AN ALTERNATIVE APPROACH ON OPEN/DISTANCE LEARNING THROUGH WEBCASTING SYSTEM

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Abstract

The aim of this project is to study the description and the presentation of an original Webcasting system. What makes it original is that during teaching it has the functions as a live Webcasting. While the course is being taught it is recorded with audience several (university) students who are active through the teacher-student interactivity. With this way it covers, at a large degree, the requirements that a live Webcasting covers. At the reception it works as an on-demand Webcasting and therefore it doesn't have the requirements of a live but the requirements of an on-demand. (sychronise of teacher-student). Such a system is placed within the bounds of distance e-learning. The project is divided in the following sections: distance e-learning, technological requirements for the realization of the original Webcasting, description of the execution process and, lastly, evaluation. More specifically, in the first section, we will analyze the categories of distance e-learning and we will distinguish the steps of the Webcasting process. In the second sections, we will describe the software and hardware that is necessary for the realization of that Webcasting. In the third section, we will point out the details of the execution and in the final section, we will examine the objectives and whether they were achieved. Moreover, we will attempt to specify the points in which Webcasting can benefit the learning process and those in which it cannot.

Distance e-Learning

Distance e-learning — which a few decades ago was a distant dream for the higher education in Greece — is now a reality for the Greek educational community. The creation as well as the attendance of distance courses tends to be nowadays a necessity for the contemporary Greek educational reality. At the same time though, it constitutes a particularly demanding venture which instructors and learners usually are not disposed to undertake. This already difficult venture faces a diffuse speculation concerning the creation of such lessons as well as the acceptance they will have.

Distance e-learning is a contemporary learning method which covers the same spectrum of needs as distance learning but is based on computer technology tools. Below we mention the main characteristics of distance e-learning.

- It doesn't demand the physical presence of an instructor in class.
- It doesn't force the learner to be in a specific **place**. Namely, he can attend the lesson wherever he is, providing that he has the appropriate means, such

as a computer and a connection to the Internet or the educational material in a CD.
- It doesn't impose **time** limitations. This means that the lesson can be attended any time and for as long as the learner wishes.
- The educational material, which is available on the Internet, is subject to updates, renewals and additions in order to be always compatible with the current educational needs.

The above make obvious that distance e-learning is a fast and flexible learning method which is necessary in cases such as:

- The training of persons that live at remote places and have limited time to spare.
- The constant training of the personnel of a company or the students of an educational institute in cognitive subjects with continuously evolving and renewed content or with high degree of specialization.

It results from the latter that distance e-learning is a precious tool for the process of Life Long Learning — which constitutes the continuous, life-long training of the personnel — that is imposed today due to the rapid evolution and specialization of Knowledge. Therefore, the creation of mechanisms that will provide continuous and life-long learning and training in an effective, flexible and reliable way is now a necessity. This necessity is more imperative for our country which faces many problems in the organization of the instructors' training, due to the great number of remote islands and borderlands. The computational and web technologies enable the search and development of new forms of organization of education by offering immense possibilities of direct communication and access to sources of knowledge and information. They mostly help though in the exploitation and further enhancement of the benefits of distance learning.

There are two types of e-learning:

- **Asynchronous learning**: In this case, there is no direct (synchronous) communication between the instructor and the learner during the learning process. The instructor can prepare the educational material and save it in an electronic medium (LMS); then, the learner can use this educational material whenever and wherever he wants.

- **Synchronous learning**: In this case, the learner participates in the learning process in real time through an intranet or Internet. This kind of instruction has many things in common with the instruction in a classroom, with the difference that, in this case, both the instructor and the learner find themselves in a virtual classroom with no geographical limits. The use of

this type of e-learning technology gives the instructor the possibility to teach anywhere in the world. Moreover, the lesson can be recorded in electronic form and repeated later if necessary. The means of communication being used is chat, virtual classrooms and application sharing.

The Webcast systems that we are about to analyze use the asynchronous learning, which may not require the simultaneous presence of the instructor and the learner but needs very good planning of each unit in order to satisfy the educational needs. This planning must be characterized by dynamic function and flexibility so as to be able to meet all possible needs.

