E-LEARNING INNOVATIONS IN HIGHER EDUCATION

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Abstract
This scientific work is presenting the ways to do computer assisted education for students, giving the good practice examples, presenting new electronic learning systems, the advantages and limits and to try to emphasize that these days E-learning is one of the most efficient way to reach education at all levels, specially higher education systems. The objectives of this paper are: to explain the contribution of modern technologies and electronic systems to educational processes, to define the concept of technology based learning, to introduce the electronic tools for education, to present good practice examples in implementing E-learning systems in higher education and corporate environment in Romania and last but not least the new electronic learning systems. Introducing the computers and ITC in educational processes facilitates them and makes the educational system modern and efficient. E - learning innovations offers a core group of professional development courses designed to help anyone achieve professional advancement and personal enrichment. The programs are founded on an extensive experience and understanding of technology-based learning environments. They focus on the most current industry practices for various learning environments and best approaches for multiple learning styles. They ensure that the students get the information and skills needed to achieve more in teaching practice and to confidently enter the distance or online classroom.

Keywords: *E-learning,technology based learning, electronic learning platform, Learning Management Systems, Integrated Learning Systems.*

Introduction

The scientific work refers to e-learning concept and it's introduction in higher education systems as support for an efficient learning.

The importance of this study resides in the fact that the introduction of ITC in educational processes, helps to modernize on one hand and facilitates on the other hand, this processes. The objectives of the study are: to explain the contribution of modern technologies and electronic systems to educational processes, to define the concept of technology based learning, to introduce the electronic tools for education, to present good practice examples in implementing E-learning systems in higher education and corporate environment in Romania and last but not least the new electronic learning systems.

The way of responding to the challenges of this theme is finding the new discoveries of the domain, presenting and adapting them to the requests of the large public, of teachers and students.

The authors have studied and used in practice the main electronic tools for education like: Learning Management Systems, Integrated Learning Systems, On-line forums, Web conferences.

In present we live in an era of technology. Technology has become an important component of our lives and we cannot develop diverse activities without it. Every day appears new gadgets or software that makes lives easier and improves the technology and software that already exists. Making lives easier is not, however, the only role technology plays in our lives.

The latest E-learning Innovations such as mobile learning (MLearning – Tremblay, 2010) or web based collaborative open environments (Lewin, 2011) makes the education more competitive but also saves resources now and in the future.

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Technology is playing an increasing role in education. As technology advances, it is used for the benefit of students and people of all ages in the learning processes.

Considering the *Handbook of Human Performance Technology (J.A.Pershing, 2006)*, the word technology for the sister fields of Educational and Human Performance Technology means "applied science."In other words, any valid and reliable process or procedure that is derived from basic research using the "scientific method" is considered a "technology." The word technology, comes from the Greek "Techne" which means craft or art. Another word "technique", with the same origin, also may be used when considering the field Educational technology. So, Educational technology may be extended to include the techniques of the educator and educators often named Educational Technologists.

Technology used in the classroom helps students to learn easier the materials presented in different courses. For example, since some people are visual learners, projection screens linked to computers can allow students to see their notes instead of simply listening to a teacher deliver a course without any technical mean.

In the same direction software can be used to supplement class curriculum, to improve the educative process by adding practical aspects to the course. Also, the programs provide study questions, activities, and even tests and quizzes for a class that can help students continue learning outside the classroom.

Technology has also become part of many curriculums, even for other courses out of computer and technology classes. Students use computers to create presentations and use the Internet in order to research topics for papers and essays, to get tests and materials for learning. Students also learn how to use the technology available to them in any type of courses but especially in computer classes. This ensures that after graduation they will be able to use the information technology in their work, which may put them ahead of someone who didn't have access to a particular technology or software in their school.

The information technology advances yearly, so the students have better access to educational opportunities. When something new and "better" appears, the "older" technology becomes more affordable, allowing it to be used in educational processes, even when schools are on a tight budget.

