2006-1563: DISTANCE LEARNING, THE PHILOSOPHY OF ITS EXISTENCE, GENERAL DEFINITIONS AND ITS PLACE IN ELECTRONIC GOVERNMENT

Ramin Sadeghi, Power and Water University of Technology (PWUT)

The author is charge of distance learning program; he has developed a distance learning software program

Saeid Moslehpour, University of Hartford

The author is assistant professor in the Department of Electrical and Computer Engineering

Distance Learning, the Philosophy of Its Existence, General Definitions and its Place in Electronic Government

Abstract

This paper addresses the history and basis for distance educational systems considering the advantages and advanced facilities available in information technology. The main purpose and philosophy of distance educational systems has been employee training; the key and operational specifications of distance educational systems and present general specifications of web-based educations are also discussed. The Canadian government has placed implementation of electronic devices as the main goal of its activities. In this global modern system the integrity of electronic data in government and education are worthy of special attention.

Other subjects included in this paper are the classification for Virtual Education and Online Learning and their applications and the viability of virtual educations and defining the global standard of SCORM (Sharable Courseware Object Reference Model).

Introduction to Distance learning[1]

Introduction to Distance learning1 Distance learning and e-Learning is an educational system based on Information Technology and Communications. Development of IT and global communication networks has dramatically changed the process of education and learning. The boundaries of educational institutions will gradually fade away and eventually, the distance between home and school will be eliminated. Electronic education includes a wide arena of applications like web-based training, computer-based training, virtual classes, and digital cooperation. This definition is based on the various modes of presentation via electronic media including internet, intranet, extranet, satellite broadcasting, videotapes, audiotapes or interactive TV sets. Electronic education portrays the development of traditional educational systems into collective or individualized education that resembles the development of conventional commerce into electronic commerce. This kind of education appears in the panorama of future educational organizations and developing countries are at the beginning of this long road. Electronic education utilizes the power of computer networks, internet technologies, satellite networks, and modern digital sciences. In fact, the art of using networks technology for the design, selection, presentation and management of the educational processes is a escalating trend. Electronic education allows quicker learning at lower costs and increases the accessibility of educational processes. In the present world of competition, those organizations that take advantage of electronic education will gain a competitive lead above and over their rivals. In electronic

[1] Distance learning may be defined as any kind of educational course that is held without the traditional face-to-face presence of teacher/students. Course materials may be transmitted in both directions using the interactive internet or active video and dynamic animations. Cable-TV, satellite TV, CD or DVD may be used solely or in combination to transmit the courseware. Virtual University is a university complex that allows students enroll via the internet, select their preferred courses, attend the scheduled sessions, pass quizzes and examinations, and communicate with their fellow students or professors. Virtual University provides tools for the management and professors to fulfill their undertakings via the internet. It provides management tools for offering courses, lecturer selection, term scheduling, financial management …etc. The professors have tools at their disposal to present their teachings, taking exams and registering the student marks.

education, selection of the desired activities form an educational menu is quite easy and this facilitates the process of education. Electronic education is in fact delivery of educational courseware via such media as internet, extranet, satellite, audio- and video-tapes, TV etc. This method concentrates on the needs and requirements of the education recipients rather that that of education providers, and using the benefits of networks, an on-line educational process can provide the desired education at any time or place. Electronic education can organize administrative and organizational activities such as registration, tuition payments, progress monitoring, and examination. This kind of education is highly attractive to organizations as it speeds up the learning, improves the efficiency of time, and by elimination of paperwork, greatly reduces the overhead costs.

In electronic education that is also called web-based education, the learners receive the courseware from online sources, and the teachers' notes and assignments from the internet. They communicate with other students and their teacher via email, or answer the questions that appear on their computer screen. They participate in exams and in their belief, despite the absence of the classrooms face-to-face interactions; the easiness of web-based education has made it very attractive.

Distance learning is by no means a new issue. In the mid 1850s, shorthand, speed typing and foreign languages were taught by correspondence courses. In the last century, radio, TV, video, and satellite have enriched the repertoire of distance learning means. Now the internet connectivity and the new generations of software and hardware facilities have demonstrated the usefulness of the web as an educational system of tools.

