

EMPLOYMENT OF ASYNCHRONOUS/ SYNCHRONOUS TECHNOLOGY FOR MASTER DEGREE IN QUALITY MANAGEMENT

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Abstract: Master education in Quality Management at "Petru Maior" University in Târgu-Mureş has been transformed by use of interactive distance learning. The model for interactive distance learning is a natural extension of its traditional educational environment (regular courses face to face) and will form the foundation for the future development of professional and distance education at the University.

In this paper is presented an introduction to the evolution of the distance learning model, a description of the techniques, technologies and design strategies involved in developing the synchronous and asynchronous components of a course, and an overview of implementation issues.

1. INTRODUCTION

"Petru Maior" University has recently adopted an interactive distance learning model that is a natural extension of the traditional face to face learning environment [3,4]. This model combines both asynchronous and synchronous learning and connects students, teachers and educational content in online learning communities [7].

In general, about 80% of a student's time is spent for study of online materials (that can be also read off line after unloading from internet) and about 20% in interactive, synchronous learning sessions with the teacher and other students. These percentages are of course flexible and the optimal allocation of time to synchronous and asynchronous components is a function of several variables including the nature of the course content, teachers personality, students participation etc.

2. EVOLUTION OF THE ASYNCHRONOUS/ SYNCHRONOUS TECHNOLOGY

The main drawback of distance learning courses is the lack of interaction. Starting in the early '80s, a number of researchers began to add asynchronous computer communications and synchronous interaction to traditional distance learning technologies [2]. Unfortunately, these technologies were often extremely expensive and technically challenging to implement. While the majority of a student's time is spent in asynchronous activities, the synchronous portion of a distance learning course is crucially important.

The learning outcomes and student retention rates in purely asynchronous, based courses are often disappointing for all age groups, and especially for younger learners.

From this point of view, a design strategy for distance learning courses is to create the social construction of an interactive, face-to-face classroom and capture all the benefits of a hands-on learning environment. The main technology we are using to implement the synchronous portion of our distance learning courses is the Lotus LearningSpace Forum 5.0 software system for interactive distance learning.

A Lotus LearningSpace Forum 5.0 session begins with the students logging on to the Forum server via Internet Explorer or Netscape. Once logged on, students are connected to each other and to the teacher in a virtual studio classroom. Depending on student location and available technology, the course might utilize Lotus LearningSpace Forum 5.0 digital voice and video capabilities for communication. Using Lotus LearningSpace Forum 5.0, the teacher can employ several tools to emulate the proven

techniques of interactive teaching that are so effective in the face-to-face classroom. The instructor might begin by asking if there are any questions on homework, reading assignments or group projects.

As an aid to answering student questions, the instructor can activate the Lotus LearningSpace Forum 5.0 white board and share stored graphics or solve analytic problems interactively by writing text and equations on the white board that appear on all of the student screens. The instructor can also bring up a Question and Answer tool that allows real time interactive quizzing and polling of the online students.

Following the format of a typical Studio class, the instructor might then present a brief mini-lecture on new content, sharing PowerPoint slides and multimedia, or using synchronized web-browsing to take the students to web-sites with course-related content.

An extremely appreciated tool for interactive distance learning is the applications sharing capability of Lotus LearningSpace Forum 5.0. Here the instructor can run any Windows-based software program on his own computer and pass control over to any of the students. The students can then lead the class in running an interactive simulation or demonstration, or present a group project.

3. ASYNCHRONOUS TECHNOLOGY

By definition, the asynchronous portion of our distance model is not coordinated in space or time so students are studying "on their own". Teachers do not put structure to this learning, they only indicate to study module number 6 in the following period of time of two weeks. The asynchronous portion of the distance learning technology looks more like the traditional classroom meeting.

One future strategy for asynchronous technology is to digitize the normal classroom activities and make them available to download from internet via streaming video. This version of videotaping may work well for some content and some students.

The other extreme are teachers that emulate independent study, and may give the student a copy of slides used in-class presentation and tell them to go to it. Independent study is good, but misses the input and feedback from teacher and other learners.

Thinking at the two extremes we have presented above, it is very evident that the structure and design of the asynchronous learning experience is crucial.

We have revisited some important concepts of learning, and we have adopted a design strategy for the distance learning program. It is an Interactive Distributed Learning (IDL) Cycle used at Rensselaer Polytechnic Institute USA [2] based on the works [1, 5, 6], that is applicable to any asynchronous type of course.

