

# Mandatory Participation in Asynchronous Learning Networks

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## Abstract

*In this paper, we report on our experiences with an asynchronous learning network (ALN) based course in higher education in which participation was not an option but a requirement. Mandatory participation in collaborative learning was the primary examination that had to be passed in order to qualify for the secondary examination, the authoring of a short essay. The evaluations show that mandatory participation as examination (MPE) is a viable format of examination for ALN based learning. The main strength of this format of examination is that it promotes active participation, which is a main ingredient in the desired learning process. Surprisingly in practice, ALN based learning with MPE was not considered beneficial for learning by the students. This is explained by the problematic shift from teacher-centered to learner-centered education and the traditional view of examination as separated from learning.*

## 1. Introduction

In making learning possible, information technology is suggested as a powerful tool (Pea 1993). Computers can “facilitate the development of knowledge building communities” (Scardamalia and Bereiter 1994), but it is important to understand the underlying pedagogical assumptions when designing IT for educational purposes (e.g., Leidner and Jarvenpaa 1995).

The term asynchronous learning network (ALN) is commonly used when referring to information technology based environments supporting teaching and learning (Hiltz and Wellman 1997). ALNs are used to enhance educational activities, and a common use of ALNs is for distributing course material and information to the students. Various types of conferencing are also provided to facilitate interaction among the participating students.

Examination is important for learning since it is well known that the way students are examined has a strong impact on their choice of strategy for studying. If students perceive that their learning will be measured in terms of reproducing facts or implementing memorized procedures, they will most likely adopt study approaches that prevent deeper understanding (Ramsden 1992). Even if good results have been achieved in one format of examination, the same students rarely perform as well if they are faced with more challenging formats of examination (Laurillard 1993). This implies that students can achieve good results in examinations, and still exhibit fundamental

misunderstandings. Traditional formats of examination in higher education have long been criticized for being destructive to the process of learning and, as a consequence of this, alternative formats for conducting examination have evolved.

Successful ALN based courses need an examination procedure that reflects the intended learning process. Often, participation is graded and term papers and other assignments are employed; however, there is very little documented and explicit research about examination in ALN, which is surprising considering the importance of examination. Some sporadic results have been reported such as Harasim (1995) in which they suggest to allocate a grade for online participation. We argue that examination is crucial for successful use of ALNs and, therefore, deserves more attention in research.

There is a need to find appropriate examination formats that are aligned with the desired learning processes in ALNs; therefore, in this paper we explore the use of “mandatory participation as examination” (MPE) in ALN based courses. We investigate the perceptions and opinions about this format of examination. The research questions raised in this paper are: Why do students prefer certain formats of examination? And, how do students find MPE in an ALN?

The remainder of this paper is organized in the following sections: First, the theoretical background to this research is given. In the next section, we discuss the motivation for, design of and evaluation of MPE in ALN. We then evaluate MPE from the perspective of the students and investigate some surprising results. Finally, we discuss the results and reach some conclusions.

## 2. Background

This section gives a brief theoretical background. The responsibility of the teacher or course designer is to “make student learning possible” (Laurillard 1993) by creating a learning environment that effectively and meaningfully supports learning. In creating such a learning environment, our understanding of education and the learning process is influenced by three main pedagogical ideas. These ideas are the grounding assumptions, i.e., “the fundamental assumptions underlying our conception of the teaching-learning process” (Duffy and Cunningham 1996, p.171) and include:

- the understanding of learning as individual construction of knowledge, i.e., constructivism (e.g., Leidner and Jarvenpaa 1995);

- the insight that both individual learning and collective learning can be supported by the group, i.e., collaborative learning (e.g., Leidner and Jarvenpaa 1993); and

- the notion of formative assessment as a complement to summative assessment (e.g., Kvale 1975; Rowntree 1977; Ramsden 1992).

These three ideas are situated in the context of asynchronous learning networks. Constructivism, collaborative learning, formative assessment and ALN are discussed further below.

