Education Reboot: Reinventing the University

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Abstract

Sources of information, in increasingly numerous varied forms, are an aggressive alternative to the educational system. Television and Internet monopolize more and more leisure time and create or modify individual personalities. Education must come forward on this track and „battle” with these technologies in order to provide information and create individuals that cover the society needs. The new developments in Information Technology and Communications (IT&C) and the growth of mobile communications have developed new ways of interaction between the individual and the information. In this regard, our option is that an online educational system suited for national expansion based on the existing infrastructure in our university and an even distribution of broadcast servers. This structure must consist in permanently accessible servers and make available educational materials and scientific conferences (recorded or live). Also it can be easily extended from the North-East region to the whole country. Implementation of broadcast server system not only benefits the universities which use these services, but also has a positive impact on the productivity and costs of these organizations. The system has also a structure that allows communication assessment synchronous or asynchronous, real-time discussions (verbal or written), audio-visual contact. The system supports simultaneous data transmission channel to presentation/audio-video communication channel. The one who presents, the teacher or the lecturer, will be able to make changes on the video channel and simultaneous on the material and will be able to display in real time, for visible and long-distance viewers. At the same time this broadcast will be recorded to be seen in asynchronously mode whenever is needed. In terms of cost, the financial support can be provided by the university, by a consortium of universities and/or through advertising, like television The paper presents a summary of the characteristics of the broadcast server system, some major issues that justify the necessity of using this model to disseminate information and knowledge and identify the potential that it possesses, but also the problems that concerns such an activity (trust, security risks, privacy risks).

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1. Introduction

The world is constantly changing in a technical, economic and social way, transforming lifestyle and action. Every decade the society is changing radically. Globalization of markets and technical and technological revolutions contemporary economy transforms into a knowledge economy, the new organizational and work governing the business world, requiring skills and generalization of advanced technologies, sound knowledge and increasing accountability.

The transition to the knowledge society and information society has led to radical changes or even all levels of economic and social life. In this respect, education and development relationship involves two meanings: on the one hand, socio-economic development, which involves changes in education, in the conduct of the educational process, and, on the other hand, the training of human educated resolving the global issues of the future.

New information and communication technologies change the perspective on educational practice, their implementation is regarded as one of the most important problems of the end of the century, elevated to national politics, even international. Obtain current and useful information positively influence the decisions taken by the organization, regardless of scope, information is considered a fourth resource, often more important than the classic (work, nature of capital) (Boboilă, 2010).

Information is created through processes of innovation and knowledge, developing in a progressive and cumulative, with an extremely fast growth rate and multiplying by dissemination. Internet use by a growing number of users is a consequence of the growing need for information and their number is growing. By service World Wide Web, the Internet has become the main source of information and communication worldwide, and is considered a great success both technologically as especially socially.

The human civilization has experienced a new phase in which information plays a central location known as information society or knowledge society. Information Society broader public access to information, through the intensive use of information and communication technologies, thus dealing with a new way of working and knowledge. The Internet is becoming an information resource unlimited international market, while being considered as determinant of globalization and vector essential knowledge society. The transition to the knowledge society is irreversible, caused by, especially, the intensity determinants (information and communication technology, multimedia production) factors increases and more on the expansion of the new global society.

Rapid change taking place in the information society, especially the depth of its restructuring requires special directions regarding the education system to align the educational objectives of the specific requirements of the knowledge society.

In the context of internationalization and globalization of organizations, advancement of digital technologies in education is manifested by: (Boboilă, 2010).

- documenting a widespread worldwide virtual library;
- training under the guidance of a teacher from thousands of miles away;
- professional qualifications for a global labor market;
- remote training activities based on information and communication technologies- "Teleactivities";
- permanent enrichment of their own culture with elements from other cultures.

Diversification and globalization have led to reconsideration of the current society of individuals’ cognitive affinities, conditional permanent and scale modeling differentiated personal values.

Development of the Information Society (Boboilă, 2010) has resulted in global:

- development of communications infrastructure;
- implementation of appropriate software tools;
- hardware development;
- digital content creation;
- individual skills in the use and exploitation of information.

