Distance Learning in Higher Education and Perspectives in Greece

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ABSTRACT

Computers and networks have become the key points that provide an effective means for distance learning sessions. Distance learning in Greece gives the opportunity for a second chance for education for adults and for those who want to update their knowledge or learn new techniques and methods for their work. The aim of the study is to analyze the on going projects in higher education institutes in Greece regarding their type, their objectives, the target groups and the issues they cover. The projects were collected and they were analysed in terms of content. Aristotle University of Thessaloniki, the bigger university in Greece, in terms of schools and students, provides teleconference activities for graduate and postgraduate programs The Hellenic (Greek) Open University in Patras, also aims at distance education in university level with exploitation of effective on line educational material and innovative instructional methods. The Athena-net telematics centre in Athens aims to upgrade the research and educational activities within the 3 university campus in Athens, University hospitals and Administrative Services. The National Technological University of Athens, The University of Ioannina, the University of Macedonia, the University of Thessaly, etc have developed various projects for asynchronous and synchronous distance learning. Although, distance learning projects in our country are in pilot level, it could be an effective tool in upgrading the educational level and the quality of life and contribute in the effective exploitation of human resources in our country and, consequently, in the evolvement of competitiveness in all production sectors in Greece.

Key words distance learning, web courses, web training, web-based instruction, tele-education, higher education, Greece.

1. INTRODUCTION

Recent years developments in ICT's provide an effective means to overcome the distance in time and space between the teachers and the students in distance learning and they are used to bridge the instructional gap. The term includes both education and training programs designed to meet the needs of adults that may consider a second chance for education, those who have limited spare time, those who live in remote areas, those with physical disability or those who want to update their knowledge or learn new techniques and methods for their work. The use of the WWW provides alternative education chances and act as a new instructional tool [1].

Distance learning can be synchronous and asynchronous. In the synchronous type, the distance learning focus on web application via Internet or via ISDN broadband transmission for audio video teleconferencing [2]. Hence, networks and their applications provide the means to cover the instructional gap when the instructor and the trainee are in different locations.

On the other hand, in the asynchronous type, web-based learning using asynchronous learning networks (ALN) focus on a new educational environment based on web-page applications via Internet, however, they still remain interactive through their proper design. Asynchronous distance learning can be web seminars, web lectures, web laboratory exercises, web field trips, and finally, web term papers. In these paperless courses, students use their computers to obtain all needed information for class assignments, to discuss with every other student in the class, and to submit any kind of project. In the case of web lectures the instructor, as well as the student, can have access to the available material on the Web, that makes learning more real, interesting and dynamic than formerly was possible, and yet, stimulates the student [3].

The convergence of informatics and communications resulted in various applications for data handling and

networking among many users, however, there is a wide offer from ICT industries for products and services. [4,5,6,7]. Networks provides the technical framework and introduce a new model for distributed, network-based services for either inter-institutional relations or the relations between the institution and the student [8]. Hence, distance learning is learning through the combination of telecommunication, information and multimedia technology and applications and has two results; the educational, that is the improvement of the existing learning methods and the development of new ones and the technological, where the ICT's provide new distance learning applications [9].

There are numerous advantages in distance learning, such as the quality of education that is improved, life long learning that is enhanced, the ease of obtaining information on the Web, the availability of quality information, the ability of the web environment to stimulate students interest, the promotion of engagement and communication between students and the instructor that becomes more frequent and productive including exchange of information and ideas, the recognition of Web value for learning, the evolution of traditional types of learning, etc. E-learners, having graduated from distance learning programs, they feel connected to their virtual classroom community and they have obtained new coping skills, a high level of discipline and self-direction and higher persistence rates. [10,11].

However, the adaptation of the new alternative education form is not always successful and it is not perceived in a common style [12]. Although research evidence suggests that distance learning programs provide high level of satisfaction through the flexibility of time and space and the focus on interactive [13], high drop-out rates and the low quality of learning attainment as perceived by both instructors and students are two major issues [14]. The literacy on computers is not a limitation for both students and teachers, however, computer literacy can be acquired through distance learning process, with the adaptation of the new technological tools in the learning environment, in the type of active learning in computer based technologies [15].

With regard to on-line learners, yet they elect specific web-based courses to enrol, their performance can be predicted from their personal choices, their self-efficacy for the course content and technological components [16]. Among the recognized standards and guidelines for distance learning programs to be successfully implemented, the criteria for their approval should be based on content, instructional strategies, the quality of personal interaction as well as the faculty and the students, the size of groups, the knowledge of other participants, student prior experience in computer mediated communication, the clarity of their task, the assignments and their assessment [17,18].