Technology based learning

Technology based learning is the way of learning using the electronic technology such as internet, intranet, audio and video conferencing, webcasts etc. **On-line learning** and **computer based learning** means the learning using the computer, respective the internet and modern technology. The synonymous of Technology based learning is the **e-learning** concept, largely spread at all the levels of educational process in our days. .

Educational technology may be extended to include the techniques of the educator and educators often named Educational Technologists.

The time saved and also the efficiency of using technology for educational purposes recommends it as the newest trend in the knowledge based economy and society. Making a parallel between education in old economy and in knowledge based economy.

Old economy	**Knowledge Based Economy**
Four years degree	Forty-years degree
Training and Cost Center	Training as Competitive Advantage
Learner mobility	Content mobility
Distance education	Distributed learning
Correspondence & Video	High tech Multimedia Centers
Generic programs	Tailored programs

Geographic centers	Brand Name Universities and Celebrity Professors
Isolated	Virtual Learning Commities

Table 1. Education in knowledge economy

Source: N.Gudanescu, Using modern technology for improving learning process at different educational levels, Procedia Social and Behavioral Sciences

"Educational technology" represents the using of modern technology in educational processes, in order to improve teaching and learning. Educational technology is also known as „learning technology'' or „instructional technology'' and includes web-sites, electronic platforms, educational software, educational electronic materials, interactive blackboards and videoconference systems for distance learning.

E-learning comprises all forms of electronically supported learning and teaching. The information and communication systems, whether networked learning or not, serve as specific media to implement the learning process. The term will still most likely be utilized to reference out-of-classroom and in-classroom educational experiences via technology, even as advances continue in regard to devices and curriculum.

E-learning is essentially the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Content is delivered via the Internet, intranet/internet, audio or video tape, satellite TV and CD-ROM.

Abbreviations like CBT (*Computer-Based Training*), IBT (*Internet-Based Training*) or WBT (*Web-Based Training*) have been used in time as synonyms to e-learning. This system is largely used today, that's why it has to be reglemented by establishing rules and principles of functioning.

E-learning principles are:

E-learning is a way of doing education that can be applied within varying education models (face to face or distance education)

E-learning is a unique form of education that combines face to face and distance education

The importance of how is technology used in the educational process and the technical level of a course

The E-learning means the implementation of innovative educational methods

E-learning can be used in two ways; the presentation of educational content, and the facilitation of educational processes

E-learning uses a standard model of courses accepted by the educational authorities from each country

E-learning offers new opportunities of education for the users

Some of the advantages that technology and electronic tools provides are:

The modernization of the educational process;

A better communication between the professors and students;

A raising participation of the students in educational programs, university courses or training sessions;

The innovation in educational programs;

Facilitates the educational act.

The limits at least in some of the countries like Romania are:

The missing of the face to face contact between professors and students;

Difficulties in the computer utilization by the older professors or students;

The evaluation process is more stressing for the students, because the grades and qualifications are generated by the computer;

Difficulties in publishing the courses (platform contents) because of the lack in author's rights legislation.

We can say that the system is useful and helps to modernize, innovate and facilitate the educational process.

E - learning Innovations is committed to professional success. Benefits of training include:

A flexible and progressive online learning format

A collaborative and blended learning environment

Immediate, practical application

Individual mentoring and coaching

Certification through a combination of selected courses

Can be tailored to specific technologies or environments

Electronic tools for education

A few of the many electronic tools used to deliver in modern conditions the education and specialization among students are Learning Management Systems (known as LMS), Integrated Learning Systems, On-line forums, and not for the last Web Conferences.

Learning Management Systems

A learning management system (LMS) is a software application or Web-based technology used to plan, implement, and assess a specific learning process. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums.