## 2.1 Construction of knowledge

The model of choice in education has been, and still is, the objectivist model of learning. In this model, the dominating activity is performed by active teachers who present information to passive students through lectures and written material, such as textbooks. The objectivist model has been criticized for stimulating surface learning (O'Neil 1995) and knowledge reproduction or knowledge telling (Schank 1997), instead of knowledge building (Scardamalia and Bereiter 1993, p.37). Knowledge building is based on a constructivist world view where knowledge is constructed as it fits the individual's experience of the world (Harasim 1995). A knowledge building strategy sees the learner as an active participant, interacting with the environment. In this view, learning is "the active struggling by the learner with issues" (Duffy and Cunningham 1996, p.174).

The constructivist model stresses the crucial relationship between new experience and what is already known, since people can only understand what they have constructed themselves (Leidner and Jarvenpaa 1995). Learning develops through encounters with new information that is different enough to be stimulating, but not so alien that it cannot be assimilated into the learner's mental structures that constitute his or her present state of understanding (Watson 1996). Learning must build on the students' own knowledge, needs and interests, and the learners must be motivated to learn (Schank 1997).

## 2.2 Collaborative learning

Collaborative learning consists of activities including peer interaction, peer evaluation, and peer cooperation, with some structuring and monitoring by the teacher. The basic premise underlying collaborative learning is that learning emerges through shared understanding of multiple learners (Leidner and Jarvenpaa 1993). The essence of collaborative learning is that active participation is critical to the learning process and that learners have knowledge valuable to other learners. Learning is sharing, and the more that is shared the more that is learned. Collaborative learning assumes that students are likely to learn as much from each other as from course material or from the teacher or the tutor. Thus, collaborative learning is a creative process of articulating ideas, "having them criticized or expanded, and getting the chance to reshape them or abandon them,

all in the light of peer-discussion" (Rowntree 1995, p.207).

## 2.3 Assessment of learning and examination

Different types of assessment of learning and examination are used throughout the education system, and there are many competing, and sometimes conflicting, understandings of the meaning and purpose of assessment and examination (e.g., Kvale 1975; Rowntree 1977; Ramsden 1992). Control, however, seems to be the dominating aspect in the concept of examination and is used to determine if the students have learned, or rather remembered, what they are expected to. Understanding and analytical abilities are not really asked for in most traditional examinations. If so, the instructor would have problems in assessing the student. Both students and educators are more comfortable if answers can be considered as objectively right or wrong. In terms of the control perspective, the outcome or the product of educational activities is referred to as summative assessment.

Another perspective, formative assessment, shows that assessment can help students to learn content and educators to learn about how best to teach it. Students are a diverse population; they vary in knowledge, skills, interests, and learning styles, and require extra support to engage in unfamiliar tasks. Formative assessment uses scaffolding to provide support and accommodate diversity. Scaffolding refers to the support provided so that learners can engage in activities that would otherwise be beyond their abilities (e.g., Jackson, Stratford et al. 1996; Jackson, Krajcik et al. 1998).

Formative assessment and summative assessment have been discussed in terms of assistance and assessment. Assistance promotes learning, growth and development. Rather than measuring the minimum competencies, assistance starts with where the learner is, and then designs plans for promoting acquisition and development of new skills. In contrast, assessment implies quality control as a means for deciding whether the learner has acquired the minimum level of knowledge.

Grading and categorizing should, however, not necessarily be viewed as a "bad thing" (Ramsden 1992, p.182). Exams are stimulating to many students, and they are also efforts that are tangible. It is clear that educators face a dilemma, since they are responsible for both helping students to learn, and for grading them. Educators may encourage critical thinking when they are teaching, but often examine students according to conformity in ideas and detailed knowledge about facts. In those cases, the examination format is unaligned with the learning philosophy and will constitute a gap between strategies for learning and for assessing learning.

## 2.4 Asynchronous Learning Networks

The term asynchronous learning network (ALN) is commonly used when referring to information technology based environments supporting teaching and learning.

ALNs are built using various tools for computer mediated communication (CMC). Examples are email, bulletin boards and newsgroups, synchronous chat systems, computer conference systems, group decision support systems, and most recently, the World Wide Web (WWW) (Hiltz and Wellman 1997). In an ALN, learners form a community where they are engaged in collaborative learning at the time and place of the individual learner's convenience (Bourne, McMaster 1997). By slowing down interaction, learners are given time for reflection, and for preparing ideas, questions and comments to be shared with other learners.