Statistics verify the ever-increasing rate of remote education. According to a recent US statistics, the interest of distance learning has grown from 5% in 1988 to 15% in 2002. Similar forecasts for the industry indicate a 100% annual growth. What many of the educators will learn is that distance learning is not an easily forgettable issue.

From the viewpoint of the learners, an on-line learning structure consists of logging into the internet for accessing their needed educational software. For most practical purposes, a computer that runs under Windows is all that is needed[2] as well as an internet and email username. The learners usually use email to submit their homework assignments, and sometimes their solutions to examination problems. Hence they need to have an email software to manage the attachments of the messages. And for composing messages, an up-to-date version of a text processor like MS-Word seems to be needed. For internet browsing, MS-Internet Explorer or Netscape Navigator is popularly advised. Other useful programs include RealPlayer, Windows Media Player, and Adobe Acrobat Reader. Nowadays the market for Distance Learning is so developed

[2] -Actually the system consists of :
A. Web Server Computer: is the bottleneck and the interface between the Virtual University system and the environment, manages the outgoing and incoming messages.
B. Applications Computer: is the most important part of the system that receives the clients or learners' requests from the Web Server, processes the request, and sends the results back to the Web Server.
C. Database Management System: is another important component that holds all of the data and information that belongs to the Virtual University. These include the reords of teachers, students, term programs, examinations, messages, grades and other data the relates to the operation of the university. Most popular Database management systems are Oracle and MSSQL Server, also quite powerful systems.

as to offer acceptable software for the design, teaching, and management of a web-based educational course. These software systems are in varying degrees of sophistication and learners' level of education, but they all of them have a common functionality of user interface for sending and receiving the course materials, possibility of holding examinations, and a student grading system.

Many of these systems have other facilities including chat rooms, bulletin boards, and file splitting. Some of them provide the facilities for audio and visual presentations and lectures, but these may cause inconveniences for users who have no access to fast internet. Generally, a company or university uses the same electronic education software for all of its courses. For example, the Stevens Technological Institute uses the WebCT software that runs on Apache Server version 1-3-9. Most of the teachers need help to initialize and launch an educational course. Therefore the company has to recruit specialist/designers whose field of activity lies somewhere between the educational activities and system support. Before a course is offered on the internet, its structure should be defined. Then the course contents are loaded into that structure that lies on the server. Uploading a course material is not so difficult or a complex task. If the course material is prepared by MS-Word, it should be converted to the HTML format and with appropriate instructions, sent to electronic education software on the server. Non-textual files like pictures and audio files should also be sent to a folder on the data base for their linkage to the various parts of the HTML, such as the first page of the lecture.

The Philosophy of Electronic Education

The most appropriate platforms for offering the distributed learning, public education, and e-Learning are the virtual learning environments on computer networks such as internet, local or national intranets and other ICT technologies. This new way and its modern approach to the design, presentation, execution and evaluation of educational programs have evolved into a major leverage in higher learning.

The design, presentation, execution and evaluation of educational programs in virtual universities deal with some important and sensitive factors that due to technological complexities and insufficient information of the planners, decision makers and investors, remain unnoticed. In this paper we present 20 key questions that, in our belief, need to be correctly answered before obstacles to virtual universities establishment can be removed. The questions are categorized in four classes: 1- Course Contents, 2- Economic Feasibility, 3- Partnership and 4- Technology. Electronic education is in fact a revolution in education. Nowadays that internet has influenced all facets of life and society, education can not avoid change and the time for change is ripe. Electronic education revolves round the axis of individualized instruction, whereas for many years, education was structured around the comfort and needs of the teachers, institutions, and administrative bureaucracies.

