

Using Online Discussions in a Blended Learning Course

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Abstract—The course "Teaching Methods in Information Science" is designed for senior students at the Faculty of Arts and Sciences, University of Rijeka (Croatia) and is realized by a blended learning model or a combination of a face-to-face environment and online learning. This paper covers the topic of online discussion as one of the most significant learning activities in the context of this course. Among many tasks for teachers in an online course, moderating online discussion is one of the most demanding. It requires lots of teacher's time, effort and skills. The paper describes tasks for teacher while moderating online discussions, as well as discussions initiated during the course.

Index Terms—blended learning, e-learning, online discussions, online moderating.

I. INTRODUCTION

Having recognized the multiple advantages of e-learning, teachers are particularly enthusiastic on improving the learning and teaching process by means of information and communication technology. A student is at the centre of educational process and takes responsibilities for his learning [1]. Although no longer in the foreground, teacher's significance in the new environment should not be underestimated.

Depending on the technology used during the realization, e-learning could be classified into ICT-supported education, blended learning and online learning [2].

As compared to classical education, the teacher's task appears to be markedly different. Although it may seem very simple at first sight and may be equated with publishing learning materials on the Internet, the role of a teacher is quite demanding because it requires competent development of online programs. A teacher is no longer a knowledge conveyor, but a person who will constantly provide support and guide students to accomplish learning objectives [1].

This paper covers the topic of online discussions as one of the most significant learning activities in the context of "Teaching Methods in Information Science" course designed for senior students in the undergraduate program in a Mathematics and Information Science major at the Department of Information Science at the Faculty of Arts and Sciences, University of Rijeka (Croatia). The course is realized through a blended learning model or a combination of a face-to-face environment and online learning using a proprietary learning management system (LMS) named AHyCo (Adaptive Hypermedia Courseware) [3].

The paper describes tasks for teachers while moderating online discussions, as well as discussions initiated during the course.

II. E-LEARNING

The process of development of information and communication technology (ICT) adds a completely new dimension to the role of teaching. The technology possibilities offer teachers to accomplish the new teaching paradigm.

The most accepted term today for ICT-supported education is e-learning, emphasizing that technology in education should be complemented with appropriate pedagogical methods, forms and principles, and particularly with those that encourage active learning [2].

E-learning, as a form of education, exists at several levels: as a completely independent form, but also as an integral part or an extension of "classical" education. The simplest form of e-learning involves using ICT as an aid to the classical teaching. If the classical teaching in classroom is combined with teaching assisted by the technology we are dealing with a blended (hybrid, mixed-mode) learning. E-learning could be introduced as completely online learning where students learn independently, mostly over the Internet (WWW) and without the need to be physically present within the learning environment [2].

According to [4], the most efficient teaching model is a blended approach, which combines self-paced learning, live e-learning, and face-to-face classroom learning. Blended learning is becoming an increasingly popular form of e-learning, particularly suitable for use in the process of transition from traditional forms of learning and teaching towards e-learning.

High-quality learning environments should be made up of elements of multiple theories of learning: behaviorism, cognitivism, and constructivism [5]. Although different theories complement each other and sometimes even overlap, it should be stressed out that constructivism is the most widely accepted model of learning in education today [6]. It emphasizes the student-centered model and learning where students are actively involved in the learning process that takes place in a collaborative learning environment [7]. The constructivist school recognizes learning as an active process of constructing meaning. Students do not memorize what the teacher said. Instead, they construct their own versions of the learning matter.

Initiating online discussions in forum is one of the learning activities that can help students construct their own meaning of knowledge. Taking part in such an

activity where students exchange ideas with their colleagues and moderators increases their understanding of learning matter.

Although online learning has many apparent advantages, including 24/7 delivery, personalization, interactivity, immediate feedback and online assessment [8], one of the major problems of e-learning, notably present in its online forms, is a high student drop out rate [9]. Drop out is mostly caused by insufficient competence in using technology and lack of time or motivation for learning. This issue is the main reason why today's e-learning forms are more oriented to communication, collaboration, and interactivity. Therefore, teachers play a crucial role: to plan and initiate different activities for students, to motivate them, and constantly provide help and support.

III. ONLINE DISCUSSIONS

A conversation about the subject content is a highly efficient learning method, which makes participation in online discussions particularly important. Students are requested to involve in intellectual activities, like creating messages to generate ideas, form judgments and answers, and give well-argued critical analysis of other students' posts, all in order to enhance the discussion process. Students may encounter with their own wrong conclusions, and may as well be aware of the disagreements between them and the moderators or other students. Also, they should be prepared to critiques on the posts they published.