### 3 Mandatory participation as examination in ALN

In this section we discuss the motivation for, design of, and implementation/evaluation of MPE in ALN.

#### 3.1 Motivation

There needs to be a balance between the pedagogical intentions, examination formats and learning environment characteristics. We believe there is a good "fit" between collaborative learning, MPE and ALN since they all focus on active participation in collaborative activities.

Collaborative learning stresses active participation in the learning process. For dialog among learners to be fruitful, learners must be engaged and share understandings, not just passively read others' contributions. Most research on ALN based collaborative learning emphasizes this (e.g., Harasim 1995, Hiltz & Wellman, 1997, Bourne 1997).

For meaningful learning to occur, examination must be congruent with the learning philosophy. Otherwise the examination procedure will promote unwanted learning strategies at the expense of those than wanted. MPE is an examination format that promotes active participation in online discussions among learners. Mandatory participation in ALN based collaborative learning offers integration between examination and learning, and supports the belief that it is not possible to separate examination from learning. ALN based courses without mandatory participation will commonly encounter problems; for instance, Almeda (1998) "found limited group interactions taking place in the absence of requiring such interaction as parts of the students' course grades."

Courses using ALNs are well suited for active participation in learning activities. A discussion of participation versus presence highlights some strengths of ALNs over traditional classrooms. To be present is simply to passively attend group sessions, and to participate is to actively contribute to group sessions. Attendance does not imply active participation and this is where traditional classrooms are weak. In a traditional classroom, learners can attend and seemingly participate. In an ALN, those who just attend are considered lurkers and they are invisible.

Participation in educational activities is more than an issue of learning and control, it is also an issue of

equality. Learners who try to participate actively can be restricted by a number of social factors (Wegerif 1998). While in traditional classrooms, learners must be allowed into the discussion before speaking, in an ALN, learners are part of the discussion at all times and there may be no mechanism for turn-taking. Compare this to 'real-time' discussions, where time is limited and many learners have difficulties in formulating and articulating contributions to a discussion under time pressure. In ALN based discussions, ideas can grow over a longer period considering that contributions are situated in a multi-topic discourse; thereby, the moment where the contribution is suitable is extended over time. In traditional classrooms, discussions change direction rapidly and the 'right' time to contribute to the discussion are momentary.

#### 3.2 Design

The idea of MPE guided the design of an ALN based course. MPE is a continuous format of examination in which students must be reasonably active throughout the course. Learning activities should be evenly spread out over the duration of the course. This way students can choose to be more active during some periods and less active in others. Examination outcome is determined by the total participation, not, as in most traditional educational settings, by large assignments at the end of the course. In order to achieve this flexibility in participation the course can be structured as thematic modules (TM).

TM is a structuring philosophy which divides the course into several self-contained, uniformly structured units (Nulden 1999). This is different from traditional modular structuring where a large topic area is divided into subtopics small enough for learners to digest and is presented in a sequence. In TM, each module introduces a separate issue or problem, like tiny islands in a vast ocean of knowledge. The individual *construction* of knowledge and of 'bridges' between the islands is accomplished through facilitated collaborative activities. Collaboration takes place in smaller groups, and facilitation is provided, thereby providing formative assessment. Every module has a well-defined beginning and ending. Since each module is self-contained, students can be more or less active in different modules as long as the total participation is 'satisfactory.'

In an ALN using MPE, each group of students has a separate area, i.e., a group folder. Within the group folder, there is one folder for each module. During a module, the group or teacher creates appropriate discussions in the current module folder. Discussions are areas for individual messages, and new messages are appended in sequence to previously posted messages. Mandatory participation as examination was evaluated in an informatics course for business administration undergraduates in Sweden.

### 3.3 Implementation

In the course design, MPE was the primary examination, which had to be passed in order to qualify for the secondary examination, the authoring of a short essay.