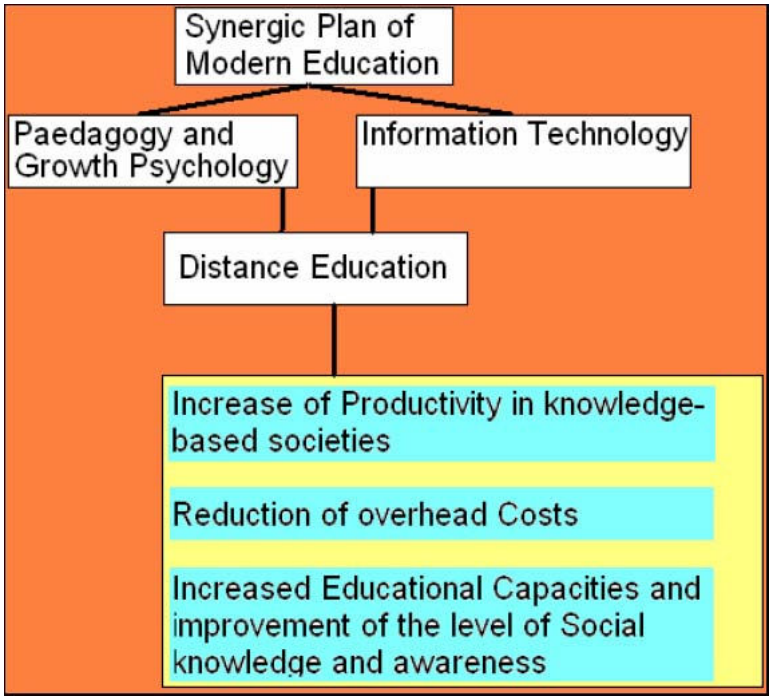

Figure 1

Now let us look at the whole subject from a different point of view and look at the learners as clients or customers, who should be given the right of choice, comfort, and fulfillment of their legitimate needs. Therefore the main objective is provision of smooth and desired operation, competitiveness and minimized education with maximum productivity and efficiency. Presently, the most widespread kind of electronic education is the web-based one that is based on the internet or an intranet. This environment includes educational resources, virtual environment, and interactive operation plus the use of email and chat-rooms. The advantage of this system is its flexibility, ease of education, elimination of the time and space limitations for users, and harmony of the learners load with their efficiency. In this system there is no need for the physical presence of the educator within the premises of the educational institute, as the system services are available anywhere that there is a computer and internet. The capital investment is justifiable only in case that the number of users is large enough to minimize the costs per user, otherwise buying the hard-cover books is less costly!

Methodology of education

1) Presentation of the material in a graphical mode with effective animations. 2) Interactive and online communication 3) Provision of exercises for better comprehension 4-Evaluation of the learner at he end of each section 5-Answering the learners' questions interactively and on-line 6-Forums for group discussions and debates between the teachers and the students 7-Global size classroom.

Operational Characteristics

1-Downloadable exercises and the possibilities of solving problems interactively 2-Real examples and situational analyses 3-Further-reading libraries 4-Collaboration and cooperation of

the students in sharing their knowledge 5-Bulletin boards for news and announcements 6-Alumni of graduates with up-to-date lists.

Elements and Components of an Electronic Course

1-In the domains of corporations, the main elements of electronic education are the learner, subject specialist, and managers. Problems of work are presented by the learner and solved with help of the specialist. Workers and individuals' performance improvement will improve the overall performance of the company. The application of electronic education needs technology, although it is not the main aspect.

Electronic Education and Its Position in Today's World

An annual doubling of the electronic education market is expected, and its size at the end of 2003 would reach 14.5 billion dollars. The IDC Co. has estimated that the governmental organizations' share of the electronic education will be more that 7 billion dollars that reflects a 98% growth from 1997 to 2002. This shows the size and the extents of market growth at the present. Electronic education will soon replace the other methods of education, thanks to its rate of growth.

Development Factors of the Electronic Education

Technology has revolutionized the businesses and now, the realm of education should be revolutionized. Information and knowledge are the armaments of today's competitive world, and can create monumental changes in it. The traditional methods of education are no more sufficient, because the cycles of production, industrial information and organizational strategies revolve much faster than was expected and the employees should be re-educated in accordance with the non-ending changes. The fastest and most useful method of education is the electronic one. Learning is the most crucial need of modern man in the 21st century. The intelligent leaders of various industries appreciate this and adopted the slogan that "We should take education to the people, and avoid taking people to education". Updated employees need more flexibility at their site of work. The factors like globalization, competition, and scarcity of work force leads the labor to work harder and longer, necessitating more freedom and higher responsibilities and less direct supervision.

