
eLearning Processes Models

Introduction

Internet based education is a challenge to traditional educational techniques. However the variety of eLearning technologies is overwhelming and the educator must choose between the various models that are available in the market. He must be aware of the differences between models; the several design possibilities and who the participants in the decision process are. In this article we present a short introduction to the subject.

Difficulties in Choosing Models

The confusion is brought on by the large number of provocative new technologies and appealing philosophies that are being promoted..

Shneiderman et al., 1998

The preponderance of education technologies available today creates difficulties and confusion regarding the manner of using and integrating them. In addition, there are many pedagogic philosophies connected to the possible applications of using technology. Among these philosophies are: the distance-learning theories, which decrease the need of moving from place to place by using synchronous and asynchronous communication; the active learning and inquiry-based education, which deals in problem solving also by using a computer as an accessory; the collaborative and cooperative learning theory which deals in building up knowledge through group interaction; computer-guided self-learning, dealing with learning while using and receiving feedback from a computer.

There also are other considerations involved in the process, including the continuous desire to improve the “quality of education”, and on the other hand the desire to lower the costs involved in the educational. There are those who see potential in the possibility of maintaining a distance-learning process for lowering the

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costs involved in the learning process, while others perceive the combination of collaborative and cooperative studying as a potential for raising the learning level. Others yet erroneously assume that it would be possible to forego the teacher in the learning process and make do with self-learning as a substitute.

Another aspect is the attempt to choose a particular model as the right one, and prefer it to others. This attempt originates with holders of managerial positions and with interested commercial companies who try to promote a single model in order to achieve a single solution. In reality, several models and several combinations of models will operate concurrently.

At the higher level of dealing with models, the question arises regarding the general learning theory that we try to apply when discussing eLearning. There is an argument that a new learning theory will be formulated, and will be adapted to learning in a computer-communications, information-rich environment. eLearning deals more with goals that should be achieved than with how to achieve them, and eLearning is more project-based while the products are not predefined. In addition the question arises whether there is a need for curriculum-based learning or is it possible, due to the immense volume of information, to enable several alternatives and freedom of choice.

The students' and teachers' motivation for learning in a computer-communications framework is an important parameter that must be taken into consideration in planning and conducting the model. Therefore, it is very important to adapt the model being tried out to the target population and the prior background and experience it has in eLearning. In addition, it is important to make the course as "human" as possible, by integrated physical meetings with the teacher, to the extent possible, transmitting photographs of the participants, and holding conference calls. Due to the high rate of dropouts from distance-learning frameworks, it is very important to take into account the level of motivation and the chances of success of a given model for a given target populations over other considerations. Moreover, there is great importance in creating high motivation throughout the learning process, and in planning the course primarily according to principles that enhance motivation among students.

Parameters for Determining Models for the Computer Communications Media

Some of the course material and teaching techniques are so perfectly matched to the characteristics of network learning that once an educator has tried it, she or he will not want to be without it.

Harasim et al., 1995

eLearning frameworks may contain a wide variety of subjects, including some which at first glance do not seem appropriate for the computer communications media. The real question is not whether the course can be given using the computer-communications media, but rather what is the most appropriate manner and what is the most correct combination of the different media in order to achieve the course's aims. Data that should be taken into account in order to reach such a decision include the geographic spread of the students, the availability of computers and of connections to the communications network, the number of students in the group, and more.

The relative advantages of computer communications, which should be taken into consideration when planning the course, are the ability to develop joint learning by the students, conduct lengthy discussions regarding several subjects, enabling joint work on a document or an essay, facilitating use of an expensive resource while dividing the time among the users, enabling integration of tools which are on the learner's personal computer, such as an electronic spreadsheet or presentations, into the learning process.

The ability of the eLearning environment to adapt itself well to different styles of learning is a subject that must be examined carefully. The prevalent argument is that the eLearning environment is able to adapt itself individually to different learning styles, which exist within a group of learners, which is harder to achieve in the traditional environment.

Combining different media, while taking into account the limitations inherent to each medium, can help construct a course that integrates the best of each medium,

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and enables an integration of traditional learning in the classroom together with using the computer communications medium for discussion and elaboration. Integration of video- and audio-media that is transmitted to the student on appropriate storage devices together with eLearning, which emphasizes the discussion and writing aspect.

Participants in Choosing the Model

Choosing the model and bringing it into effect also depends on the participation of people in certain positions who are connected to the administrative and educational aspects of the learning process. The model, therefore, is a compromise derived also from the collection of restrictions and demands that these people raise.

Administrators

It seems that they are usually the most interested in integrating eLearning into the institutions to which they are responsible. Problems of over-population or shortage of classrooms in some of the institutions, as well as the desire to achieve a higher financial cost-utility rate, motivates them to examine the integration of eLearning. Another point is the rough competition developing between the higher education institutions located in different parts of the world, which now, thanks to eLearning, can approach any student, regardless of physical location.

