

COMBINATION OF EDUCATION TECHNOLOGIES FOR THE ENHANCEMENT OF AN ASYNCHRONOUS SYSTEM

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Abstract

In this paper we will present an asynchronous educational system, with navel point an enhanced form of Webcast. This enhanced Webcast form is broadcasted through a webpage, which has been appropriately modulated with Hypertext, Java-Applets and Internet services and application such as forum, portals, e-libraries, blogs, etc. This combination of technological tools will be implemented according to the modern learning theories and the didactical rules of each teaching material. So, we will have greater efficiency of the asynchronous system.

Introduction

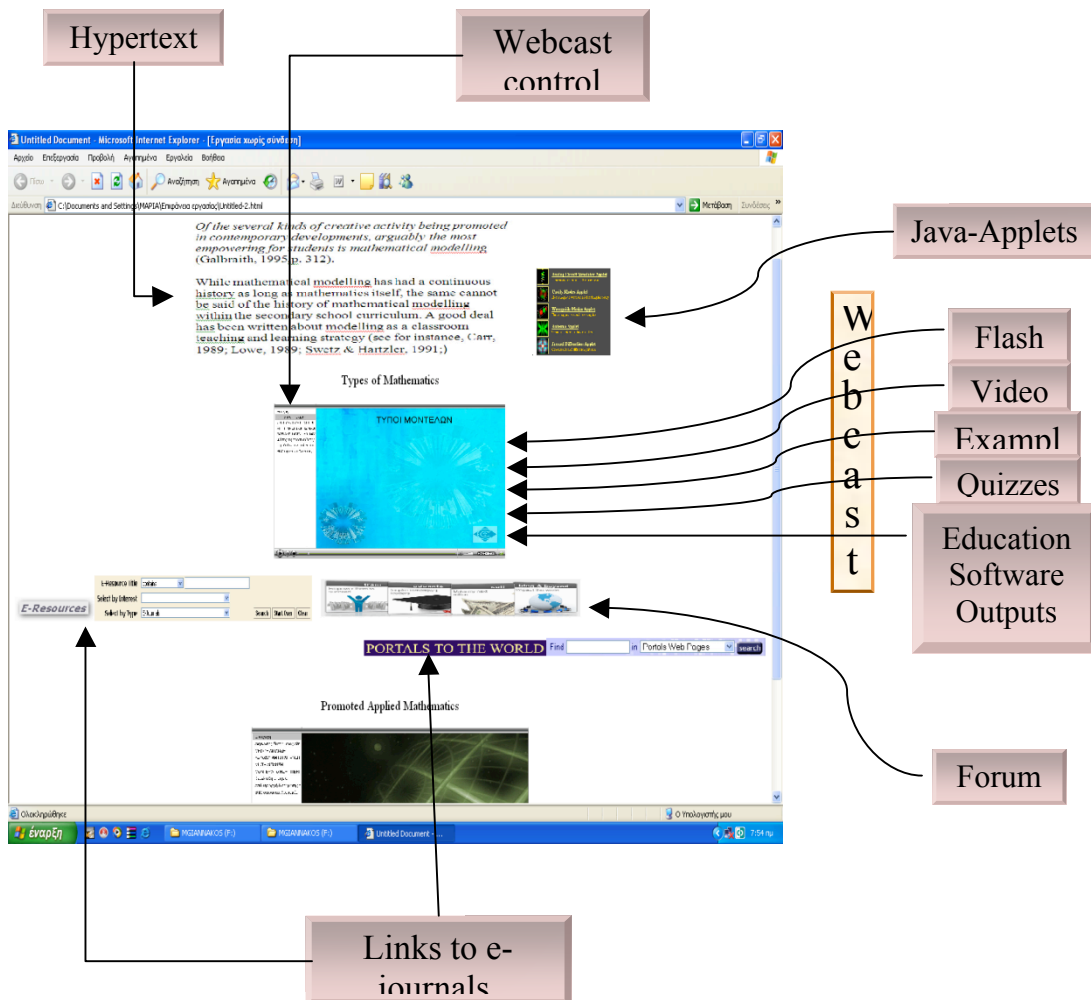
In the 21st century, long distance education is developing with great rhythms. An element of this development is the mass amount of software and systems (e-class) that have been produced for education purposes. The media that has been produced can in several occasions be proven (Gillies, 2003) as useful tools so for the teacher and also for the student. By combining technologies such as Flash, Java-Applets, portals, e-journals, e-libraries and educational software (Baralis, Malafekas, Rappos, & Vlamos, 2000), in the context of creating Webcast and on a webpage, on which we will incorporate the Webcast, we make the system friendlier and more efficient.