Participation in such an activity increases students' understanding of the learning matter, memorizing skills and, therefore, develops learning process. Learning becomes more active [8]. A learning society is created through discussions. Groups of students solve problems, analyze possible solutions, start debates and build knowledge. In the process of independent learning, they help their colleagues and contribute to their learning. Thus learning becomes interactive [7].

Anderson uses the term discourse rather than discussion to highlight the focused and sustained deliberation [10].

A. Salmon's Model of Online Moderating

One of the most frequently used models for moderating online discussions in e-learning courses, based on the constructivist principle was developed by Gilly Salmon [7]. It is a five-stage model which provides tasks for teachers who are moderating discussions (moderators).

First stage of the model is *access and motivation* and focuses on the basics of using the technology involved in e-learning. Moderator should ensure that all participants successfully login to the course and find basic instructions. Sending welcome message for students in order to motivate them for learning and asking for help, if needed, is also one of the important tasks for moderator in this stage. Some students can manifest fear of technology or low self-esteem for online learning so moderators should provide individual support and encourage them for online communication.

In the stage of *online socialization*, a moderator should initiate a certain activity for "breaking the ice". That can be achieved by posting a message on the forum or creating a web page that would contain some personal information students would like to share with others. Students should

be informed that the posts and communication with other students are significant in order to get acquainted with each other and to gain confidence necessary for further cooperation [10]. Moderators should stimulate discussion topics based on the course content. Aside from formal discussions, students should be provided with a virtual place for discussion topics that have provoked their interest, but have no relation with the course.

The next stage according to Salmon is *information exchange*. The moderator's role is to moderate discussions and help students explore required information. During the stage, moderators will most likely encounter students who just browse, but do not participate, as well as students who dominate the discussion. Aside from encouraging students, moderators should periodically summarize the information and highlight their importance.

Knowledge construction is what follows. A moderator is recommended to "be in the background", so that students can independently and interactively extend their knowledge, but also to enter a discussion at the right moment by proposing ideas, indicating information resource or guiding discussions through questions. The moderator's task is to encourage critical thinking and self-evaluation.

In the last stage called *Development*, students are responsible for their own learning and need little additional support from moderator. They complete their final assignments that provide moderator information about achieving learning objectives.

B. Students' Participation Level in Online Discussions

Efficiency of online discussions depends on the number of students who take active part in it. In their article about the experience with an online master's degree at the University of Paisley, authors McLellan, Stansfield and Connolly stated two problems of moderated discussions [8]. One of them is the small number of students who take part in discussions, which prevents from developing an interesting and useful discussion. The other problem, which makes a moderator unable to determine students' progress, is, along with the small number of students, a low level of reaction. Although the assignments were clearly stated in the initial stage of the course, and considerable efforts were put into stimulating students for discussions, a level of participation often did not meet the expectations.

In the process of planning an online course, moderators should devote their attention to designing a communication, that is, discussion scenario. A low participation level of students is discouraging for moderators, as well as for students who want to participate in this form of sharing and gaining knowledge. This is why moderators should develop an effective teaching strategy [11].

Most of the online students intentionally choose not to participate in a discussion which is why an effective teaching strategy is even more required. In most cases, discussions are not evaluated, nor have little effect on the final grade, so participants devote most of their time to the assignments relevant for the evaluation. A low participation level in online discussions does not arise from the fact that students refuse to participate. It arises from the lack of time.

Although they can evaluate their knowledge through tests, students who do not participate in discussions do not receive feedback on the real acquisition of the matter, considering the fact that discussions require understanding and thinking in analytical and critical manner [8].

Aside from evaluation of students' participation in discussions, moderators may develop alternative strategies. Thus, relevant materials and additional examples can be posted to the forum which attracts students into virtual environment created for an online conversation to read and collect the materials. It may also encourage them to answer questions or to reflect on other students' viewpoints. Discussions can be divided into smaller sections which enables students to discuss a particular field. Questions can also be divided according to shorter or longer answers. This strategy takes into consideration the students' lack of time [8].

According to [10], a higher participation level is achieved when discussions are managed by the moderators who are also participants of the course.