Today's work force that is familiar with modern technology realizes that while company's schedules should be met on time, there is no need for doing the job at a particular place of time, and demands a time for learning and further education. The intrinsic characteristics of the electronic education are probably the main factors for its development.

General Characteristics

General Environmental Requirements (Basic Facilities)

1. Virtual classroom space including all requirements (teaching program, virtual laboratory, virtual examination,…etc)
2. presentation of web-based course material and graphics, with instructor image
3. presentation of voluminous course texts in memo fields
4. facilities for question/answer dialog between the student and the instructor
5. Search facilities for the offered courses' database using the XML or other script languages like Java Applets, VB and Java scripts

6. Database access with username/password, and administrator's tools for review and control of access records
7. Electronic whiteboard and other educational accessories (environments such as Net-meeting and Collaborative Tools
8. Holding final examinations and issuing certificates(regular administrative functionalities)
9. Help texts for users
10. Mailbox for proposals, criticism, and user requests

Features for Users

1. Multimedia chat-rooms, real-time chat
2. Self evaluation and progression chart
3. access to all data and resources with respect to access rights and limitations

General features

1. Storage of emails
2. Bulletin board
3. Learner's free space
4. Electronic periodicals

Types of Computer-based training (CBT)

Trainings can be classified on the basis of the media:

1. Electronic education based on hyper-media on CD
2. Web Based Distance Learning (WBDL)

In this term paper only the second type is discussed as it offers bi-directional interaction, updateability, and its widespread use. Besides it allows implementation of learners' database and monitoring of the educational process. These advantages are not available in the first case that is based on hyper-media on CD.

General Definitions of Virtual University System

Virtual University is based on electronic education that uses IT and communication technologies and can gradually cover a wide spectrum of educational fields and branches of learning. The admitted learner is required to observe the rules and regulations of the Ministry of Science, Research and Technology and continue his studies like the students of traditional universities. Except for the term final examinations, the students of virtual university can perform all their duties on an unattended basis. For example, registration, course selection, and subsequent studies can all be done electronically and unattended. However, due to unfamiliarity of the fresh students with the use of internet, the required skills are taught during the first term on attended basis.(These notes relate to long term training programs and their appearance here is for describing the Virtual University).

The students have to pay their training costs to the university. These costs do not include the internet subscription or purchasing a personal computer or laptop. It is clear that in the future, with any increase in the number of students, the training costs will be reduced. The training cost

of a term is evaluated and determined at the end of the term. The total annual training costs are calculated by the university and announced publicly.

The fields of study in the virtual university have no limit for enrollment of the students, although only at the beginning, because of the hardware limitations, some fields of study may have a limit for enrollment. This university uses the internet and CD for transferring the course materials to the students. Since each recorded lecture will be used repeatedly, the cost savings allow the employment of the best teachers and lecturers. Since the students of this university do not have to commute daily, and do not need a dormitory, restaurant etc, and they can pursue their studies quite freely via modern tools and technologies, it will attract many students. These students gain a solid hands-on experience with the modern technologies and can better contribute to, and be a good performer for their respective employers after graduation.

Position of e-Learning in developing countries

Presently developing countries have a very special and unique condition of age-distribution in the population mix. The uncontrolled and high birthrates of last decades have yielded a crop of millions of demanding jobless and barred-from-universities. Studies in new international situations have shown that the only way to overcome this crisis is achievement of technological development, so that internal needs are satisfied and high-tech exports of technical and engineering services with high added-value are increased

"IT" is one of the technologies that can play a significant role in this scene. Development of this technology will greatly affect the development of other technologies, increased productivity, improvement of services, and reduction of unemployment with a diverse set of various new jobs. The main difference between this technology and other ones are,

