importance. To address evaluation and assessment all participated institutions had systems in place. Huge amount of data was collected, in Western countries, on financial efficiency, faculty satisfaction, student achievement, student demand, student satisfaction, and student retention in order to evaluate the effectiveness of programs.

5.2 RESULT SUMMARY

The analysis of data that is collected through empirical research and theoretical study is successfully done. Hence, the summary of research work was concluded in relation to research questions. The investigation of different e-learning methods used in distance education and in traditional classrooms was done as part of research.

More people participated in a learning process by the advent of technology, and showed an interest in study. A web-based training facilitates the society with the use of Internet and they should take advantage of it. As discussed early e-learning cab be CD-ROM based, Intranet-based, Internet-based, or Network-based. It includes audio, video, text, virtual and animated environments. Following rationales were analyzed during interviews:

1. Sound educational principles are the basis of e-learning
2. Technology is vast for learners to get lost when learning
3. Technology saves time in finding learning resources
4. To embark on web-based learning learners should have basic technology knowledge else learning can be threatening to students with poor IT skills

5.3 CONCLUSION

From late 1990s till now, 30 percent of all Internet traffic is carried along by mobile technologies that have not been envisaged. Fixed-line networks, software applications, and hardware resources are in a state of mesh. E-learning is significantly impacted by these changes.

ICT based e-learning spans all dimensions of learning process. In electronic context, restrictive definition with respect to particular technologies has limited long term relevance to learning transactions. E-learning is both a distinct area of research and part of wider medley of knowledge management, information exchange, and learning within an electronic environment.

As seen, e-learning is generally defined in relation to its use of specific technologies. Conventional definition includes elements:

*   Communication and information technologies
*   A network of Internet and WWW
*   Delivery on time/at any time
*   For the purpose of learning an exchange of electronic information

In services industry as the research and teaching continues, more of these techniques would integrate in classrooms. Students would adapt to the learning environment as they understand their learning styles.

Chapter 6:   DISCUSSIONS

6.1 CONCLUSIONS

The term 'e-learning' was defined more than 50 times by Romiszowski (2004) as argued in the thesis. Structured definition is given by Romiszowski from the research for e-learning. Illustration of the framework is in table 6 below.

Table 6 Structured definition of e-learning

STUDY	SELF STUDY Computer Based Learning/Instruction/Teaching (CBL/I/T)	COLLABORATIVE GROUP Computer Mediated Communication
ONLINE STUDY Synchronous Communication ("Real Time")	Accessing websites, surfing the Internet to obtain information or learning (skill or knowledge)	Audio/Video conferencing Chat rooms with(out) video
OFFLINE STUDY Asynchronous Communication ("Flexi Time")	Downloading material from Internet to study later/using stand-alone course material	Asynchronous communication by email, discussion lists or a Learning Management System

Source: taken from Romiszowski 2004 page 6

Effective Web-based learning comprises not just training in the use of technology as widely recognized by research (Bates, 1995; Fullan, 1993). But, it should also be integrated with pedagogical uses of technology for development of lifelong learning skills and further developing goals in education in the information age (He, 1998). In educational environment when web technology is used its necessary to determine its effectiveness on students, courses, institutions, and teachers (Barr & Tagg, 1995).

Locally, within countries it is not difficult to reach campuses due to distance. But as with the hectic and fast life of today, there is increase in distance learners with the demand of learning and improvement in technology that has made it easy to learn through Web. Apart from that, e-learning is seen to be a transformative measure for bringing change and reforming higher education.

As a major technological advancement Web reshapes not only universities but also the world as whole. Thus in given circumstances, universities have to adopt Web for both teaching and learning. Progressively the development in Web-based learning in distance education setup is a good start.

6.2 IMPLICATIONS FOR INFORMATICS

Telecommunication and computer science when combined brought credibility to educational certificates received through e-learning systems that came with the paradigm shift in education and creatively measured outcomes reminding the words by Immanuel Kant, "one has some information or knowledge and every designer would need this knowledge". According to Virtual University Design team led by Western Governor, "creating a competency-based approach to assessing and certifying learning at the post secondary level is paramount".