IV. COURSE "TEACHING METHODS IN INFORMATION SCIENCE"

The course "Teaching Methods in Information Science" is designed for senior students in the undergraduate program in a Mathematics and Information Science major and introduces students as future elementary and high-school teachers to the exploitation of ICT in education and to the basics of instructional design. The course is managed by two teachers.

The course consists of the following topics:

1. Hypermedia and adaptive hypermedia
2. ICT in education (Internet, WWW in education, Computer-mediated communication (CMC) in education, online testing)
3. E-learning (blended learning, distance learning)
4. Web design
5. Web-based courseware (planning, designing, developing, and evaluating courseware)

Some learning activities previously performed f2f in class were substituted with e-learning activities where students learn independently or communicate over forums in groups using AHyCo LMS.

The lack of personal contact between teachers and students, and between students themselves, is often outlined as one of the problems of e-learning [8]. The blended model assumes that some of the classes are held in the classical (face-to-face) form what partially solves the problem. In this course, the students have the opportunity to meet each other and the teachers on several occasions. Foremost, the course starts with a two hour kick off face-to-face lecture where the teacher introduces the students with the learning objectives, discusses the most significant knowledge and tasks to be learned, and describes all learning activities.

One of the tasks of the teachers in the initial phase is to provide the students with the technical support [7]. In order to familiarize with AHyCo's tools, an introduction to the AHyCo LMS system follows. This sequence overcomes the lack of students' experience in e-learning, especially in using LMS. The students are also informed to contact their teachers by e-mail or to put a post on the forum if a problem occurs while working with the system.

Further course activities are performed in a predefined sequence according to the announced schedule. After the initial f2f stage, students individually examine the course contents which are divided into modules. AHyCo modules are composed of several lectures and online tests for self evaluation, linked with prerequisite relationships, which govern the progression through the knowledge space.

The teachers as moderators initiate and moderate online discussions on the forum based on a topic of module contents in terms of proper understanding of the materials and of creating a learning society [10]. Online discussions will be thoroughly discussed in the remainder of the paper.

In addition to posting messages to the forum, the students are individually required to write short papers (essays) which deal with the module content. These papers are then uploaded to be evaluated by the moderator using the AHyCo's online grading subsystem [13].

Each module activity ends by solving the AHyCo test in f2f environment. Moderator's task is to send feedback by e-mail which should include comments, result of the AHyCo test, points for discussion participation and the paper grade.

Students are also expected to develop a hypermedia e-learning web application or WWW courseware, with various multimedia elements, online tests and communication tools. Teachers test the acquisition of learning objectives through practical assignments. Furthermore, students learn to work in teams since the courseware is developed within the groups, each consisting of 3-5 members. The moderator helps and guides students to design a courseware, and also helps them assign tasks within group members. Students and the moderator communicate predominantly by e-mail or over forums, but, when required, all students meet the teacher in class. Group members also communicate with each other both online and f2f.

Each group evaluates the other groups' courseware according to a defined set of criteria using AHyCo grading subsystem. Courseware is evaluated both by the teacher and students from the other groups (peer-evaluated), but currently only teacher's grade is taken into account.

More about blended-learning model can be found in [13].

V. ONLINE DISCUSSIONS IN "TEACHING METHODS IN INFORMATION SCIENCE" COURSE

Discussions are highly significant for the realization of the "Teaching Methods in Information Science" course, and therefore demand a certain amount of the teachers' time and effort. Discussion topics are based on the subject matter presented in the course, so students should learn the modules' content before entering a discussion.

The number of students enrolled in the course is different according to academic years. Being a senior-year course, the number of students enrolled per term is between 10 and 25.

Teachers begin the course by welcoming the students into the online learning environment over the forum. They also present to students certain rules that need to be obeyed when posting messages. Students should be advised to write clearly and concisely and use certain forms of text formatting. There is also netiquette that need to be followed.

Naziv teme	Diskusije	Odgovora	Čitanja	Zadnja Poruka
Obavijesti i pitanja Važne informacije i pitanja o predmetu Metodika nastave informatike	14	26	1739	29.1.2008 14:43 Nataša Hoić-Božić
Web dizajn Rasprave na teme vezane uz web dizajn predmeta Metodika nastave informatike u 2007/2008.	11	119	2833	28.1.2008 7:58 Kristina Šimetić
E-learning Rasprave na teme vezane uz module o e-learningu predmeta Metodika nastave informatike	14	205	7993	15.12.2007 10:37 Martina Holenko
Test Tema za isprobavanje slanja i čitanja poruka	11	32	696	6.12.2007 10:28 Dejan Dešković

Legenda

- Nema novih poruka
- Nove poruke
- Tema je zaključana
- Popularna tema ili poruka

Figure 1. AHyCo page with discussion topics

In order to avoid messages like “Me, too!”, “I definitely agree with you”, etc., teachers should stress out the importance of contributing to discussions and providing arguments for their viewpoints by posting messages relevant to the theme.