System Presentation

As we have mentioned our system consists of a webpage, with navel point an enhanced Webcast and at the same time it will have other capabilities, like Java applications, connections on the Web in selected applications and services. By looking at the interface (Figure 1) we can easily see the format that our system will have.

As we can see clearly from our figure (Figure 1), the system will be user friendly (Arkün & Akkoyunlu, 2008); it doesn't require any special computer skills from the user. We also suggest that the study of this educational material be linear, exactly like the creator has designed it. Of course, the system isn't restricted only to the study of the material the Webcast provides, because of the other media that are been utilised, mainly through the Web.

Figure 1: System's Interface



Research for the Didactical Needs of the Educational Material

The first step we should undertake is to select the material that we are going to teach with the Webcast. Then we should elaborate the particularities and the needs of this material (mathematics, need for representation) and find the methods that will enable us to cover these needs (Bruner, 1960).

Furthermore, the creation (of the educational material) that we present is based on the modern aspects of Discovery Learning, the theory of constructivism and on features from the theories (Cobb, Von Glasersfeld, & Steffe, 1988) about the use of the computer as a cognitive tool or a mind tool.

Research on the Students

To increase the Webcast's efficiency the student group that the Webcast applies to, should be a cohesive group. Furthermore, the conduction of a research on the "a priori" knowledge, experiences and the cognitive structures of the students would help to specify the problems they are facing and could help the creation of the material (Deliyannis, Floros, Vlamos, & Tsiridou, 2008) and this would result to an efficiency increase on the particular student group.

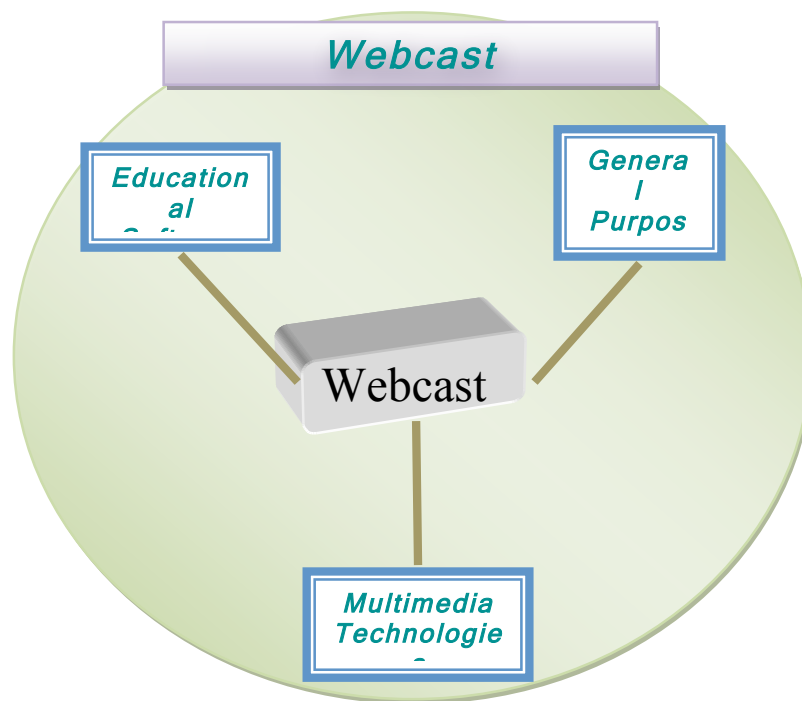
Webcast Creation

The core of our system is the Webcast and so we will start the implementation with its creation, which will revolve on the educational needs, as they have been studied in the previous step.

Webcast Enhancement

With the creation of a primary form of Webcast we must choose and implement the applications that we are going to inset into it. This can easily be accomplished when the application form is compatible with the Webcast (Fly, Awf, Avi, etc.) and the incorporation can be easily achieved with an image processing programme or a Webcast creation programme. If the form is not compatible we can use a Screen Capture programme, although this fact is rare to occur because most Webcast creation programmes have the ability to incorporate almost all the applications on the Webcast. In the case we have created interactive material we have to pay attention to the Webcast's final form so it will also support interactiveness (Fly, Swf). To facilitate us during the Webcast enhancement we created three categories, in which we have divided the technological tools that contribute to the enhancement (Figure 2).