Distance e-learning can possibly:

- constitute an exclusive learning method or
- play a supportive and supplementary role to the conventional forms of instruction such as the traditional teaching model in a classroom. The combination of methods is called **blended learning**.

Technological Requirements

In this part, we will describe the technological requirements for the creation and broadcast of lectures via Internet (webcasting).

Since the broadcast that we are about to describe is asynchronous, it won't be necessary to refer to protocols for the combined use of sound and picture that support live broadcasts (H.32x). The material we will need is divided in two categories: the Software and the Hardware.

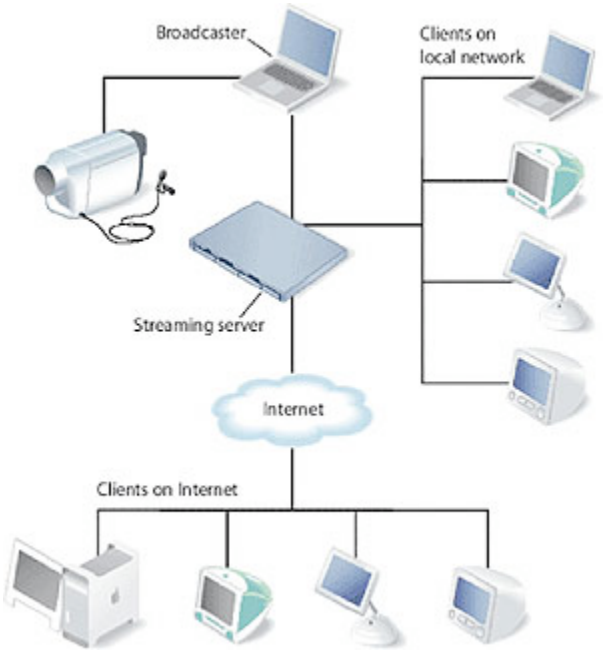
The hardware we will need is:

- cameras for the insertion of picture (audience, speaker, Document Camera)
- microphones for the insertion of sound ("gun" type, earphones)

Figure 1: Portable device

The above may be replaced by a portable device of sound and picture receiving and saving, which can also be used for live broadcasts. Then it would be desirable to have a sound and picture mixer in order to edit them; otherwise, since the broadcast will be asynchronous, we can use a program. In the next step, we do the broadcasting, for the realization of which we will need a video on demand server – Streaming Server (Helix).

Figure 2: Webcast network



We can choose the software that we will use from a wide range of programs. For instance, we can use “Windows movie maker” or “Adobe premiere pro” or even “Camtasia Studio” for the digitization and the editing, “Microsoft Producer” for the synchronization of the slides and “DVD Adobe Encore” for the production. These are some of the programs that have been used and can cover at least the basic needs with satisfactory results.

Description of the Execution Process of a Webcasting System

The process is divided in the following parts:

- Planning and production of the educational material
- Selection of the assistive technological tools
- Combination and editing of the educational material using the technological tools
- Upload of the modified material to the servers
- Updates / modifications of the material (feedback)