The teacher-moderator initiates a discussion on forum by putting questions or raising a problem that needs to be considered. It may also be done by students. Along with posting their answers, opinions and thoughts, they should comment messages posted by others. Within a certain topic, it is recommendable to create their own discussions based on the topic [12].

A few days after a discussion is concluded, the moderator posts a summary which includes students’ reflections and main conclusions of the discussion. However, there is a possibility for a student to prepare the summary in order to make up for not participating in the discussion.

A. Asynchronous Communication Using Forum

AHyCo's forum supports many-to-many and group-oriented approaches in which students are grouped together and create their own discussions. The forum has advantages over some other many-to-many asynchronous forms of communication such as newsgroups [13]. AHyCo's multi-threaded forum is efficiently integrated into the existing user interface. It is implemented as a set of Web pages so that students navigate and post forum messages more easily.

Depending on a group a student is enrolled to, he or she can participate in various discussions and see different topics (Figure 1). In addition to that, student is automatically linked to discussions related to the courses he or she has enrolled to. Some discussion can be classified as private and therefore be inaccessible to some students or groups of students.

One student posts a question or an opinion and the others read it and attach replies. This is a continuous process and the sequence of posts (or a thread) can go on for an indefinite period of time [13]. Multi-threaded forum was chosen to be implemented since its structure satisfied user's need for easy message browsing and efficient manipulation (Figure 2).

B. Discussion Topics

There are three discussions scheduled in the context of the “Teaching Methods in Information Science” course. Discussion topics are also the topics of the larger course content units (the modules):

1. E-learning (blended learning, distance learning)
2. Web design
3. Development of web-based courseware

During the first discussion, students share their ideas of distance learning. A guideline for the discussion may be:

“Give short answers to the following questions as students or participants of the course: What do you consider to be the most significant advantages of distance or online learning and why? Which element would you (or do you) find as the main disadvantage of this type of learning and why?”

Now, imagine you are high-school teachers and try answering the same questions. What would be the main advantage and the main disadvantage of this type or work with your students?”

During the second discussion about the web design, students are encouraged to suggest the topics which they found interesting while they were examining the learning material. They may choose and analyze a web site they considered to serve as a good or bad example of web design.

The third discussion is on the topic of courseware developing and is initiated by the following moderator’s questions:

“What type of a web courseware would you find as most helpful for your learning and why? In your explanation, consider your favorite learning style, contents you would like to learn (or you should learn during the course), the available technology...”

During the discussion, students go through the elements they plan to implement into their work or analyze the courseware examples they found on the web.

Besides topics for scheduled discussions, there are topics used for important notices, questions, answers, and technical support, together with topic for testing posts.

The screenshot shows the AHyCo forum interface. At the top left is the AHyCo logo. The top center displays the forum title: "PRIKAZANE SU PORUKE TEME: E-LEARNING". The top right shows the user's name "Holenko, Martina", the date "08.02.2008", and the forum name "AHyCoRI". Below the header, there are three navigation buttons: "Povratak u glavni izbornik", "Teme foruma", and "Dodaj novu poruku u temi". The main content area lists several discussion threads, each with a folder icon, a title, a date, and a time. The threads are:

Folder	Title	Date	Time	Author
	Sažetak diskusije	15.12.2007	10:37:59	Martina Holenko
+	online tečaj	8.12.2007	0:10:54	Željka Crnarić
+	Komunikacija računalom VS susret uživo	6.12.2007	10:34:29	Dejan Dešković
-	Telekonferencija/videokonferencija	2.12.2007	23:38:31	Damir Vičević
	RE: Primjena telekonferencije	9.12.2007	23:20:58	Aida Šehić
-	RE: Telekonferencija/videokonferencija	5.12.2007	11:29:28	Martina Holenko
	RE: RE: Telekonferencija/videokonferencija	8.12.2007	23:47:32	Ana Muškardin

Figure 2. AHyCo page with threads in discussion about e-learning

C. Evaluation of discussion participation

Each discussion is evaluated with 5 points which makes 5 per cent of the total score of the course (altogether, 15 points out of 100). Students are familiar with the criteria that evaluate the quality and quantity, as well as the style and format of the posts.

