

ENGINEERING EDUCATION OF E-LEARNING

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ABSTRACT: *Since the beginning of human , man trying to accomplishment and progress in effort has been spared and always trying to find the best, easiest, fastest, most cost-effective and ... ways for this. Human knowledge is regarded by governments and nations .This century have most advances in science and technology , and obviously, despite this progress, face to face communication can't answering to community needs training and knowledge transfer ,thus ,new ways of communication are required. Rapid advances in technology and media and the rapid spread of information and communication technologies, change the nature of how and why the place and time of learning and the emergence of a new type of learning is called e-learning. E-learning has evolved combination of traditional methods of teaching and learning using information technology that, the early twenty-first century as the preferred method of learning in an era of knowledge is introduced. The important step in development of E-Learning is learning capabilities and behavior of individuals and their attitudes. To increase the effectiveness of the training should increase awareness on this issue.to train people must to be use of engineering methods .so ,at first we must to specify the individual learning needs in various age and various groups of people and then prioritizing and planning. It is the responsibility of educating engineers.*

KEYWORDS: Educational Engineering, Electronic Learning, Information Technology

INTRODUCTION

Man-active, dynamic, and require browser. Has always sought to address their needs, one needs access to information because it does not provide access to information no one needs to be Mqdvrmmy. Humanity today than the past Need information and communicate with other community knows and the vast amounts of information has led training, information and knowledge are the main axes of advance. Nowadays due to the utilization of information and communication technologies, the era of information and communication are called.

Communication era, the increasing need of education, lack of access to educational facilities, lack of economic opportunity, lack of qualified teachers and high costs of education, the experts found that with the help of information technology to invent new ways to teach economic and quality they can also be trained to a large population simultaneously. as such, e-learning emerged as a new paradigm of modern education (Pei-Chen sun et al. 2008).

E-learning as a way New large impact to school institutions, organizations, but has a major impact on higher education. (Harper, Chen, and Yen 2004)

So we see that e-learning or simply transfer knowledge using information technology platforms, (Ladouceur, 2001) has emerged rapidly as a successful method of learning in the twenty-first century will present. (Bowles, 2000)

Anyway awaited update of developments in the field of education, more learning will take place outside of the classroom, the shorter will be the period of compulsory education, of different ages inflexible disappears education and training graduates will be compiled as Position, time and person-centered.(Feyzi,Rahmani,2010)

Within the past two decades, the world realized that no power-driven industrial development and economic progress also depends on the ability to create community awareness or information that has informed.

Distance education as the most effective way to do this is to develop appropriate training programs to create a learning community informed of the community to act as a base for. Development of information and communication technology (ICT) tools to the printing and mailing (late nineteenth to mid-twentieth century) to send waves of visual communication tools (fifth and sixth decades of the twentieth century) began and the emergence of computer and computer related in the later decades of the last century is drawn still consistently continue.

In this period, we have witnessed the emergence and development of two generations of distance education systems have been:

- First generation: a home schooling (late nineteenth century in Russia, the U.S. and the UK, mid -twentieth century in other parts of the world and the sixth decade of the twentieth century). The generation of media use : book and print and mail
- Second generation: open and distance learning (mid-twentieth century in Europe and America, and Asia and other parts of the world). Media used in this generation : books and printed materials , radio and then television, audio clips , and audio - visual
- The Third Generation of the way around e-learning and open education (and Initialize final years of the twentieth century twenty-first century has been called the century of distance education). Media used in this generation : books and printed material , video recording - audio , radio programs - TV , satellite, education, education program using interactive compressed tablet PCs, and media composition.
- Fourth generation : Virtual Education (twenty-first century education system) used in this generation of media : books and printed material , video recording - audio , radio and television, satellite training , training programs using personal computers, computer multi-media and ICT and the teaching - learning combined in a virtual environment.

It is superior to each of these generations upon generations before her? Do you have a computer network is a cloud media, media Dygranva gradually disappear? The answer to both questions is no. Because each of them has its own advantages in different situations. The main advantage of e-learning systems, especially in online education is that they are able to support constructive and distinctive models of teaching - learning. Thus, the intrinsic characteristics of open and distance education in the first and second generations of the same manufacturer will prevail, but it will not abandon its use . Naturally, each of these technologies provide the infrastructure to do is to be determined. The main cause of this infrastructure approach to professional education and training Engineering has named a new domain.