Mass development of these technologies has led to lower prices of computers, a phenomenon that has led to widespread use of new information technologies, facilitating access to information for all members of society. In this context, they paved the shift from information society to knowledge-based information society in which the individual is able to exploit and to transform information.
In the knowledge society, a very important factor is the training, which involves, first, an education degree. Given that teamwork is an essential factor in training, must be provided and personal skills such as balance, tolerance, sense of responsibility, communication skills, etc.

The key benefits of an educated society lies in its ability to choose the path to progress and knowledge. This makes evident the need to develop educational technologies and standards to improve the efficiency of the educational process.

Unlike past societies, where knowledge was gained through experience, the secret society of the future is education and, thus, increasing the role of human capital. The principle of lifelong learning is the possibility of achieving a highly individualized education, in full accordance with the needs and personal aspirations, throughout their lives. To comply with this principle requires organizing educational influences in a coherent educational system.

New educational technologies (Zamfir, 2009) have emerged as a direct consequence of the evolution of both the psycho-pedagogical models of education and new communication technologies. Means teaching have evolved over time from being printed on paper support, learning programs through video, audio or hard copy, interactive multimedia information in real time via the Internet. The method of the information society is computer assisted instruction. There are many names used to describe what generically is known as computer assisted instruction, which suggests both the technology used and pedagogical issues involved. There are numerous advantages of using new information technologies in education, of which the most important are shown in Figure 1.

![Advantages of using new information technologies in education](image)

Any current member of society should be prepared for a lifestyle based on continuous learning to keep up with the avalanche of knowledge and the increasing dispersion of qualifications and areas of activity, which are becoming more specialized and interconnected. Roger E. Bohn (1998) defined learning as the evolution of knowledge over time (Learning is evolution of knowledge over time). And knowledge is dependent on learning: the more a person is better educated, the better is his ability to transform information into knowledge.

Due to the rapid growth of information volumes continue learning continues throughout life (lifelong learning), it becomes a necessity, being embodied, in most cases, training courses, training in work or training away. It appears so obvious the need to develop new learning environments as alternatives to classic system/traditional education.
2. Technology and education

Technology is not just hardware and software. It includes numerous and extremely diverse means that pupils/students can use to improve their own learning. Teachers can also pose such use technology resources to enhance learning and create prerequisites’ running in optimum condition (Switzer, Callahan, & Quinn, 1999).

The teacher is not the only source of information available to the student. Technology provides access to sources beyond the classroom, textbooks or courses. The teacher should be the one who facilitates learning, incorporating in the act of teaching a set of strategies to guide students in learning. Technology can be used to develop skills in terms of efficient information processing and learning. Databases, simulations, and access to the Internet can facilitate access to complex information and experiences, as students acquire skills and knowledge, which are ultimately embodied in the standards for educational content. Also, students can apply their principles of free choice really relevant materials, being involved and comfort, assisted in learning activities that require the use of technology (Switzer et al., 1999).

We can say that technology is the one that opens doors to the world, allowing learners to access a wide range of resources to obtain the desired information.

Increasing the capacity of processing and storage of information and data, significantly reducing equipment size and appearance friendly interfaces (Roșca, Apostol, Zamfir, & Bodea, 2002) is another factor leading to increased use of computers. The new IT&C technologies are used in many cases in the training process, the direct or indirect benefit of the students. Their contribution to the educational field materializes:

- Materials for teaching and learning;
- Application support for teaching;
- Web-based training systems.

As support teaching, computers are used by teachers to:
- achievement and preparation of teaching materials;
- evaluation and development of students;
- achieving timing and schedules of activities (effective planning and time management).

In their attempt to acquire concepts and/or skills, students can use new technologies in different ways and purposes, from the searching/writing information through the Internet to the writing homework using word processors.