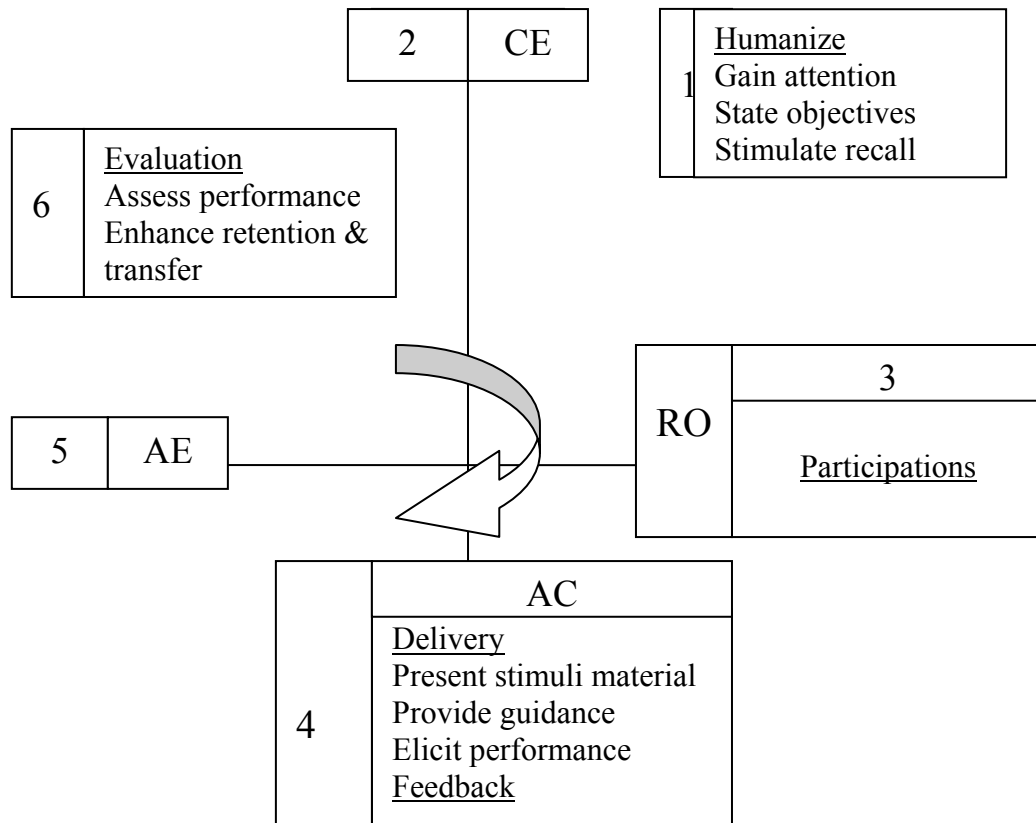


Figure 1: Interactive Distributed Learning Cycle

Figure 1 shows the cyclic nature of the design, indicating that all elements should be considered for each and every learning experience, regardless of length [3,4].

- STEP 1: The Interactive Distance Learning (IDL) Cycle starts with an introduction of the objectives and a statement of the necessary bibliographic material for the course module. It tries to "humanize" the learning environment by making the student feel a part of a learning community.
- STEP 2: Following the motivational introduction, students are exposed to a concrete example (Concrete Experience CE) of what they are about to study.
- STEP 3: Students are then asked to think about this experience (Reflective Observation RO) and share those thoughts with other students. This is all done asynchronously.
- STEP 4: Abstract Conceptualization (AC) presents principles or theories and requires feedback on performance.
- STEP 5: Active Experimentation (AE) is an activity that requires the student to go beyond regurgitating the content presented in Step 4.
- STEP 6: The student is prepared to transfer this new knowledge to future learning experiences after Evaluation.

This Cycle serves as a template for the asynchronous learning experience. Teachers can implement this cycle in any number of ways, depending on their specificity.

The learning modules lack personality, so it needs to be humanized. Among other things, we need to motivate students, orientate them and give them direction. Students seldom read a lot of text on the web. Hence, we need something more than text to add this personality.

One possibility could be to use a second window with streaming video just near the text window. It gives the illusion of the instructor talking directly to the learner. The effect

adds warmth to the learner's experience. Video streaming can be used at major transition points. Elsewhere in the module, streaming audio can be used to provide direction to the learner as well as support and encouragement.

As a conclusion we consider that there is no single way to implement the cycle and also, asynchronous learning is not for everyone. Much depends on the learner's maturity and motivation.

4. IMPLEMENTATION ISSUES

In the implementation of the distance learning program we have looked at different issues regarding:

- the support infrastructure that currently exists in the University for traditional courses;
- how we do transition from traditional courses to the distance learning courses;
- enhanced course development support, including instructional design support and the use of a team approach to course development;
- technical support for students;
- on-line student services: downloadable forms for admissions, on-line registration, 24 hour on-line access to individual student, registration.

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