- its requirement for being widespread among all layers of the population
- its requirement for a real and adequate training and education, without which new jobs will not come to fruition

These requirements have introduced the concept of "Computer Literacy" in the educational literature of many countries. Computer Literacy is a pre-requisite for entering the virtual university, and only on that basis a plan can be designed and presented. The plan firstly discusses the meaning of computer literacy concept, and then analyses the deficiencies in the computer training across the country, and then presents the plan for an all-encompassing effort of computer and IT training that matches the national needs and expediencies. The plan addresses a wide range of the population, including the students, government and private sector employees, job-seekers, and other technical/vocational institutions and individuals. E-Learning can positively affect the employees' affairs but the success of this strategy needs a careful analysis of the various factors' interplay, time, money and management support.

Five critical factors, described below, can help decision making on implementation of e-Learning. These five factors, hereinafter referred to as 5-C, are Client, Cost, Capability, Content and Culture.

Challenging factors or crises in implementation of virtual education

Culture customarily, in all organizations of our country, the management defines the needs for human resource, the training consultant proposes the solution, and the individual attends the training programs. This procedure is not compatible with the strategies of e-Learning because in e-Learning, some control activities are delegated to the learner. In fact an opportunity is provided for the learner to distinguish and define his personal educational requirements. He does not need the services of the training consultant. But if the organization culture continues to dictate the training and educational policies, then the line of activity will be narrowed. The other cultural factor that affects the effectiveness of e-Learning is the evaluation process: Whether classroom examinations should determine the human resource development or the extent of change in the skills and knowledge of the employee should be used as the evaluation criteria? Besides, e-learning can be accomplished at any time or any place like home, or office. But in developing countries, the strategy of staff training is based on classroom programs and this is so solidified that they can hardly accept learning at other locations, including home.

Do our organizations support this kind of learning? How do the organizations evaluate and reward the employees who have had the responsibility and wisdom to upgrade themselves and plan for their self-education? The transition from an instructor-centered mode to a learner-centered mode is a cultural issue that can not succeed without the support of high management. The following questions can be helpful in analyzing the organization culture:

a) How does the organization evaluate the position of e-Learning?
b) How do we evaluate the role of e-learning in support of the long- and short-range organizational objectives?
c) How does our organization define the process of training and development?
d) Who is responsible for analyzing the human resource requirements?
e) Does the organization support the individuals who are looking for non-conventional methods of development?
f) Does the organization support the individuals who pursue learning beyond the conventional programs?
g) Are the senior managers prepared to support e-Learning?
h) What financial and other resources exist for promoting e-Learning?

Contents

Is the content of educational program appropriate? People can read, discuss, listen to audio-tapes or talk to experts about swimming. But learning swimming requires getting wet. Similarly, e-Learning can be considered as a part of the training strategy but it is not the only or the best method for learning the skills. Deciding on the suitability of the contents of E-learning for attaining the desired skills requires a thorough analysis. E-learning programs need to be complemented with further activities.

Capability

Full utilization of the e-Learning requires access to a computer with multi-media features. Internet can also provide very good programs. But what happens if the organization has no access to internet of lacks the capability of using it? Some organizations use security systems to

limit their employees' access to the web. The uses of many programs are forbidden in countries like Iraq, North Korea, Russia, Libya and Iran. In many organizations that have internet connection, only a small number of specialists are privileged to access the web. Such problems highlight the capacity of the organization for absorbing the e-Learning technologies.

Cost

In fact e-Learning can be costly, too. What are the key factors for costs and expenditures on e-Learning and how can they be compared with the present programs? First of all, the importance of e-Learning should be assessed from the organization's point of view. Is the organization looking for a full-scale knowledge management and e-Learning or they want to run an inexpensive program obtained form the web? Obviously the costs of these two options are quite different and the latter may be 100 times more costly.

An organization that decides to begin with a small prototype or pilot program needs some special educational methods and examinations. The price of even these can be quite high, and the size of organization, the features and facilities of the system, and the number of its methods may largely influence the price. The first step in estimating the costs of such program is to determine whether it it is fully bundled and includes the functionalities for learning, follow-up and reporting or such functionalities are priced separately? Naturally, procurement of a prefabricated web program has a low cost (10 to 100 USD), but its suitability must be ensured.