The most widely used IT&C resources for teaching and learning are educational software (teaching) applications containing various teaching strategies that address directly the learners, helping them to acquire information or to acquire skills through demonstrations, examples explanations, simulations. As the teaching software, educational software or tools and resources for e-learning, many electronic materials (digital media/multimedia) are developed to support the educational process: maps, dictionaries, encyclopedias, educational films, presentations in various digital formats sites, tests, tutorials, simulations, software forming skills, practice software, educational games, etc. Computer and electronic materials/ media are used to support teaching, learning, assessment or as a means of communication. The quality of an educational software (attractiveness, information of them diverse and competent) depends directly on the success of an e-learning system (Mark, 2010).

Along with educational software and e-books, there are new technologies for learning that built various elements of the educational infrastructure: e-journal, e-library, e-course, e-college. In this way, there is provided a digital context of learning - e-learning - which subsequently lead to the development of educational organizations and creating virtual communities focused on specific issues of education (Roșca et al., 2002).

Other helpful tools for those who choose to use IT&C are applications of expert assistance, as appropriate applications CAD (Computer Aided Design), the music or video editors, and the simulation of practical activities.

The first example enables environmental design 2D or 3D objects, or the environment, may be in this research to support or facilitate deepening knowledge.

Video editors and music facilitates the processing and noise removal of audio and video recording, allowing the addition, removal, adjustment of tonal and/or color tones.

The third example refers to any application, like flight simulator car simulator, simulator-energy, banking and financial situations simulator etc. It provides access to both a higher level of understanding and training in professional activities and risk assessments in various contingencies or even unknown yet.
If the first achievements in computer assisted instruction were built on pedagogical principles of programmed instruction, current educational systems encourage active construction of knowledge, provides the most accessible learning environments promote student reflection and issued many routine activities.

Access to the internet has had a major in education, enabling communication and sharing of resources, which, through an increased need for continuing education has led to the development of Web-based training systems. As the world is advancing in terms of technology, it is necessary that the educational environment to understand and anticipate technology changes and their impact on learning mode. From elementary schools to college campuses and computers were incorporated into educational programs, giving students greater freedom, flexibility and individuality in the classroom. In addition, computers provides an opportunity for independent exploration, a professional training and a cooperative learning (Alonso & Norman, 1996).

Due to the large amount of information available, a great importance has each person's ability to process that information wisely. Developing these skills becomes a key component of education in the information age.

Learning that emphasizing student involvement is a type of learning that gives students a dynamic role in the learning process, by which he becomes an active participant. They accumulate knowledge prints and own pace of learning and using their own strategies. Motivation is more intrinsic than extrinsic nature, thus learning is more individualized than standardized. Students can develop some skills such as the ability to solve problems, think critically and reflect habit. Learning that places the student at the center of the educational process responds and adapts to their different learning styles. In the traditional method, the teacher has a central role in learning, it can be pursued only in a time slot in a given space called a classroom/seminar, presenting only the material that you allow time allocated for the course. This student turns in relatively passive receiver or otherwise, the consumer of information.

3. Media culture and education

The audiovisual sector directly employs over one million people in the EU. It also plays a key social and cultural role - TV remains the foremost source of information and entertainment in Europe, with most homes having a television and the average European watching up to 4 hours a day. Audiovisual content is also increasingly accessed through on demand services.

The actual trend is to promote online distribution of content.

Digital technology and the internet are rapidly changing the way in which audiovisual works are produced, marketed, and distributed. Consumers increasingly expect to be able to watch anything, anywhere, any time and via any one of a number of devices (TV, personal computer, games console, mobile media device). Business models have to evolve rapidly to keep pace with the ever faster pace of technological change which offers new opportunities for creators and distributors and also new consumer expectations and ultimately more growth and jobs.

The digital "dematerialization" of content presents great opportunities for Europe, but also a number of challenges. First of all, obstacles still stand in the way of digital distribution of cultural products and services. In addition, illegal downloads on a large scale can jeopardize the development of an economically viable single market for digital content. Finally, there needs to be much more encouragement for legal cross-border offers. The consultation paper outlines the existing challenges for three groups of stakeholders – right holders, consumers and commercial users – in order to start a reflection on possible European responses.