Web-based instruction for education and training purposes is booming throughout the world, and Greece is not an exception The aim of the study is to research the on going projects in higher education institutes in Greece as it concerns their type, their objectives, the target groups and the issues they cover.

2. METHODS AND MATERIALS

The on going projects in higher education institutes in Greece were collected through a research on the web pages of the Greek universities. The research concerned the retrieve of official university websites that included information on distance learning applications and similar on going telematics projects. The web research included all sites with the key words "distance learning", "tele-education", 'tele-working', "web courses". "web-teaching", "computer based training" in combination with "higher education".

The collected data from the websites about distance learning in Greek universities were analysed in terms of their content, and especially as it concerns the type of distance learning they support, their objectives, the target groups and the theme issues they cover.

3. RESULTS

3.1. Hellenic Open University

The Hellenic Open University (H.O.U. -Hellenic Open University) in Patras, Greece, is an innovative project for our country and it aims at distance education in university level in combination with the development and exploitation of educational material and research on new technology instructional methods[19]. Students with a high school degree only, are able to enrol –usually on line- in theme units that substitute the traditional courses. During their courses they have to communicate with the instructor, they prepare assignments and they form on line groups with their co-students. In the end of their studies they have acquired a certificate for attending courses or for training, concerning certain theme units, graduate and post-graduate titles, such as in Humanitarian Sciences, Technology, Social Sciences and Applied Sciences.

Research evidence on economic evaluation of courses of the H.O.U. shows that the benefits overrun the costs in any case and the it is judged to be a beneficial investment choice [20] With regard in a survey [21] on student drop-outs in H.O.U., more than half of the drop-out students claimed that they were not able to estimate precisely the time that they would have to devote to their professional activity and as a result the time dedicated to their education decreased unexpectedly. Furthermore, one out of four students felt that their knowledge was not sufficient for university level studies.

3.2. Aristotle University of Thessaloniki

The ISDN Telecommunications Centre of AUTH administers and manages the operation of the telecommunications network and offers advanced services to all users of the academic community, while constantly upgrades current services and presents new ones[22].

Aristotle University in Thessaloniki is innovative since 1995 where takes place the first pilot applications for the exploitation of new technologies in education within the 1st EE funded project. Since 1997, there is an important effort to transform the bigger university in Greece in dual mode

university that can provide a great part of graduate and postgraduate programs with both traditional methods and distance learning, with the creation of 6 virtual tele-classes and one tele-conference room. These virtual classrooms are fully equipped with the necessary peripherals to support transmission of 512 Kbps, 4-Isdn BRI interface, Video transmission (30 frames per sec), Video teleconference with protocol H.320 over ISDN network and T.120 applications, echo cancellation, ambient noise suppression, internet access, remote and PTZ cameras, data show projector, document cameras, electronic white board(smart board), VCR, omni-directional microphones, wireless microphones, 10 push-to-talk microphones, and finally tablet pad for interactive control with the system

In August 2002, A.U.Th.'s Multipoint Conferencing Server (Picturetel's Montage 570) was upgraded to support from 4 to 8 remote videoconference sites. The Telecommunication Centre of AUTH is now able to offer multipoint videoconferencing services supporting up to 8 simultaneous remote audio, video and data connections. Hence, academic community members can participate in distance learning activities, educational seminars and conferences with up to 8 participants from remote sites. This application sharing feature (T.120) offers multi-location data sharing for all remote sites, while Continuous Presence option delivers a more natural videoconference allowing the participants to view multiple simultaneous sites (4 of the 8) on their displays[23]. A great number of teleconferences sessions took place within these last 8 years between Aristotle University and other academic units all over the world, where students and faculty from all participating universities had the opportunity to attend lectures, to participate in international conferences and to effectively train through seminars professionals such as teachers in all levels of education in new technology aspect [24,25].

3.3. University of Macedonia in Thessaloniki

The University of Macedonia, located in Thessaloniki, through the EE initial INTERREG II, supports a distance learning project named "Telemathos" in collaboration with the prefectures of Pella, Florina and Kastoria in Western Macedonia region [26]. Telemathos aims at the production of multimedia educational material and provides e-courses concerning: "Business Administration", 'Sales techniques and marketing methods', "Accounting and taxes", "Evaluation of investment and exploitation of incentives", for graduate students and professionals for their professional training and local economic development.

3.4. Athena-Telematics Center

The Athena-net telematics center is an ATM INTRANET among the 3 universities in the metropolitan area of Athens and it aims to upgrade the research and educational activities within the university campus in Athens, University hospitals, Administrative Services, and University departments and to support the students, the faculty, researchers, employees, etc, a work environment with continuous communication and access to university, national and international databases. It was funded by EE

initiatives as necessary infrastructure for the participation of our country in the program for "Research and Development for High Performance Computing & Networking (HPCN)" in EE.