Clients

Will the employees actually get the benefits of e-Learning? Assume a company decides to implement e-Learning. The existence of the e-Learning system does not guarantee the appreciation and learning of the employees even if the organization badly needs the e-learning. How to persuade the personnel for using it? The answer to this question includes such measures as: making them aware of the need and the benefits, motivating the employees, making computers available to all, and conducting programs. You can not arrange a training program without informing the employees of its time, place, contents …etc. All employees need to be informed of the hidden opportunities and benefits in e-Learning, and persuaded to take advantage of the tide for their own development. However, employees should adopt the best model for utilizing internet and related tools, and discard negative attitudes. Internal memoranda, staff meetings, general assembly of employees … are opportunities for increasing the awareness of the employees. Employees' awareness of the following subjects can be beneficial,

- e-Learning can continue at any time and in any place
- Programs for human resource development become simpler
- Method of learning can be selected by the learner
- University certificates can be received without attending classrooms

The increasing number of the e-Learning students is also a decisive factor.

e-Learning and the Brain Drain Phenomenon

e-Learning[3] can be considered as a serious threat to the developing countries. Developed countries can utilize e-Learning to attract the brains and educate them to satisfy their own needs. Subsequently, by providing an internet-based job market for them, support them financially. This will automate and optimize the brain-drain flow because they continue living in their birth-place but their brains and thoughts belongs to the advanced countries. In other words, the brain-drain of the future abstracts from its physical implications and the need for migration of people will decrease but our country's brain stock will serve the advanced countries. This threat should be considered as serious and appropriate measures need to be planned.

Structure and faculties of the Virtual University

The proposed plan for the Virtual University is based on the established rules and regulations for management of the universities, the specific characteristics of the e-Learning, and stress on a framework that guarantees and assures educational qualities. The flexibility of structure is specially considered and attempts have been made to come up with an optimized structure that can be implemented. This structure allows revision and appropriate modification according to the future requirements and prevailing conditions. Organization of the Virtual University,

A. Board of Trustees
B. President
C. Board of Directors
D. Deputy of Educational Affairs
E. Technical and Support Deputy

A. Board of Trustees, The functions, authorities and responsibilities of the board of trustees is similar to that of other non-profit universities under the Ministry of Science, Research and Technology.
B. President, the president with the proposal of the board of trustees is nominated and certified by the Minister of Science, Research and Technology. His/her duties and functions are similar to that of other universities' presidents.
C. Board of Directors, the board of directors consists of the president, his/her consultant, and the deputies. The function of this board is similar to that of other universities.

[3] E-Learning in brief is the use of Information Technology (IT) for educational purposes which are accomplished by software, internet or combinations of these. The span of e-Learning can cover the primary schools to academic levels, computer-related subjects, foreign languages ...etc. One of its main advantages is the identical access of a very large number of students to the courseware or virtual facilities such as laboratories, films, and the like. If e-Learning is properly and thoughtfully planned, implemented and managed, then it can induce creativity and intellectual production. It should be noted that the psychological issues of education need due attention, and specialists continuously stress on seriousness in learning and propose newer and better solutions. Many of them believe that a well-designed e-Learning system can transform education into a bi-directional process. The traditional educational system, based on the teacher-student relation, also seems to have this property of bi-directionality, however in many countries, we actually witness that the teachers and professors repeatedly lecture in a constant and unchanging manner and may answer the questions of their students. In these cases the feedback mechanism is very rarely seen to be at work. On the other hand, the traditional system forces all students to learn a defined quantity of the course materials within a defined length of time, and disregards the variance in aptitudes and intellectual capacities of the students. The output of this approach is "variable learning" in "equal time" whereas the objective of e-Learning is equal "learning" in "variable time".