The investigation is thus carried out of assessment instruments that are in all shapes and sizes. The fundamental purpose they serve in a higher education setup is ensuring that students had comprehended the material at deep level. It is explained by Marton and Salijo (1996) that deep understanding was the capacity to use detailed concepts creatively and lead to the ability of people to think about problems and formulate some solutions to them (p.11). The two major theories are thus discussed, Computer Supported Cooperative Work (CSCW) and Group Supported Systems (GSS).

6.2.1 COMPUTER SUPPORTED COOPERATIVE WORKING (CSCW).

Wilson (1991) addressed CSCW as how collaborative activities and their coordination were supported by means of computer systems. This is related to this research as well as an investigation on e-learning that would be supported by means of computer system. CSCW focuses on the psychological, organizational, and social effects as well as study tools and techniques of groupware.

Wilson (1991) at another place stated that CSCW was a generic term that combined the people working behavior in groups with technology enabled computer networking, and associated software hardware, techniques, and services. By the above definition CSCW is concluded to be a system to increase effectiveness of technology enabled group. Group working processes, and the technology that might be used in this incensement, therefore, are two major areas of concern. This discussion is similar to the research investigation as here it is trying to increase effectiveness of learning by use of technology (virtual network software).

6.2.2 GROUP SUPPORTED SYSTEMS (GSS)

Individuals contribute to operate in groups. Therefore, it is important to understand an individual to understand and support group processes (Wilson, 1991). Human behavior is thus discussed.

6.2.3 EXAMPLE OF LEARNING MANAGEMENT SYSTEM

As a 'correct' model for distance learning is not yet developed, thus, there is not even a singular rightful way to assess a student progress. However, the most significant element in utilizing traditional and alternative assessments in distance learning is to ensure the technique fits the mode of delivery. Student taking their final examination in isolation of their homes and mailing it to the instructor would raise doubts in ethicality and legitimacy of the educational process and validity of the results. On other hand, expecting students to appear in person at the test center would not be a practical solution either. To withhold the legitimacy of the educational program, academicians would have to devise a unique testing alternative. Synchronous and asynchronous are the assessment methods that this paper evaluates.

6.3 METHOD EVALUATION

To validate all types of distance learning benchmarks initially developed are in existence for many years in various forms. Would they be applicable to e-learning in distance education setup? This is a crucial question. Or it could mean, whether the current benchmarks would be appropriate to ensure quality in web-based learning?

By the help of the following seven categories these benchmarks are evaluated:

Institutional Support

Institutional activities are such that which helps to provide a conductive environment in maintaining and developing qualitative e-learning.

Course Development

Course is developed by the help of on-campus faculty members, or subject experts within the commercial agencies or organizations.

Teaching / Learning Process

Those activities that are in relation to art of teaching are included.

Course Structure

Policies and procedures that relate to learning and teaching process to support are included.

Student Support

These are the services found in universities for admissions and financial aids.

Faculty Support

These are the activities that are included to assist faculty in online teaching.

Evaluation and Assessment

Policies and procedures formed to address how the universities assess web-based learning.

6.4 CONCLUSION

It is written as there are at least two key stakeholders in any educational setting; the academic staff and the students – Davey Yeung, the author of Quality Assurance of Web-based learning in distance education. In order to develop an effective quality assurance model for web-based learning there needs to be a study on students' perception on this problem and this result needs to be incorporated with academic staff perceiving on the same issue forming a more concrete picture of the model.

According to this study benchmarks for quality driven e-learning were considered crucial and particularly the institutions strove in incorporating them into their practices, policies and procedures. At the same time, some instants were left behind that were not related to quality for technology based education.

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University of Borås is a modern university in the city center. We give courses in business administration and informatics, library and information science, fashion and textiles, behavioral sciences and teacher education, engineering and health sciences.

In the **School of Business and IT (HIT),** we have focused on the students' future needs. Therefore we have created programs in which employability is a key word. Subject integration and contextualization are other important concepts. The department has a closeness, both between students and teachers as well as between industry and education.

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