Students will be assigned 2 out of 5 points for indicating understanding of the material or publishing posts relevant for the discussion.

Furthermore, students will be assigned 2 points depending on the level of participation, that is, for posting creative comments of other messages within a fixed period of time.

Finally, 1 point will be assigned for presenting ideas clearly, adding a proper subject to the message and posting it to the appropriate place on forum, as well as for obeying the netiquette.

The student will receive the points for participating in the discussions, along with the teacher's comments by e-mail.

D. Advantages and Disadvantages of Discussions and Student's Comments

Replying to questions submitted by teachers, students learn to reflect on the material they read, find and analyze examples from the internet, provide arguments in discussions with their colleagues and acquire learning matter.

Taking part in the discussions can help resolve obscurities students have after reading the material. Here is an example of a message in which a student asks others for help:

"I couldn't understand the difference between a teleconference and a videoconference. I presume that a videoconference is the most well-known form of teleconference. A teleconference is probably a more

general term. Can somebody clarify the difference between these two methods of material distribution?"

The messages exchanged helped the student to conclude on the difference between the terms mentioned.

As students find discussions time-consuming, moderators often deal with the lack of participation. During the course, the teachers should motivate students by showing interest for their posts, by commending and stimulating them. However, a major stimulus is certainly the fact that the activity is evaluated within the course.

Points for discussion participation will be based on the posts and comments that enhanced discussions, not on the number of messages sent. Students often misinterpret the criteria and send messages that are of low value for the discussion.

It seems that some of the students read posts and reply to them mostly during the last few days of discussions, so one of the biggest challenges for moderators is to motivate them to participate regularly.

A survey conducted in the end of the course showed that students accepted the new way of online learning with AHyCo system quite well. The students were satisfied with the pedagogical approach and their academic achievements. The survey was anonymous and was conducted using the AHyCo surveying subsystem. The results have shown that students consider the forum (46%) and AHyCo's modules (36%) to be the most usable components of the system. At the end of the questionnaire, students were encouraged to give positive and negative comments. Some of the advantages related to online discussions, emphasized by the students, were:

- The guided forum
- Freedom to access forum at any time
- Opportunity to communicate with the instructor in a more efficient manner (if a question is answered on the forum, everyone can read the answer)
- Participation in the group work and discussions as completely new experience.

When asked if there was something they would change, some students stated that this way of learning requires too much time and that the instructor required excessive participation on the forum, which, in their opinion, should not be mandatory.

The authors are quite satisfied with the results, especially because the participants are to be teachers and they will possibly use the online discussions in their future work, enabling the transfer of the new approach to learning in schools.

VI. CONCLUSIONS AND FUTURE PLANS

In this paper the online discussion as one of the learning activity in the context of "Teaching Methods in Information Science" course is described. The participation in online discussions requires student's intellectual activities in order to enhance the discussion process: creating messages, formulating ideas, judgments and answers, as well as providing properly argued critical analyses of other students' posts. Students extend their knowledge by expressing their opinions and experience, and their participation illustrates the understanding of the materials and the motivation for work.

In the realization of online discussions, moderators need to encourage students, as well as monitor their active involvement and progress which is quite time-consuming, especially with a large number of students.

During the implementation of "Teaching Methods in Information Science" course, students score certain number of points through discussion participation which are awarded by the moderator after the end of the discussion. The discussion evaluation takes a considerable amount of time. Currently, the AHyCo system tools provide monitoring the number of posts sent by a certain student, which only partially facilitates the evaluation process.

While reading students messages, moderators estimate whether a message contributes the discussion, whether it is well-organized or perhaps it insults other students. However, they cannot store this information in AHyCo, so system tools upgrade that will enable this feature is planned. Thus, in the end of each discussion, moderators will be provided with statistical information on the number of messages, as well as the number of quality messages that meet the requirements of style in order to greatly facilitate the evaluation process of discussion participation.

Future work for AHyCo's development will also lead to better support for students' progress monitoring. Currently, this is based on tabular reports and graphs. Introduction of intelligent mechanisms that enhance the monitoring process and propose actions for moderators in the event of problems is planned.

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This article was modified from a presentation at the 31st International Convention MIPRO 2008 in Opatija, Croatia, May 2008. Manuscript received 30 July 2008. Published as submitted by the authors.