It supports the connection of the 3 universities with 34-155 Mbps and many advanced pilot multimedia applications over local networks ATM, as a Metropolitan Area Network (MAN) in the model of the Academic and Research Broadband Isdn Networks in EU [27]. The applications consist of programs for synchronous distance learning among the 3 universities courses with the aim of multiple – point video teleconference rooms (at least one for every university), the VoD (Video on demand) for multimedia information will be available on demand for faculty and students, and finally, the medicine multimedia information for the research units in the 3 university hospitals, laboratories and educational units in the universities, as virtual laboratories. The network also provides access to information sources, such as digital libraries, and it can be an effective tool for researchers and postgraduate students in the 3 universities. Athena-net will also provide through virtual classrooms the necessary training in new technology and telematics issues to teachers of elementary, secondary and high school education in our country[28]

The network services will be accessible for external users such as international research and development units within the General Directorate XIII of the EU for pilot applications concerning telematics and it will act as a national host for broadband applications in the program for Advanced Communication Technology Services ACTS – Information Society 3rd EE Support Framework. It is also used as a digital site for the telematics applications programme of the EE that focus on multimedia software applications for the sectors of education, medicine, transportation, the Environment, public administration, civil and rural communications. The Athena- net is also a member of the GUNET which is an horizontal action of 18 Universities and 14 Technological Institutes in Greece.

3.5. National Technological University of Athens

The National Technological University of Athens (NTUA) supports the faculty and the students with distance learning infrastructure in terms of installations, audiovisual media and network equipment.

Since 1998, there are 10 fully implemented tele-classes, one for each department of the NTUA. These tele-classes, with datashow projector, document camera, video player and microphone installation, can assist in video teleconference purposes and it is already successfully used. There is also VOD (Video on demand) service through the main network of NTUA, which can support videos from live classes. In the year 1999, another high quality tele-class was implemented in Central Library of NTUA, with digital video, automated cameras for both tutors and trainees, and fast internet network access in other teleclasses in Natiopnal and Kapodistrian University of Athens and in Business and Economics University of Athens. These virtual classes were funded from EE projects and they can facilitate the real time

attend of classes through the Internet (H. 323) or ISDN connection (H.320). [29]

The TEE (Technological Chamber of Greece) in combination with the NTUA has supported the creation of fully equipped tele-classes in Thessaloniki, Larisa, Patras and the island of Syros forthe materialization of synchronous distance learning seminars for civil engineers, architects and topographic engineers, generally for members of the TEE, and also, to act as constant network knots of the NTUA in regional Greece, in order to diffuse knowledge and innovations in the field. The distance seminars concerned computer aided design software (AUTOCAD) and the basic principles for tele-working applications [30].

3.6. Pandeion University for Social and Political Sciences

The Pandeion University for Social and Political Sciences in Athens in order to provide complete long life education and training for Social and Political sciences issues has proceeded in the production and development of various educational applications, such as distance learning, telematics and multimedia. These applications aim to educate and train the instructors that are necessary for the implementation of the multiple purpose training and seminar carriers all over our country. The Center for Professional Training -KEK aims at the basic and long life training based on the creation of initiatives within local authorities, the production of credited distance learning applications and the participation in international collaboration networks of relative services in European Union [31]

3.7. National and Kapodistrian University of Athens

The Network Operation Center (NOC) of the university offers to the faculty a number of pilot services on synchronous and asynchronous distance education, telemedicine concerning digital filing of medicine pictures, multiple point tele-video conference, video streaming and video on demand. Especially, on VOD service, there is a audiovisual archive of .mpg, .avi, .mov, H261, .jpeg, .mp3, etc. files on lectures, seminars and video presentations that can be retrieved and presented in real time on a terminal. However, the potential users of that service that can be users from the intranet of the university or outer users, should have the relative decode player installed to view the file, which is not saved in their computer. [32]

3.8. Athens University of Economics and Business

The tele-education Centre of the Athens University of Ecomomics and Business materializes an application for the development of distance learning environment through the Lab. of Business Information Technology. The pilot web courses in the asynchronous distance learning environment concern web courses for :Internet and E-commerce, Database for Business applications, Principles for the design and Implementation of Information systems and Business Information Systems, specifically created to support the needs of executives [33]

3.9. Agricultucal University of Athens

In the Science Department of the Agricultural University of Athens, in the Laboratory of Informatics, there are pilot applications for asynchronous distance learning web courses. The courses are available on line for the students via the intranet of the university and they concern Visual Fortran 90, Visual Basic 6, introduction in computers and HTML [34]

3.10. University of Piraeus

The University of Piraeus through its Network Center supports a number of WWW course tools, available only for potential students. In order to enter the specific web tutorial page the student has to create a personal account. It is an asynchronous distance learning environment. These specific web courses refer to various issues such as cardiological events and tooth hygiene [35].