Information technology

Processing and distribution of data, computer software, hardware and IT equipment remotely say. (Anonymous, 2002) computer network equipment, telecommunications, information technology and the web of the main components of the count process. Providing Internet facilities like e-mail, newsgroups, software resources, the Web Site and information technology are the driving force . (Feizi and Rahman, 2010)

Learning

There are various definitions of different thinkers about learning that we are going to mention a few definitions:

Mann believes that learning to practice moderation in behavior or knowledge and experience.

Abbott states that learning is a process that enables the learner to understand and evaluate new knowledge to use their previous experience, the knowledge and the findings are the same compound.

Kymbi believes learning to relatively permanent changes in behavior or potential behavior that arises from experience. Knows the overall learning cycle that started with the experience and contemplation, it continues to operate.

Given these definitions that can be targeted learning process that alters human behavior is the result of experience, Learning outcomes should always be transferred to the learner's behavior and then learn the individual is able to do something that was not before learning to handle it. (Guilds, 2005)

E-learning:

E-learning, a learning that took place in the Internet environment and utilizes technology to facilitate networking. Learning through electronic means and by taking advantage of networking takes place (Zareei Zvarky, 2005)

E-learning is the way of educational goals and plans with the help of information and communication technology provides. Various sectors of society, including businesses, industries, educational institutions and people interested in learning a variety of applications of this technology are faced with questions (Safavi, 2007)

E-learning provides countless opportunities for learning subjects that previously were not possible, the chance of learning from a reputed and accredited university becomes possible, there is a pervasive need to change the lifestyle and does not make or migration turnover the and his family. (parker, 2004)

E-learning simply consists of using information technologies for learning. (Ladouceur, 2001)

E-learning is the application of information and communication technology (ICT) multimedia computer, electronic and digital tools to design or choice of materials and management of teaching and learning (training) that form a network of learning providers, learners, experts design warlords education and computer technology (hardware and software) are organized.

ICT (Information and Communication Technology)

Consists of collecting ,selecting, processing , analysis and application in the field of information transfer them via multimedia computers. Unlike the open learning and distance learning technology not as a bridge to transfer knowledge and skills, but the main factor is the training process. On the brighter e-learning does not necessarily mean the use of digital resources and technologies related to teaching is not easy to make. But rather to provide personalized learning experiences and new learning to be able to discern the slow pace of potential and give them actuality. This is achieved by teaching engineering development and deployment of electronic communications networks and information technology revolution, it is possible.

- ❖ Learning new methods of training that includes most of the attributes of the physical environment of the classroom environment and interact with the instructors and learners through the learning content, will receive.
- ❖ Teaching and learning process with the help of electronic systems, including all training using electronic devices such as audio, video, computer, network and similar can be done.

In general, the goal of e-learning, providing equal access to free and are searching the area of training courses and create a uniform manner for different classes anywhere and optimize the material in order to provide deeper learning.(Jahanian,2009)

Disadvantages of e-learning:

- ▶ ☐ excessive technology
- ▶ ☐ high initial investment
- ▶ ☐ Computer literate audience needs
- ▶ ☐ limited communication between teacher and student
- ▶ ☐ Strong communication infrastructure deficit

An important feature of e-learning:

- ▶ The content is updated dynamically and on-line access to the (online) for all is possible.
- ▶ Real-time (real-time) and has no time limit.
- ▶ teaching - learning process in the partnership.
- ▶ the learning environment belongs to all the participants and the learning activities at the time and place of your own choice to do.
- ▶ It is comprehensive because it provides many resources to students to choose the best content and the best teaching model enables to fit your situation.

Virtual learning environments:

Space to provide all the functions, duties and services of educational institutions at all levels of a system that uses multi-media and information and communication technology is designed to make the teaching - learning process in groups or individually, simultaneously online, either asynchronous or not performed online.

The difference between e-learning and distance education:

E-learning leads to knowledge transfer at any time and in any place where learning to use the available tools and methods to use the familiarity, regardless of the type and level of provides.

Using this approach, students are having so much power they feel they can learn their views, ideas and thoughts with other people around the world to exchange their experiences and share. The virtual learning environment, higher education and professional engineering team in collaboration with teaching science in a multimedia environment designed to be prepared. This type of training in both isolated and individual learning environments in open and distance education institutions to become group communication environment. So that its members can communicate with each other either in synchronous or asynchronous.