Each module was initialized with a two-hour lecture. The rest of the week-long module consisted of ALN based discussion in groups. An end-of-module summary by each group provided closure of the module. The course lasted 10 weeks, covered 10 modules, and was worth two credit points (i.e., 2 weeks of full-time studies). The eighty-five students were divided into five groups, each having a teaching assistant (TA) to facilitate online discussions (i.e., formative assessment). Before the course started, the course coordinator and the TAs participated in a half-day workshop to discuss the role of the TA. One of the TAs' many important responsibilities was to inform the course coordinator about students who were not participating and, consequently, not fulfilling examination requirements. The course coordinator then judged the student's effort and took full responsibility for any final decision to pass or fail the student (i.e., summative assessment). Determining a student's participation was, in some cases, difficult. Some limited tools to visualize the activities in the ALN were available to make it easier to understand each individual's level of participation, but these tools were very much in their infancy. The issue of technology support for visualizing and facilitating discussion is beyond the scope of this paper, but is an important area for future research.

## 4 Teacher centered evaluation

From the perspective of the course coordinator and the teaching assistants, mandatory participation as the primary examination criterion turned out well. This claim is supported by the course coordinator's and TAs' combined experiences; however, we encountered some problems and below we summarize our experiences from MPE in the course:

**New and different.** The contrast of learner-centered education as opposed to teacher-centered caused difficulties for students and teachers, who were clearly not used to this learning philosophy.

**Off-topic discussions.** Besides discussions of topics not related to the course, a more disturbing problem was that students sometimes posted messages to enhance the perceived participation.

**Mature and evolve.** At first, many students had difficulty seeing the point in collaborative learning, but over time, some students revised their attitude and realized that one can learn from interaction with other learners.

**Teaching assistant frustration.** Deciding when a student was not reasonably active was difficult, especially considering the lack of social context and cues available in the ALN.

## 5. Learner centered evaluation

In the previous section, we concluded that the course was successful from the perspective of the course coordinator and the teaching assistants; however, we identified a number of weak areas. We investigated MPE from the perspective of the students. In this section, we discuss the evaluation of the learners' perceptions of examination in general, and of MPE in particular. We applied the findings from a previously conducted survey (survey 1) to design the survey used to evaluate students' perception of MPE (survey 2). The second survey had some surprising results that led us to follow up with interviews in search for explanations.

### 5.1 Examination in general (survey 1)

In this section, we recapitulate the findings from a previously conducted survey. To investigate students' perceptions of assessment of learning and examination in general, we surveyed 371 students in a business school at a Swedish University. There were 192 women and 179 men, between 19 and 49 years old, with a mean age of 24 years (sd 4.5). The survey was anonymous, and students answered a series of questions about their perception of examination. Both Likert-scale based questions and open-ended questions were used. Statistical analysis was conducted and is reported elsewhere (Nulden 1999).

Students were asked what format of examination they preferred: written exam, group assignment, home assignment, longer essay, seminar, short paper or verbal exam. They were to choose only one of these seven well-established examination formats. The results showed diverse preferences for examination format with no obvious "winner." They were then asked to describe why they answered they did. The students' given motivations for preferring one type of examination were coded and categorized through interpretative content analysis (Patton 1990). Each student's answer could only belong to one category. Three categories were distinct in the motivation given by the 371 students: learning, fairness and convenience. Below examine each category in detail.

The first category was learning. Almost fifty percent of the students gave learning as a motivation. That is, the preferred format of examination was perceived as a learning activity, or an opportunity to learn. For written exams, examples include *"I have time to prepare and acquire knowledge in the way I learn best,"* and for short essays, *"it is independent, realistic and it is knowledge that really stays."* For group assignments, an example was *"it is stimulating, and the learning process is really efficient as the problems are discussed in the group."*

As a second category, fairness and equal treatment were given as motivation by one fourth of the students. For written exams, one student stated *"it has to be difficult, otherwise everybody will pass, and with very little effort."* For short papers and longer essays, fairness was described in this way: *"it shows what the individual student really knows in a realistic and fair way."*

Fairness and equal treatment were not stated as motivation by any of the students who preferred examination formats involving groups.