3.11. University of Ioannina

The University of Ioannina provides, within the Laboratory of Medicine and Technology Software a full presentation of cardiology issues through the web with video on demand applications [36]. That asynchronous type of distance learning can be useful not only to students of medicine but supports life long knowledge about specific cardiology issues and telemedicine pilot applications for cardiologists.

There is also an ongoing project named "DIDO" to support long distance course in "teaching of mathematics through networks and information technology tools" in combination with the centre for research in physics "Democritus" [37] for the effective teaching of mathematics for graduate students.

3.12 University of Thessaly

The University of Thessaly Network Management Centre, in cooperation with GUNET, offers the following pilot services: videoconference and tele-education over IP, videoconference over ISDN, Video on Demand, concerning the live transmission of TV programs and local radio station program through Internet.

The Network Centre of the University has already set up a fully-equipped videoconference room for 32 persons in Trikala, for the Department of Physical Training Science. There is a video teleconference Vtel system capable to support transmission of 512 Kbps, 4-Isdn BRI interface with IMUX, Video transmission (30 frames per sec), Video teleconference with protocol H.320 over ISDN network and T.120 applications, echo cancellation, ambient noise suppression, internet access, PTZ cameras, document cameras, VCR, omni-directional microphones, 10 push-to-talk microphones, and finally tablet pad for interactive control with the system [38]. The video teleconference room has already been successfully used for synchronous distance education sessions in physical training science issues for the students and for similar post- graduate courses attendance.

3.13 University of Patras

The University of Patras through the Network Centre offers a number of pilot services and rich material concerning computer supported cooperative work, video conference, online training and offline training [39].

3.14 University of the Aegean

The University of Aegean has achieved to connect through the Aegean-net all university units in different islands on the Aegean Sea, the islands of Lesvos, Chios, Samos, Rhodes, [40]. The Aegean-net project offers the proper infrastructure and know-how to these remote geographically locations and aims to use for research/educational purposes.

3.15. Democritus University of Thrace

There are already 3 fully equipped tele-education classes over ISDN connection, in departments of the Democritus University in the cities of Xanthi, Komotini and Alexandroupolis. [41]. Especially in the classroom of local Xanthi, the teleconference system is based on PBX with 4 BRI lines for total 512 Kbps. The classroom in Komotini offers 3 BRI lines and 384 Kbps. In Alexandroupolis, there is a connection over ISDN for 4 BRI lines and 512 Kbps. There are also asynchronous teleeducation applications, for multimedia material, structured in theme units and able for offer from web servers. There is also Video On Demand service for the accomplishment of synchronous teleeducation courses and seminars, video and audio streaming.

4. CONCLUSIONS

Distance learning applications in Greece is still in pilot level, hence, it is already achieved the minimum presupposition for at least one fully equipped virtual classroom for every academic unit. Distance learning environments usually function through the network operation centers in every University, which co-support a number of advanced telematics services in order to diffuse the acquired knowledge, such as the development of multimedia software, guidelines for the design and implementation of virtual tele-classrooms, Video on Demand services, Mbone, advanced communication services, access for remote information libraries, databases, etc. There are also found rich material on distance learning issues.

Most of these projects are funded by European Union, within research and development projects for Advanced Communication and Technology Services or within EE Support Frameworks.

Distance learning provided in higher education could be an effective tool in upgrading the educational level, the rendered services and the quality of life in our country. The on going projects in the universities in Greece aim to contribute in the effective exploitation of human resources in our country and, consequently, in the evolvement of competitiveness in all production sectors in Greece. These projects also help to materialize the successful achievement of the objectives of the 3rd community support framework for the INFORMATION SOCIETY and the equal participation of our country in the new EE.

Greece is a country, with many remote areas, such as islands and mountainous areas, and the contemporary infrastructure for distance learning applications could be exploited for local development programmes. Computer based education is designed to provide total access in higher education in more citizens in our country for both graduate and post-graduate level. Knowledge, new technology, innovations and ICT services can be effectively diffused in our country with the implementation of various programs for distance education, remote seminars, professional training, corporate training and the support of new professional horizons for graduates. Furthermore, Greek universities will be able to reinforce continuing life education for human resources, a basic presupposition for the materialization of the "Society of Information" and consequently, for the development of our national economy.

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