In another definition a Learning Management System (commonly abbreviated as LMS) is a software application for the administration, documentation, tracking, and reporting of training programs, classroom and online events, e-learning programs, and training content. As described in (Ellis 2009) a robust LMS should be able to do the following:

centralize and automate administration of documents, students and other useful information

use self-service and self-guided services

assemble and deliver learning content rapidly

consolidate training initiatives on a scalable web-based platform

support portability and standards

personalize content and enable knowledge reuse.

Some LMSs are Web-based to facilitate access to learning content and administration from distance. LMSs are used generally by universities (educational institutions) to enhance and support classroom teaching and offering courses to a larger population of learners across the country or continent but can be used very frequently for adult preparation and specialization at the work-place or in organized training sessions.

The virtual learning environment used by universities and colleges allow professors/tutors to manage their courses and exchange information with students for a course that in most cases will last several weeks and will meet several times during those weeks. In the corporate environment setting a course may be much shorter, easier to present as content and completed in a single instructor-led event or online session. The characteristics shared by both types of LMSs for universities and for education for adults and instruction are:

Manage users, roles, courses, instructors, facilities, and generate reports for any person or activity.

Generate Courses calendar

Offers learning path

Student messaging and notifications

Assessment and testing handling before and after following the course
Generates automatic tests choosing different ways to combine the questions
Display scores and transcripts
Grading of coursework and roster processing, including wait listing
Web-based or blended course delivery

The soft platform is not so important for the end users, they are interested in the facilities offered by the platform, easy access, courses posted, forums, tests, case studies etc. The information posted on the platforms is known as learning content.

A learning content management system (LCMS) is a related technology to the learning management system that it is focused on the development, management and publishing of the content that will typically be delivered thorough an LMS. An LCMS is a multi-user environment where developers may create, store, use, manage, and deliver digital learning content from a central object repository. In the university environment as well as in the corporate environment the content is made by courses, case studies and practical materials of study, tests and recapitulative questions sets, training modules etc. The learning materials (learning objects) are not only written materials, but graphics, audio and video materials for courses and training support. The materials are posted by the teachers, trainers and platform administrators but also by the students on share section.

Integrated Learning Systems

Integrated Learning Systems (abbreviated as ILS) are hardware and software solutions designed to deliver instructional content. The effective delivery of that content is measured, monitored, and maintained with an array of assessment and management tools that may also be part of that system.

Comparing with static online help or even animated tutorials, Integrated Learning Systems are highly interactive and designed to provide feedback as to progress and grasp of the subject matter at hand. Built-in tools further allow professors to monitor and measure a student's progress.

Integrated Learning Systems are packages of networked hardware and software used for education. Such systems provide instructional content as well as assessment and management tools. In an integrated learning system program, each student studies at his or her level, because an adaptive testing algorithm places every student at a level appropriate for the instructional process. In a number of off-the-shelf, drill-and-practice programs, no adaptive testing occurs, and the student works at whatever "level" of the program he or she chooses.

Integrated Learning Systems require a significant commitment of implementation expense, time, and effort. Researchers remain divided on their long-term value. Students using these systems have been shown to perform significantly better than equivalent control groups. Being instructional systems can be successfully used for the adults also that are in the process of learning a trade.

An ILS is made up of two components, Computer Aided Instruction (CAI) modules (often called courseware) and a Management System.

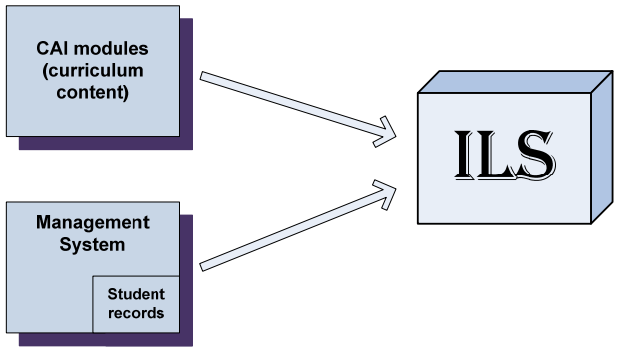

Figure 2.The scheme of an Integrated Learning System

The Management System keeps records of the students' performance and, in some cases depending on the software, moves them through the levels of difficulty as appropriate. It also allows the professors to configure all the different course options, to suit their own teaching styles and the needs of their students.