D. Deputy of Educational Affairs This position is responsible for planning, execution, and supervision of all activities that are directly or indirectly related to the educational affairs of the university. All department heads and HQ units of educational services operate under this deputy:

- Admission and Registration This unit controls the general qualifications of the applicants mentioned in the announced list of names for each year and performs the followings:
    a. Receiving the applicants' documents including the original certificate of pre-university year, transcript of the marks for high-school and pre-university, photocopy of the identity card, photograph, etc. via post-office services or directly from the applicant
    b. Initial registration, filing of documents, issuing the registration voucher and units' selected for the first semester, introducing the applicant to the respective educational department and the Monitoring and Progress Control Unit. All these activities are performed using the network
    c. Safe-keeping of the above documents until graduation
    d. Delivering the documents to the graduates unit after the student is guaranteed
- Monitoring and Progress Control Unit, this unit is charged with the responsibility of controlling the educational parameters such as the floor and ceiling of the course units for each student in each semester or term. Also controlling the pre-requisites fulfillment…etc. Other functions of this unit include
    a. Issuing the voucher for unit selection to students for second and later semesters
    b. Receiving the final examination grades of all students and preparation of the respective certificate for each semester
    c. Introducing the students to their instructors and professors and instructors to the students at the semester start
    d. Informing the students of the prevailing rules and regulations. All these activities are done via the network
- Examination Unit This unit is part of the Monitoring and Progress Control Unit is responsible for scheduling and preparation of the exams that will be held at the end of each semester with the physical presence of the students. This unit closely cooperates with the educational departments, Supervision and Evaluation, and support units in the provinces and other cities
- Graduates Unit This unit is responsible for certifying the graduation of the students, based on its input information from the Monitoring and Progress Control Unit, and finance and accounting department. Its other functions include:
    a. Issuing a temporary certificate of graduation according to the rules and regulations for higher education

b. Issuing the graduation certificate according to the rules and regulations for higher education
c. Preparing letters of graduation confirmation in response to various organizations inquiries and requests

- Learning Consultancy Unit, this unit performs the tasks that the advising professors do in traditional universities. The consultation and advice is via the network. This unit operates under the Educational Deputy of the university
- Professors Affairs This unit is responsible for:
  a. Maintaining the records of the instructors and professors
  b. Updating the records of each instructor and professor's teaching activities
  c. Computation of the working hours of each instructor and professor during each semester and its delivery to the accounting and finance department, this unit has a close inter-relation with the educational, finance and accounting, administration, and monitoring and progress supervision departments
- Educational Groups, an educational group of this university comprises of several similar or related branches of study that can be clustered and classified as a unit. These groups are in close collaboration with the Recording and Production Unit that prepare course presentations, and via the group manager, communicate with the educational deputy of the university. The number and titles of various groups for the first year of the activity of this university is given in the respective section of this report

E. Technical and Support Deputy This division consists of the following three departments that collectively handle all HQ services to the previously mentioned sections and also supports the Recording and Production.
   - Administration
   - Finance and Accounting
   - Technical Services and Network Operation

F. Recording and Production This unit includes the web-casting for all centers that generate and record the educational programs. These centers are the kernels and main parts of the educational activities of this university that are the busiest parts, too, and closely collaborate with the instructors and professors whose physical presence in the university is mainly for recording and production of the programs. Due to the scientific and educational dimensions of the activities of this unit and the assets under its custody, it is directly positioned below the Support Deputy of the university. Supplementary activities such as reproduction and dispatch of CD's and videotapes … is also a function of this unit that is done with co-operation and co-ordination of the educational groups and other HQ sections of the university.

G. Supervision and Evaluation Unit, for the purposes of educational quality assurance, and good performance of the operating units, and diagnosis of the weak-points and strong-points of the university and eventual submission of constructive proposals to the president, this unit is envisaged. Among the

supervisory functions of this unit, its supervision and evaluation of the following units is of special importance:

- Recording and production
- Examinations
- Accounting and Finance Among the duties of this unit are:
- Overall supervision of all units of the university by receiving their regular and ad hoc reports
- Preparation of all necessary mechanisms for the control and supervision required and demanded by the Ministry of Science, Research and Technology, and the named traditional university that monitors the virtual university

H. Planning and Operations Research This unit is formed in order to explore and define the opportunities and possibilities, both in Iran and abroad, of the qualitative and quantitative improvement of the university, regular evaluations of the organization structure and job descriptions, and preparation of the annual programs and reports within the framework of the policies and guidelines set by the management.