At the Romanian national level, education has experienced a rising in the last two decades due to technological advances. This has made the information now supplied online; they can be visited by increasingly more people. Universities were opened where they were implemented various models mixed between traditional and student-centered and new specializations have been developed based on the new technologies available in the universities that used only traditional educational model. Globalization of education tended to online content and information shared in asynchronous environments anywhere in the world. The fact that traditional education was supplemented by methods of remote access to course materials, access to knowledge was expanded as coverage, overcoming barriers caused by limited physical space of the presentation of the course materials.
4. AICU digital platform

MEDIAEC platform was created at the University "Alexandru Ioan Cuza" (AICU) to keep up with these new trends in national education, and is composed of two independent systems.

The first system, for education delivered synchronously to beneficiaries, named MEDIAEC Videoconference System, enables simultaneous connection of 15 audio/video (A/V) channels and 30 audio channels, traceability event up to 150 participants passive unidirectional transmission online event registration and the possibility of a maximum of 15 simultaneous manageable. Server communications protocols implemented A/V are H323 and SIP servers can be called both the Internet and the telephone services of the University.

The second system, oriented to the beneficiaries of education delivered asynchronously, called application ID, offers the possibility of loading different types of material, dissemination simultaneously by a large number of beneficiaries, beneficiaries or questioning staff evaluation. In fact, the app is a Content Management System (CMS-EM) of educational and research documents. The materials are organized into folders called courses and access is achieved through "enrollment" courses participants. Materials can be taken in uncontrolled or controlled by the person who created the course, meaning that the recipient can be guided through the material according to their learning abilities or when browsing the course materials.

These two initial systems have been used successfully in over 3000 educational events and/or science by over 330 teachers are all over the world, distributing educational materials with different types of services accessed: broadcast sessions online conference papers, presentations of research results, the public works doctoral etc.; sessions audiovisual works or communications between institutions located anywhere in the world; University courses offered beneficiaries from different corners of the world and assessments of the degree of learning achieved of them, recording any type of event described above.

In Romania there have been established videoconferencing connections with almost all major universities (Iași, Bucharest, Cluj, Târgu Mureș, Timișoara, Oradea, Galați, Suceava), pre-university centers, environment related educational institutions (Romanian Academy, Romanian Literature Museum, Museum Academic AICU), and institutions in the public/private area (RoEduNet, SMURD, Avitech România, Palas, Castle Sturdza of Miclăușeni).

Due to existing systems in AICU, access to information and their distribution to multiple receivers became instant transactions. Teachers who rely on online support and are far from AICU have the opportunity both through dedicated videoconferencing systems and by special software support sessions "live" questions and answers, readings and dissertations, these allegations public. Split information for all those interested is now as simple as posting new messages in a forum. University mission is always the same knowledge necessary to serve effectively all its students, national, and now international, coverage now exceeds the barriers of physical space. With current mobile technologies (tablets, smart phones, laptops etc.) the students can access course materials, participate in a course even live anywhere they are.

Technological advantages brought by MEDIAEC in education have helped in the development of new systems online course materials. Speeds ever higher data transfer provides the University the opportunity to provide more complex content in the online environment. AICU system developed through the support of MEDIAEC and filled with Broadcasting System, now offers access from anywhere in the world, so the course material as well as live broadcasts and recordings of presentations training materials, workshops and scientific conferences. The technical structure / system consisting of four independent servers:

- Content Management System (CMS-EM) • Database Server (DBS)
- Broadcast Server/Video Server • Multi-Video Connection Server (MCU)
The advantages are:

- Students can learn at their own pace and direct from their homes
- Students can review or replay conducting experiments or reading scientific lectures whenever they need a correct understanding of content
- Students with a slower pace will not hinder learning materials covering the entire group of students

5. Conclusions

Streaming the educational activities through a similar broadcasting infrastructure such as MEDIAEC presents the following scenarios:

- offer courses in various formats, registered and/or printed on various media (digital or paper), may attract a larger number of participants;
- access to recorded lectures (audio-video, audio and/or typed) is considered a positive thing in the uptake of knowledge by most actors involved in the educational act;
- the depth of knowledge can grow by allowing the access at any time.

References


http://ec.europa.eu/avpolicy/other_actions/content_online/index_en.htm