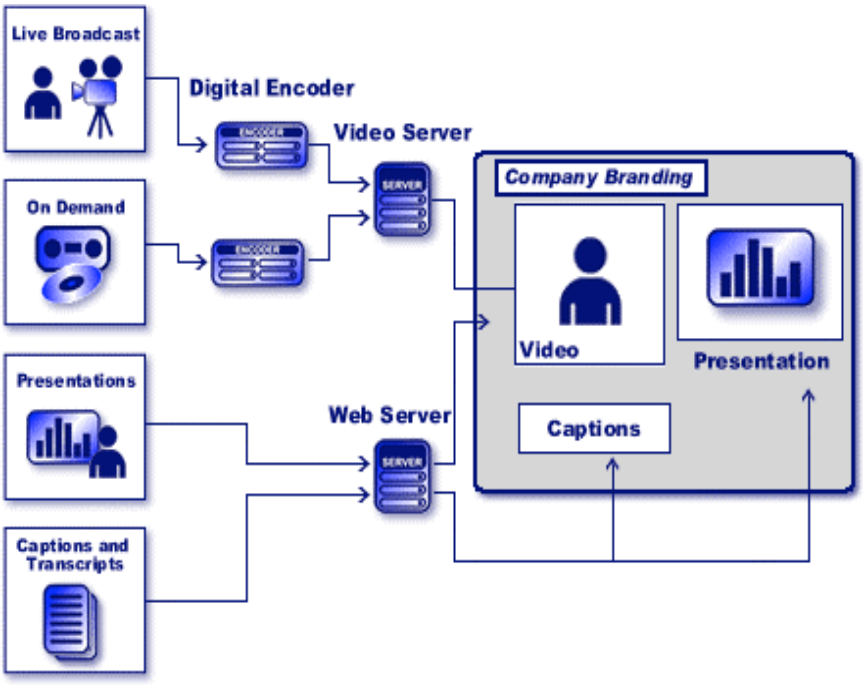
Planning and Production of the Educational Material

Some of the most important issues regarding the implementation of distance learning are the planning and the production of the educational/instructive material. The particularity of distance learning, concerning the educational/ instructive material, is that it constitutes the main lever of the teaching process. If in the conventional educational system the one who teaches is the instructor and the educational material supports his task, in distance learning the one who teaches is the educational material. Therefore, there is need of a very careful planning of the educational material since it plays the most important role in the learning process.

Selection of the Assistive Technological Tools

In this part, we take advantage of the possibilities of new technologies. Here, in parallel to the basic video of the lesson, we can insert comments, tables, presentations as well as many other forms of helpful material in order to enrich the lecture of each module.

Figure 3: Use of broadcast tools



Combination and Editing of the Educational Material Using the Technological Tools

This part is directly related to the previous one since the combination that will be done depends on the selection of the technological tools. Namely, this part is about the matching of the tools to the instructive needs (comprehension, assimilation).

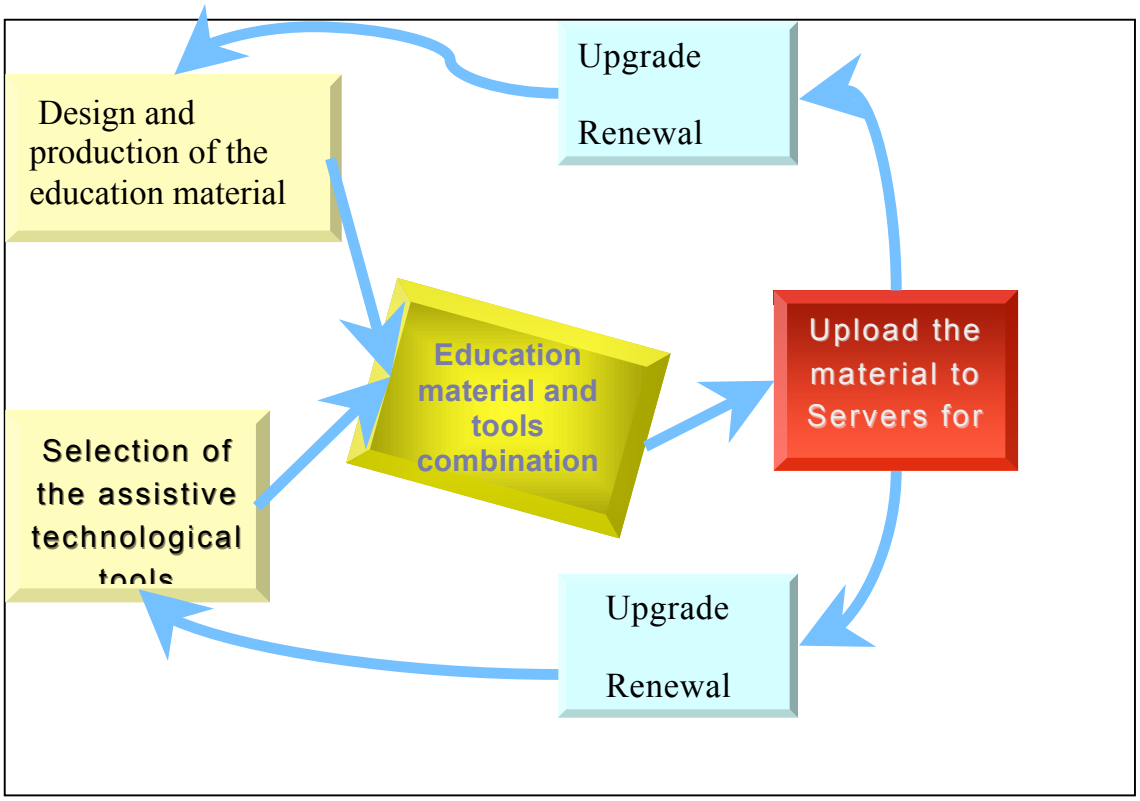
Upload of the Modified Material to the Servers