On the other hand, they face problems such as: how to carry out an evaluation of the teacher's teaching quality in the computer communications medium, the amount of time the teacher must invest in the eLearning environment becomes a function of the number of students taking a particular course, which makes popular courses expensive where they once were profitable.

Teachers

The teachers are central participants in the process of eLearning's entering the education institutions; their disagreement and objections to the process prevent penetration and implementation of eLearning processes. Some of them harbor a worry that the eLearning environments will cause the replacement of the teacher's position, where, for example, one teacher accompanied by many assistants will replace several teachers. Others, of course, shy away from using technology and

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from the absence of face-to-face interaction with their students. The lack of enthusiasm and the difficulties are greater in departments where the familiarity with technology is lower, compared with those departments that are more familiar with technology.

The time flexibility, which the various eLearning models create, poses a real difficulty for some of the teachers. Their desire to limit the quantity and duration of the interaction with the students to fixed time frames conflicts to a certain degree with eLearning process.

Web Content Developers

The complexity of the content creating tools in the eLearning environment, as well as the absence of available local tools which enable the teacher to create the contents on his PC and transfer them in a simple manner to the network, are an acute problem which obstructs creating the contents by the teachers, and which must be addressed.

Shifting to the WWW environment, together with the progress of the swift technology, requires adept people to develop the computer communications courses. The teachers cannot be counted on to be those who will perform the technical work involved in developing the courses, due to the required specific expertise. Existing solutions may in part be expensive and include outsourcing of the process to an external body, setting up an internal unit to perform the work or employing the institution's students to perform the work. In any event, a specific, resource-consuming, addressing of the issue is required.

eLearning Models

Adjunct Model

This model is based on continuing the traditional learning process together with capabilities of communication between the learners and the teacher beyond school hours. Using computer communications media enables holding discussions, handing in exercises, carrying out collaborative learning among learners, and transmitting information from the teacher to the learners.

Use of the Adjunct Model is usually optional for the learners, but is sometimes integrated into the curriculum, and the learner even receives credits for his or her

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participation. Using the Adjunct Model constitutes an enrichment of traditional learning processes, and is also an introduction to the process of using computer-communications media for teaching purposes. This is in fact the most common model in the world, and as early as the seventies, use was made of it by integrated e-mail into the traditional learning process.

The possibilities embodied in the Internet enable teachers to give students tasks based on the vastness of the information included on the Web, usage of resources available in the network, and usage of authentic and innovative sources as regards the material studied in the course.

Mixed Model

In the Mixed Model, use of eLearning is an integral part of the curriculum and of the student's assessment. There are several possibilities of utilizing the Mixed Model, one of which is to use the network for the purpose of simulation and role-playing, or for mutual assessment of each other's work. In addition, integrating transmitting whole sections of the course online together with other sections that are given in the traditional fashion.

Online Model

In the Online Model, most of the interaction in the course takes place through use of the communications network and the computer. Using the computer mediated communications medium does not contradict using other media such as distributing video or audiocassettes, or using auxiliary literature. Face to face meetings for presenting the course and learning how to use computer communications are also part of framework of the Online Model course. As in other Models reviewed, in the Online Model, too, using collaborative learning is part of the way material is transmitted in the course. The tasks in the course are usually transmitted to groups of several students, which encourage the need for pooling resources among the group members. Experience gathered from computer mediated communications courses shows that the students contribute to most of the messages transmitted in the study groups, the students usually take an active part in discussions, and tend to respond to a message passed around the study group and to discourse the raised issues; the students also tend to base their answers on information other students have transmitted as part of the discussion. In this eLearning model, the probability of situations where a small number of students set the pace or are the sole participants

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in the discussions is small, and this arises mainly from each student's ability to freely express him or herself at the same time as others and with no time restraints.

Asynchronous vs. Synchronous

In traditional learning, there are different levels of combining synchronous and asynchronous learning. Anything from meetings between the teacher and the students in the classroom, through working in groups outside the classroom and the teacher's working with part of the students, to individual work by the students and working with a library. These situations reflect the shift from full synchronous asynchronous learning.

The desire to integrate synchronous learning into eLearning processes involves restrictions which do not exist in traditional learning, such as the need of a larger communications Bandwidth than customarily used, which makes the learning process more expensive, a higher technological complexity, which includes more sophisticated software and hardware than is customarily used, as well as problems of personal communications between the participants due to the difficulties caused by the asynchronous media (refresh time problems, sound- and picture-quality problems, *etc.*) Therefore, it is not recommended to make much use of synchronous communication in eLearning.

Synchronous learning also requires time and sometimes place regularity from the participants, due to the need to be near appropriate transmitting and reception equipment, which causes a problem in cases of students who are widely spread out in different time zones. On the other hand, synchronous learning enhances the feeling of estrangement that might be caused by asynchronous communication, and enhances the sense of community among the participants.