The third motivation category, according one fourth of the students, was convenience. Note that this does not mean convenient in the “getting a good grade easy” way. Rather, a student preferring the written exam stated that, “*written exams, as they are over in a few hours, and I can easily fit that into the rest of my life.*” A student who preferred group assignments wrote, “*I find the informal discussions and problem solving to be very efficient and practical.*” Some students prefer home assignments, since “*I can work in my own pace, and where ever I want.*”

**5.2 MPE in particular (survey 2)**

To evaluate how the students perceived MPE in the course described in section 3.3, a survey was conducted one week after the course was completed. Out of the 85 students participating in the course, those who completed the survey were a total of 61 students, 31 men and 30 women, between 20 and 38 years old, and with a mean age of 23 years (sd 4.9). The survey was designed according to the findings in Survey 1 as discussed above, i.e., the three categories: learning, fair and convenient. Figure 1 below shows the distribution of the answers to the questions: (1) is MPE an opportunity to learn; (2) is MPE a fair way to conduct an examination; and (3) is MPE convenient. The answers were distributed in a six point Likert scale ranging from 1 (absolutely not) to 6 (absolutely).

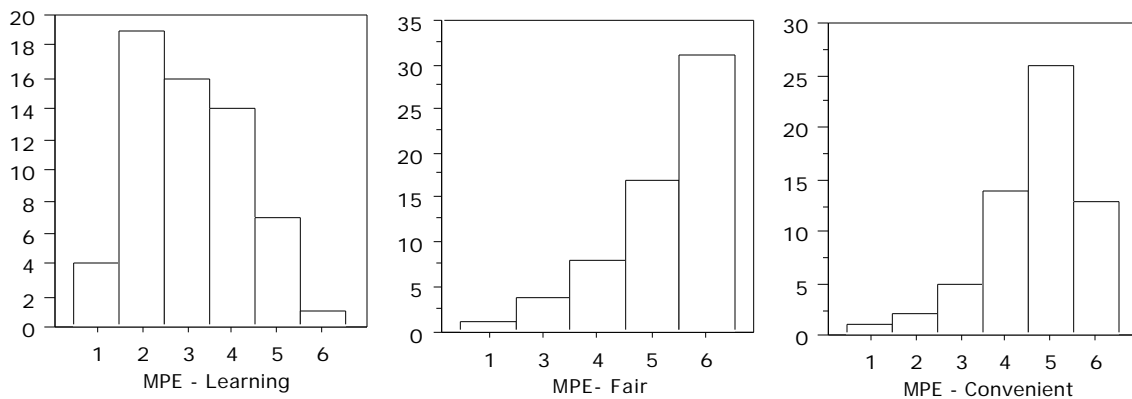


Figure 1: Students perception of mandatory participation as on form of examination

MPE was considered viable in two categories: fair and convenient. The third and perhaps most important category, "learning", received significantly lower results. To further investigate this, interviews were conducted with students who had participated in the course.

**5.3 Interviews**

That the students did not perceive interaction and dialogue with each other as learning puzzled us; therefore, we interviewed four of the students, one woman and three men. The interviews lasted approximately one hour each and employed the format of an informal discussion. In the interviews, we used Figure 1 above as a starting point and engaged the interviewees in a constructive dialogue.

Regarding reading other participants’ comments, several aspects surfaced. “*I did not read that much of what the others had written since everybody wrote the same thing every time.*” Quite the opposite was “*I read it all, but only because I wanted to write something nobody else had written.*” The length of the comments was a problem, “*some of the comments were more like essays, like one page, is that a discussion? I only read the short ones, and they were only agreeing on something in the long ones.*”

One participant was open about it, “*nobody, not even once did anybody respond to my comments in the discussion. I started to write some odd things to provoke the rest of the group, but nothing happened. It made me lose a lot of motivation. But most of all it made me sad.*” The lack of professional experience or work experience in general was also one explanation to the low rated learning. “*I don’t see how people without any experience of the profession can contribute anything to my learning? They just think and believe things.*” Authority was an issue: “*I listen to authorities, like teachers, why should I listen to people who know even less than I do?*” The control of meeting the examination criteria was also influencing the behavior of at least one of the interviewees: “*I made sure to say something new every time, in case you were monitoring us. I mean, I didn’t want to just agree on what others had said, this cannot be good for the grade.*”