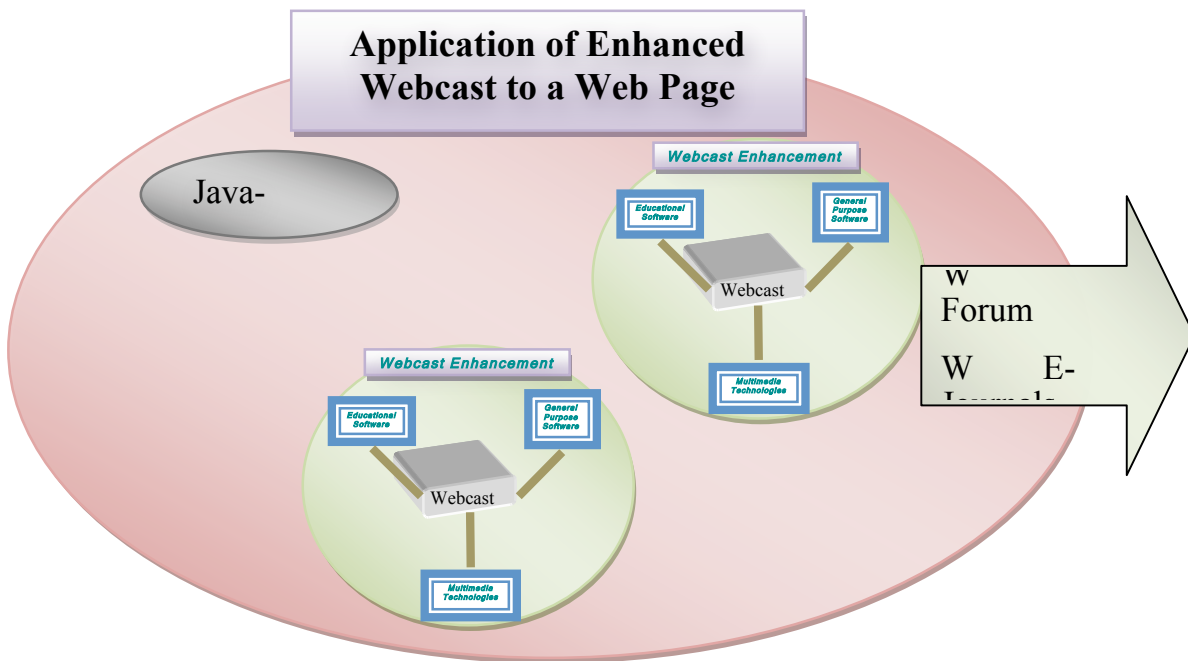
Figure 2: Webcast Enhancement



Application of Enhanced Webcast to a Web Page

After we create the enhanced forms of Webcast, we will create a Web Page, which will broadcast the Webcast and guide the student's study and comprehension of the material through the pre-selected Java applications and the instructive Hypertext. In addition, the internet applications (e-libraries, e-journals, blogs, forums) provide the student with the ability to study further more, to communicate and discuss on subjects referring to the Webcast material. Below we can see the schematic representation of the introduction of enhanced Webcast to the Web Page.