The key features of an ILS are as follows:

Each student has an individualized learning program. If they perform well, they can make rapid progress onto higher levels of difficulty. If they experience problems, they are given more practice and may also be given additional tutorials and support questions on the various skills needed to deal with a particular topic.

Professors have access to a lot of data for monitoring students' progress. This will highlight students who are experiencing difficulty and who are in need of additional support. This data is gathered automatically and can be printed out in a series of different reports.

Students performance is constantly monitored by the Management System.

Students get immediate feedback after every question. This can raise motivation and accelerate learning.

The benefits that can be achieved through the use of an ILS can be:

Significant learning gains in mathematics

Significant learning gains in English or any other language that uses the ILS

Improved motivation and attitude to work

Improved performance in all curriculum areas because of the first three benefits

On-line forums

A forum is hierarchical or tree-like in structure: a forum can contain a number of sub forums, each of which may have several topics. Within a forum's topic, each new discussion started is called a thread, and can be replied to by as many people as wish to. Depending on the forum's settings, users can be anonymous or have to register with the forum and then subsequently log in order to post messages. On most forums, users do not have to log in to read existing messages.

The talkers share their own knowledge with others, by giving them information or advices, also specialists in different domains present on the forums can give the interested ones the right data. But, in the majority of the cases when we talk about electronic educational systems, the on-line forums are integrated in LMS or ILS. These forums are administrated by the teachers and platforms administrators that manage the entire system. In the case of the teachers as moderators they have to respond to the students' questions and guide them in the way of learning the most important things for their future.

Every day, millions of users log on to their favorite online forums, communities and social spaces and interact with others to get advice and discuss everything from the latest news and trends

to their hobbies and professions to whatever else strikes their fancy. Administrators have to lead these communities, deal with difficult users, manage staff members and make tough decisions. Legal constraints, spammers and technical issues can turn the excitement of running an on-line community into chaos.

The steps to create an on-line forum are:
Creating an organizational structure
Designing and launching the community
Deciding on user options like private messaging
Promoting and attracting members
Utilizing technology to members benefit
Developing and enforcing guidelines
Choosing and managing moderators
Shutting down users who disrupt and harm the community
Involving the users and keeping the site interesting and inviting
Generating revenue

Web Conferences and Video Conferences

Web Conferencing refers to a service that allows conferencing events to be shared with remote locations. The service allows information to be shared simultaneously, across geographically dispersed locations in nearly real-time. Applications for web conferencing include meetings, training events, lectures, or short presentations from any computer. A participant can be either an individual person or a group. System requirements that allow individuals within a group to participate as individuals, when an audience participant asks a question, depend on the size of the group. Handling such requirements is often the responsibility of the group. In general, system requirements depend on the vendor. The service is made possible by Internet technologies, particularly on IP/TCP connections.

For interactive online workshops web conferences are complemented by electronic meeting systems (EMS) which provide a range of on-line facilitation tools such as brainstorming and categorization, a range of voting methods or structured discussions, typically with optional anonymity. Typically, EMS do not provide core web conferencing functionality such as screen sharing or voice conferencing though some EMS can control web conferencing sessions.