Engineering

Professional approach is the application of the laws of nature and physical resources to build and design materials, structures, machines, instruments or systems will process them.

Engineering Education

Engineering education is the cause or mechanism devised a system, approach, functions and strategies for organizing, controlling effect of the teaching - learning process through the application of known scientific laws and theories on this process takes place.(Ebrahimzadeh,2011)

Teaching Engineering is the application of advanced information and communication in the educational process of teaching - learning how to use the hardware, media, educational and multimedia computers with special attention to the basic principles of pedagogy or education.

This interdisciplinary branch of engineering education is not a discipline but has learned. Because the four major areas of research dealing with the main factors that makes up the infrastructure. All these four areas in a coordinated interactional studies rational - are organized communication.

Nykelsq, (2000) argues that the field of view of epistemology are based on three pillars:

A - Levels of Reality

B -Common principles strings

C – Complexity

Engineering education a fresh look at the teaching - learning or teaching from the perspective of engineering in all its activities, the evolution of the educational system is concerned. In this new perspective, professors and experts in various fields of science and engineering education, training and educational experts, front-line support to cover the line. Teaching Engineering with educational technology and instructional design is different. In fact, both of them are part of the Department of Engineering.(Ebrahimzadeh,2011)

Engineering studies in the areas of education:

1- area of psychological research

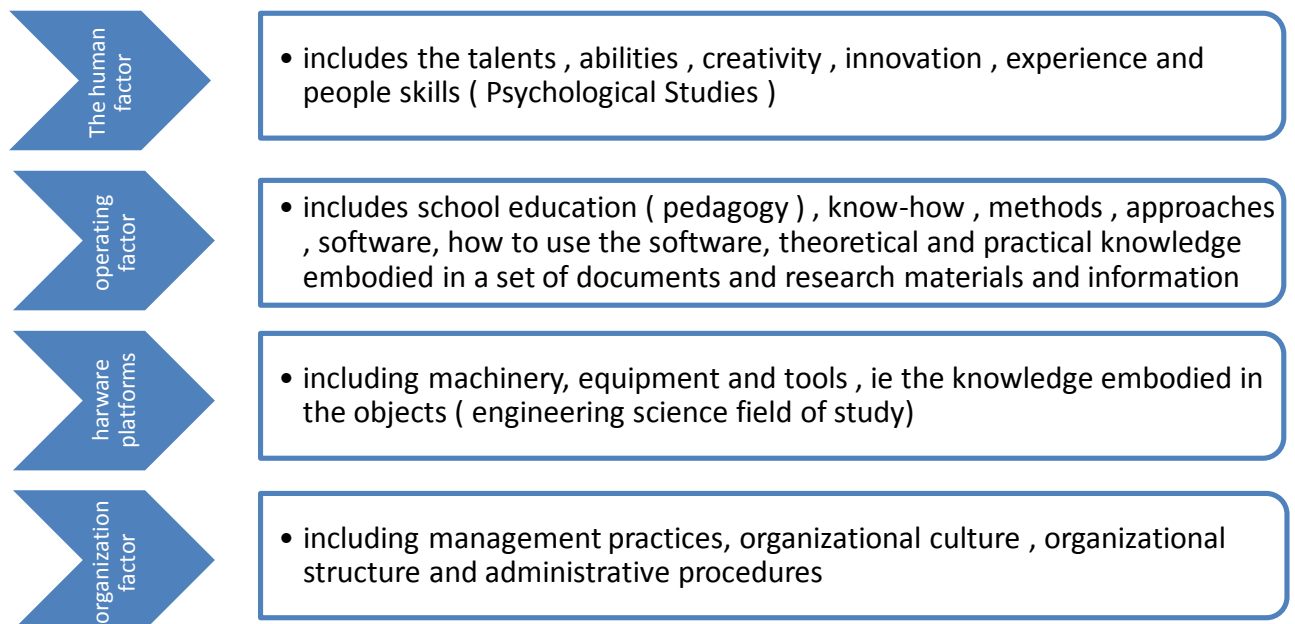
2-Studies of Applied Sciences

3-Engineering studies

4 - sociological and management studies

Major infrastructure engineering education:

- 1- The Human Factor : includes the talents , abilities , creativity , innovation , experience and people skills (Psychological Studies)
- 2- Operating Information includes school education (pedagogy) , know-how , methods , approaches , software, how to use the software, theoretical and practical knowledge embodied in a set of documents and research materials and information (studies Applied Sciences)
- 3- hardware platforms including machinery, equipment and tools , ie the knowledge embodied in the objects (engineering science field of study)
- 4- Organizational factors including management practices, organizational culture , organizational structure and administrative procedures . The theoretical and practical knowledge embodied in educational and social institutions , the application (field of study of sociology and management , especially management training)



Bychel Meyer and Ttrips believe there are similarities between software design and instructional design. Thus, in both of the designers are trying to formulate an approach for the engineering of large, complex problems to find appropriate solutions to gain. But this similarity should not lead one to imagine the engineering education and instructional design.

The main difference between these two areas , the degree of accuracy is expected from each . Software engineers , and systems that are involved in work in mathematical logic . Training engineers in the computer software portion of the work involved , but mainly to work with the system based on human cognition and of course there is more uncertainty and complexity. Adopting these similarities , engineering education, particularly in the field of computer-based training and prototyping, all the skills that are needed in the design or virtual e-learning environment , the education process will be served . If we accept that organizations and their employees are the most valuable asset and this asset can be trained in the shadow of a favorable

return on investment comes. Smart organizations , the key to success in the development of specialized skills and knowledge to know that their organizations have been available in source form . These resources are planned and designed by engineers training .

Training of engineers in different ways and updating the knowledge and skills that have been created as a resource to all students via e-learning in the organization makes available . In today's world the word speed comes first . It takes months to produce a course . Knowledge required for diagnosis , selection , training design , develop , test , and revise their application processes are time consuming . Specific knowledge in any organization requires this level of rigor , but other students do not need it . Engineering education significantly reduces the time from months to days and causes , from people who are experts in science and the knowledge that they need to be short . It is clear that the process of e-learning content creation , writing software or not does not matter , because the main body of the work , training Engineering course at the beginning of the manufacturing process is performed .

Horton argues that the difficulties of creating content for e-learning into logic modules, text, and graphics, it is not a tool, but it uses a decision pedagogical approach, it is reasonable to the learning to the subject together should be facilitated. It really is a learning process engineering.

Engineers learn what activities they can do at training centers?

- ☐ Project Control and Management Training
- ☐ designing mechanized systems of education
- ☐ Training Strategy
- ☐ Cost - Benefit Analysis Training
- ☐ determine and measure the impact of training on quality indices
- ☐ Develop incentive systems and training personnel in the field
- ☐ Economic evaluation (technical and economic justification) educational projects
- ☐ Develop evaluation system for administrators, teachers, students, authors and...
- ☐ Develop a comprehensive feedback system

Application of engineering education:

This approach allows managers using engineering techniques to the development of e-learning processes in the units under their supervision. The main results obtained from the e-Learning engineering approach can be mentioned the following:

- Standardization of training providers
- Training Needs Assessment
- Measure the effectiveness of training

Working specialized blend of electronic content	
Tasks	Specialized
Training Needs Assessment Planning and Economic Evaluation	Engineer
Manage and control project Organization design Instructional Design of Educational rule base Identify the required media content	Training Strategy
Providing basic scenario provided the content and evaluation procedures	
Preparation of films and interactive scenario	film and sound recording Groups
Provide expert knowledge about the main content of the raw materials necessary for the assessment of learners Working with groups a way to apply the standard considerations	Professional standards
Providing electronic components , raw training content organized Created consolidation and integration of electronic components	Implementation

CONCLUSIONS

Engineering education as a strategic solution to educational engineering problems, wisdom teaching - learning process (almost) completely dissolves and a significant part of the educational system eliminates the major problems. Engineers E should be given to identify the characteristics of the learning environment needs to pay attention to the needs of learners with appropriate content using text, audio , image, video , animation and ... Organize and submit . Then to strengthen and deepen learning, learners are encouraged to participate in individual and group activities. Well -designed and benefiting from the continuing evolution of communication management tools and provide authentic and reliable.

Suggestions and guidelines

- 1-Create the academic discipline of engineering education
- 2-Training of specialists functioning (Penguin Education)
- 3-Use the training of engineers in the planning macro Education and Higher Education
- 4-Use of engineering education in the training of specialized labor
- 5- Create infrastructure (software and hardware)
- 6-Changes in the attitudes of teachers and teachers teaching teachers

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