Figure 3: Application of Enhanced Webcast to a Web Page



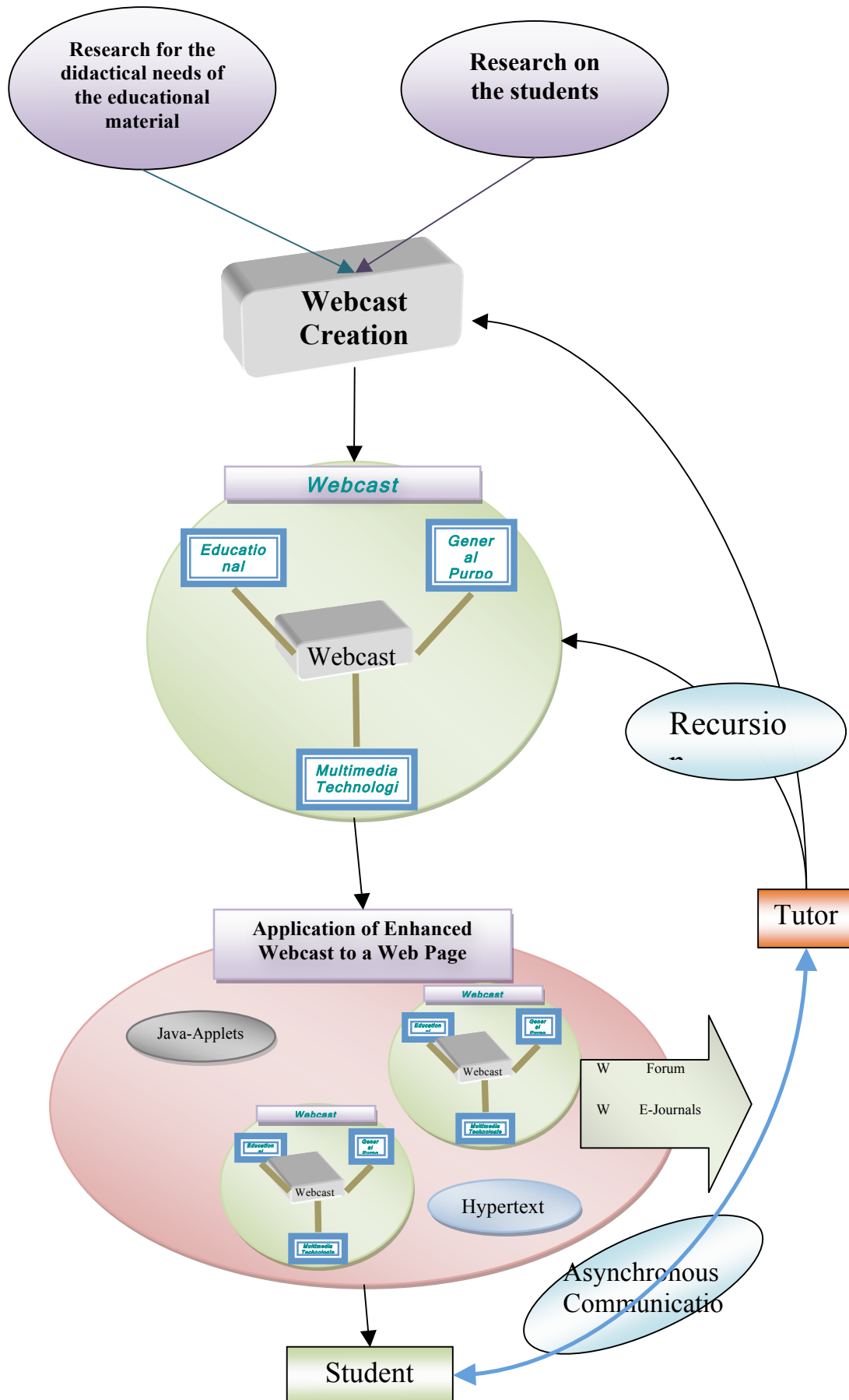
Integrated System

We have analysed all the creation steps of the recommended system. Now, we will see all of them in one structure, in which can distinguish the steps of creation and also the role that the tutor plays on the smooth functioning and the life of the system. This system has been applied for the case study of mathematical modelling procedures. We have used it in order to demonstrate how to construct Webcasts in various applications, more specifically in Bioinformatics (Panayotopoulos & Vlamos, 2008), Thermodynamics (Kontogeorgis, Vlamos, & Bilchev, 1999), Reaction-Diffusion Processes (Vlamos, 2003) and Heat Conduction (Vlamos, 1999).

As we can see the system is supplied with information about the teaching material and the group we aim to watch the Webcast. Then, having this information in mind a primary form of Webcast is created (Giannakos, 2008). At the next step the Webcast is being enhanced with the multimedia application. We then apply the Webcast to the specially modulated Web Page, from where the student uses the material and also has an asynchronous communication with the tutor. Then the

tutor in his turn, with this asynchronous communication with the student receives information about the success or failure of the material; and with this way the material by usage can be improved and become better.

Figure 4: Integrated System



Conclusion

Our objective with this project is to present a new form of technological material, which by combining the potentials of many technological tools it will offer new possibilities in this department. The form of this technological material is at the evaluation phase and the earliest results have shown positive elements in regard to the acceptance point from the students. This primary form of this educational material is considered to be used as the base for a future improved edition, which will try to cover some of the needs in education.

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