Other typical features of a web conference include:

Slide show presentations - where images are presented to the audience and markup tools and a remote mouse pointer are used to engage the audience while the presenter discusses slide content

Live or Streaming video - where full motion webcam, digital video camera or multi-media files are pushed to the audience

VoIP (Real time audio communication through the computer via use of headphones and speakers)

Web tours - where URLs, data from forms, cookies, scripts and session data can be pushed to other participants enabling them to be pushed though web based logons, clicks, etc. This type of feature works well when demonstrating websites where users themselves can also participate

Meeting Recording - where presentation activity is recorded on the client side or server side for later viewing and/or distribution

Whiteboard with annotation, allowing the presenter and/or attendees to highlight or mark items on the slide presentation. Or, simply make notes on a blank whiteboard

Text chat - For live question and answer sessions, limited to the people connected to the meeting. Text chat may be public (to all participants) or private (between 2 participants)

Polls and surveys (allows the presenter to conduct questions with multiple choice answers directed to the audience)

Screen sharing/desktop sharing/application sharing (where participants can view anything the presenter currently has shown on their screen. Some screen sharing applications allow for remote desktop control, allowing participants to manipulate the presenters screen, although this is not widely used.)

Videoconference (video conferencing)

A videoconference is a live connection between people in separate locations for the purpose of communication, usually involving audio and often text as well as video. At its simplest, videoconferencing provides transmission of static images and text between two locations. At its most sophisticated, it provides transmission of full-motion video images and high-quality audio between multiple locations. Videoconferencing software is quickly becoming standard computer equipment. Digital Camera afford the user easy - and cheap - live connections to distant friends and family. Although the audio and video quality of such a minimal setup is not high, the combined benefits of a video link and long-distance savings may be quite persuasive.

The tangible benefits for businesses using videoconferencing include lower travel costs and profits gained from offering videoconferencing as an aspect of customer service. The intangible benefits include the facilitation of group work among geographically distant teammates and a stronger sense of community among business contacts, both within and between companies. In terms of group work, users can chat, transfer files, share programs, send and receive graphic data, and operate computers from remote locations. On a more personal level, the face-to-face connection adds non-verbal communication to the exchange and allows participants to develop a stronger sense of familiarity with individuals they may never actually meet in the same place.

A videoconference can be thought of as a phone call with pictures - Microsoft refers to that aspect of its NetMeeting package as a "web phone" - and indications suggest that videoconferencing will some day become the primary mode of distance communication.

The latest Electronic Learning Systems

The innovation regarding the E-learning technologies is on one side the mobile learning and on the other side the collaborative open environments/workplaces.

3.1 MLearning

MLearning (Mobile learning) is the newest discovery in the field and represents the learning using mobile devices or in other definition: ‘Any sort of learning that happens when the learner is not a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies’.

Learner access to m-learning project systems and materials was via a microportal (mPortal), which consists of a series of mini web pages with navigation pointing to:

learning materials
mini web Page Builder tools
a collaborative activities tool (the mediaBoard)
peer-to-peer communication services (messages, chat, discussion and blogs)
the learning management system
simple help guides for the system
links to places on the Web that may be helpful or interesting for our target audience.

The mPortal also manages the ‘behind the scenes’ integration and security.

The Page Builder tools within the mPortal allow learners to create and edit their own mini web pages for viewing on mobile devices (and also accessible from a desktop computer) in a password-protected environment.

The pages learners create can contain a number of different elements including text, pictures, movies, animations, audio, blogs (a short version of the term 'web log', meaning a publicly accessible web-based journal), conversations and links to any web pages chosen by the learner.

3.2 Virtual Collaborative open Environments/Workplaces

A Collaborative Workspace or shared workspace is an inter-connected environment in which all the participants in dispersed locations can access and interact with each other just as inside a single entity.

The environment may be supported by electronic communications and groupware which enable participants to overcome space and time differentials. These are typically enabled by a shared mental model, common information, and a shared understanding by all of the participants regardless of physical location.

Communication comes in two forms: synchronous and asynchronous. Asynchronous communication includes email and shared file systems where information is exchanged back and forth in a non-interactive, sequential manner. The popularity of synchronous forms has increased over recent years driven by improvements in processing capabilities and the widespread availability of high speed internet. These include video and voice messaging services including shared whiteboard capabilities. Program sharing has also become available to allow remote users to share much more detailed information through CAD packages, spreadsheets, etc. and have access to these in real time.