In this part, we upload the material to local, net or internet servers or, more specifically, Webcasting servers which can then provide the material anytime to anyone who has the right of use (client).

Updates/modifications of the Material (Feedback)

The educational material which is available on the Internet is subject to updates, renewals and additions in order to be always compatible with the current educational needs.

The following outline shows us the whole execution process of a Webcasting system.



Evaluation

In this part, we have to answer a crucial question — that is whether the asynchronous Webcasting method can meet the educational needs. Many problems arise in the case of education via Internet, for instance:

- It is difficult for the users to find information that interests them as well as relative information given that they have access to infinite websites.
- Even if they find relevant information or websites, it is difficult to control automatically and notice when each website changes so the users spend too much time on browsing a small number of websites in order to find updated information.

However, we overcome the problem of the size of the Internet and the difficulty of its management and we focus on the possibility of comprehension of the material by the learners. Therefore, we have to study the process of knowledge gain.

Various socio-biological theories (Ornstein, 1991) have studied the human brain and its capacity of reacting in a certain way to specific stimulants. These stimulants may be the features of an object such as the size, the form, the speed and the color. These features may be applied in a website; for instance in a text, in

a graphic and in animated pictures. The right stimulant will promote learning so we should use the right stimulant for the comprehension of the respective subject. Namely, we have to pay attention to the selection of the appropriate teaching method for each subject.

LIVE	WEBCASTS ON-DEMAND	"LIVE TEACHING" - ON DEMAND ATTENDANCE
Interactivity (instant answer of questions)	non interactivity (unanswered questions)	some form of interactivity due to the common questions that the audience and each student, that tries to study with the material, have
need to synchronize teacher and student	no need to synchronize	no need to synchronize
need live broadcast	upload and download with the use of web - database	upload and download with the use of web - database

In the presentation series executed with Webcast, there were observed certain problems (questions not answered in the right moment and then forgotten) which however didn't appear in all the units but only in those where interactivity was greatly necessary.

Steps of Utilization (2 different paths)

1) Small lectures	1) Normal size lectures
2) Clarified questions for each lecture	2) Clarified questions for each lecture
3) The presentation will include lectures and questions together	3) The presentation will include lectures separately from questions

Therefore, the conclusion is that with the use of Webcasts in teaching with this new model live-teaching but on demand attendance the system's performance can be increased a lot. For instance, I videotape a teaching having a number of students, the students express their questions on critical points, these questions could on a great extent cover the questions than the students that watch asynchronous have. The system's increase percentage, though, depends mostly from the way that the method is utilized (for instance how many and which students will be used).

After research use of this original Webcast we observed that the system's performance depends on:

- The number of students that form the audience.
- The selection of the suitable audience based on the group which you aim to teach (e.g., graduates, undergraduates, without knowledge of the subject).
- Its usage at appropriate to such kind of educational units.

Summarizing, the use of Webcasts in teaching is a valuable tool which can maximize its reduction through a good schedule, its usage in appropriate units and in some points with the help of the traditional way of teaching (blended learning) and with the use of new methods like the one we presented, that will aim to increase the student's level of understanding.

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