The importance of the introduction lecture in the module was mentioned by all. “*It is very difficult to start a discussion, or rather it is impossible, if the lecturer gives the answer to the question. Or as it was in one module he asked a ‘yes or no’ question.*” The order of the modules matters since “*In this type of approach it is very important to have good start. I mean not necessarily the*

*topic, but try to put a hot topic and the most colorful lecturer first. The wrong person first may ruin it all.*" Students agreed, however, that the non-sequential structure of the thematic modules did not affect the discussion in a negative way. The role of the TA was discussed in the interviews. All four were certain that the "learning factor" is very dependent on the TA, who must be well prepared.

Instructions and expectations for all participants must be made clear at the start of a course. The lecturer giving the lecture and starting the module must receive clear instructions about the purpose of the lecture. More importantly, the lecturer needs help and support in designing the end of the lecture, i.e., the starting point for the ALN based discussion. *"Meeting a class for only one time, it must be very difficult to raise the right question no matter what area the lecturer is talking about."*

One respondent was unfamiliar with the novel format of the technology, asynchronous learning networks, and the structure, thematic modules. *"I have only lived in Sweden for a few years. This was the first time ever that I did something like this in an educational setting."* The other three respondents made very similar comments. One of them said, *"to me, learning is when I read a book, or when a teacher tells me what's important."* Some experienced frustration in articulating opinions: *"the first module I sat and stared at the computer for more than an hour, I had nothing to say"* and *"It is difficult to write well. When you say things it's not as important."* The intangible nature of a discussion was also raised: *"Maybe I learned something in the discussions, but what? If I read a book I know I learn something."*

The interviews can be summarized in the following three points: First, introducing new students to a course applying MPE must receive extensive attention. Second, in the same way, the person introducing each module must be thoroughly supported by the course coordinator. Third, the students admitted that working (learning) with TM/ALN and MPE was new to most students, but that as they became more familiar with the approach, they saw the potential in it.

## 6 Discussion

MPE was evaluated from two perspectives: First from a course coordinator and a teaching assistant perspective, and second from a student perspective. In this section, we discuss the findings.

The transformation from a teacher-centered to a learner-centered view of education was more difficult than expected. We assumed that resistance to and frustration with the new course structure would gradually decrease and that students would appreciate ALN based learning and MPE. This assumption was partly true since the students successively became more accustomed to their new roles and responsibilities. While students found MPE both fair and convenient, they did not find it very

beneficial for learning. There exist several possible explanations for this:

MPE is a sufficiently dramatic change that students need time to acclimate. In many ways, this was a total twist to most students in how to think about learning. Some students may still feel inclined to say: "OK, so we've had our discussion: now tell us what you want us to learn for the exam" (Rowntree 1995, p.214). Clearly, these students expect examination to be separated from the learning activity. Our own experience showed that the roles of the teachers, course coordinators and teaching assistants are different in ALN environments and require new perspectives, skills and competencies.

There was also competition between different courses and activities for the students' attention and efforts. The different courses have different examination requirements, some which are more rigorous and detailed, and others such as MPE in ALN that are relatively easy to pass. Here we encounter a difficulty since making the examination criteria more demanding or detailed could lead to strategies for surface learning, yet less demanding and controlling criteria mean that students give priority to other activities.

## 7 Conclusions

We have evaluated MPE in ALN and conclude that the approach has potential if certain problems are resolved. One issue is that students do not regard ALN based collaborative learning with MPE to be valuable from a learning standpoint. This means that MPE, which in theory should be a meaningful format of examination, is viewed in practice as a non-integrated part of the learning process, to some extent. Further research is necessary to determine how to deal with measures of participation; however, we would like to emphasize that this is not a matter of controlling the students and validating accuracy of the information posted, but establishing a climate of true and high quality peer interaction. In this respect, we conclude that promised learning outcomes do not deliver by default, despite good intentions. This is the main point of this paper, i.e., getting ALNs to work in practice requires suitable formats of examination, and this is an aspect of research on ALN that has not received sufficient attention.

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