Examples of good practice in implementing E-learning systems in higher education

The e-learning concept is frequently used in our country in these days. Now in Romania all prestigious companies and universities have e-learning platforms thus contributing to lifelong learning even from long distances from the educational source.

Some examples are: Universities that implemented and use the e-learning system for students distance learning like Academy of Economic Studies from Bucharest, NicolaeTitulescu University, Titu Maiorescu University which uses for the moment a moodle platform but is implementing an European project financed from structural funds which main objective is the creation of a e-learning platform, Valahia University from Targoviste and so on. Being a express request from Education Ministry that each university that organize distance courses to have a e-learning platform, many universities from our country are searching modalities to have a such platform. Because the costs are in some cases bigger than the universities financial possibilities they write and implement European projects in order to finance an e-learning platform.

An example of good practice is the E-learning system implemented by NicolaeTitulescu University.

Figure 3.NicolaeTitulescu University site: www.univnt.ro

The students can connect to the electronic distance learning platform using a browser-based application such as Microsoft Internet Explorer, Opera, Firefox etc. at http://elis.univnt.ro/ or university site www.univnt.ro through the button *"Login Student"* (left side of the page www.univnt.ro). The students will enter login information into a web page similar to the following image:

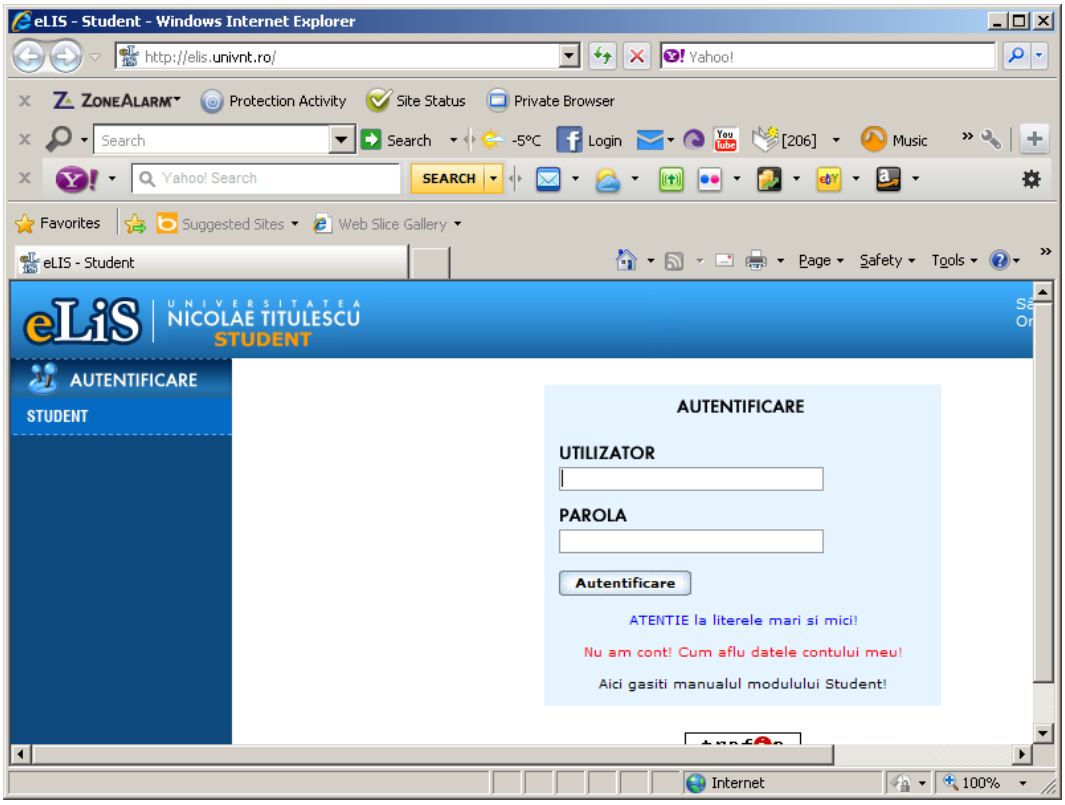

Figure 4.E-Lis Platform, Nicolae Titulescu University

Once connected to the electronic platform, students can access the following types of information:

- downloading of courses, course materials
- assessment of knowledge through online tests
- access syllabus and curricula
- the school situation
- the financial situation
- announcements at different levels (University, faculty, academic year), to provide bidirectional communication
- to address tutors, they can view their email addresses on the www.univnt.ro
- bibliography.

The advantages of electronic eLis platform are:

- the Platform enables access to the electronic course materials, assessment tests
- electronic platform provides bidirectional communication through the posts
- with electronic platform you can send messages and post announcements to the entire University, to a group or to a particular academic year. Teachers also are assigned an username and a password. They can access the electronic platform, too. Also, each teacher is assigned to a University e-mail box so this way it can ensure communication with students.

Another example of good practice is the E-learning system implemented by Ecologic University from Bucharest :

Figure 5.Start Web Page U.E.B.(Ecological University of Bucharest http://www.kopernic.ueb.ro/GUI/Desktop.aspx)

The teacher will be able to see the system access history by his students (number and login, download documents, etc.) and can choose whether it will help in establishing activating the final grade. During the course, the students have associated a teacher who will be able to view a report history for each student to access the system and can then take into account the historical mark the award. Activity Report will include student name, date and time of action (connecting to the system, disconnect, download documents, etc.).

Students can download their documents uploaded by teachers for school materials from the plan. After connecting a student in the system, among other things, will see the list of courses that is registered. When you choose a course will open a page with all the details of that course: title, description, teacher, etc. and also loaded the professor for that course.

Students can download/upload electronic files in default locations (essays, themes, etc). For each course, students can download materials and their various topics, as described in the previous paragraph. Also students will be able to upload the server various themes or essays. Once they are loaded, the teacher will receive a message informing the student that made a theme and will have a link to access that topic.

Students can ask questions to teachers in private or public system.

A student will be able to view posts related to his account and his notes for each subject.

Both students and teachers will have their mail box, where they can view past messages and they will be able to send other messages in the system. The system will also have a chat, where you can discuss general topics in real-time.

The teachers can define a set of test questions and they can choose by checking questions, those that are public, meaning that students can access as a sort of quiz to prepare for the exam.

At the date set by teachers, students will be able to pass the tests for materials studied, displaying to the final result.

Conclusions

Considering the scope and the results of this work we can conclude that the E-learning is the best way to achieve education these days, when the resources are limited by the global economic decline, because is more cheaper for the people, especially students and for the educational institutions where a small number of teachers are involved and one time buying the new technology.

Technology is making it possible for teachers to reach more to the students, allowing students the time they need to learn, accumulate, succeed, and providing our future workforce with competent, knowledgeable employees.

E-learning Innovations brings professional success and a lot of benefits.

As a future work we are designing Virtual E-learning Centers through the project "Practical training for competitiveness in the labor market". The project is implemented for the students of Economics and is created in order to meet the students' internship.

This study creates the premises to implement the E-learning type activities in the academic environment. During the ongoing project " Practical training for competitiveness in the labor market" from Nicolae Titulescu University will be put in place some of the methods described previously. This project is meant for the students from Economic Studies and implies the creation of virtual exercise firms to satisfy the internship. In this manner will be created a pilot program which lays the foundations for further research and development of future theoretical and practical E-learning models.

In conclusion the e-learning systems are useful for any type of education, at any level, but specially for higher education and adults education. E-learning systems are used also for the high school level or small children's education. The good practice example is concluding for the present work and emphasizes the importance of the information technology used in the educational processes.

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