Some Realizations of Virtual University

Distance Learning
This is basically founded on the same old and traditional methods but does not requires the presence of the instructor, and needs the availability of educational tools such as books, video and audio tape…etc. It has a long history and background.

On-line Learning
This approach is based of the presentation of a real classroom on the communication networks and uses the simultaneous presence of the triadic entities, namely teacher, student and the educational environment. An example is the video-classrooms that were first introduced in the Harvard and Michigan universities in early 1980. In this approach CD is frequently used.

Virtual Education
This approach integrates the instructor and the educational environment by using the modern communications and intelligent design of the educational structures and processes on the basis information technology applications. The Virtual universities emerged in the late 1990 and are also referred to as web-based distance learning.

Operations
Use of various facilities such as text, voice, animation, video-clubs, 3 dimensional graphics, … in a unified environment for continued learning via the relationship between the classroom and the web and the complex structure of related classrooms, in the continuous presence of educational and learning architecture founded on the expert's view of education.

Requirements of Distance Learning

- Availability of an informational communication backbone

- Availability of a proper wideband communication capacity as the main factor for expanded enrollment
- Availability of the proper computer systems(central servers, web services servers, database servers, routing and switching computers)

Educational Organization Management

- Data Security(with provisions for access rights and copyright)
- Evaluation and supervision
- Supervision and monitoring of the learners(evaluation and examination process)
- Supervision of supporting processes(registration and examination

CHALLENGES FACING THE ELECTRONIC GOVERNMENT

The electronic government, considering its rate of growth, has faced many challenges, one of which is that it should cope with the economic policies, regulation, and employee compensation. An American office of public finance has summarized the challenges facing electronic government as follows:

a. Viability of a committed executive management
b. Creation of effective business accounts
c. Safeguarding the centralism and simultaneous attention to public
d. Protecting the privacy of the citizens
e. Security surveillance
f. Registering and keeping the records
g. Establishment of a strong technical infra-structure
h. Elimination of human resource anxieties and fears
i. Ensuring the uniform and unified services to the public

But the scientists have noticed other important challenges: The definition of the parameters of the electronic government, and the design of its operations should be compatible with other legacy rules and regulations.

Studies in the USA have shown that technical aspects are not the greatest concerns of the managers of the electronic government, and their strongest stress is on policies like establishing cooperation and coordination among the public sector managers and having them concentrate on their own problems rather than collective objectives and the duties or functions of the electronic government.

Some of these challenges may involve social aspects of the informational policies about the internet. If the electronic government proves to be an effective methodology for people's participation in the government, then one of the great concerns would be the subset of underprivileged people who lack the necessary technical know-how.

Bibliography

1. Alpert, M.S., De Sonne, M.L., DBS: The Time is Now, National Association of Broadcasters, Washington, D.C., USA, 2002
2. Masullo, M.J., "Infrastructure, Education and Digital Libraries", Conference on Advanced Technology in Education, Cairo, Egypt, March 2003.
3. Masullo, M.J., Mack, R., "The Role of Digital Libraries in K-12 Education", D-Lib Magazine, Reston, USA, September 2000.
4. Mack, R., Masullo, M.J., Meyer, J., "Educational Multimedia: Perspectives in Evolution", IBM Research Report, New York, USA, 2003 (in press).
5. Masullo, M.J., Calo, S., Nguyen, T., Willner, B., "Multimedia On-Demand and the Organization of Education Systems", Proceedings of IFIP WG 3.2 Conference on University Uses of Visualization, University of California at Irvine, Irvine, California, USA, Elsevier Science Publishers B.V., July 2003.
6. Negroponte, N., Knopf, New York, USA, 2005.
7. Ruiz, A., Masullo, M.J., "A Universal and Global Education Infrastructure", UNESCO World Congress Moscow, Russia, July 2002