

An Online Peer Assessment Platform for e-Learning Environments

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Abstract: Peer assessment is an educational procedure in which students are requested to act as both reviewers and authors, evaluating the work of their fellow students. Peer assessment has been found to help students improve the quality of their work and better understand the educational material. E-learning can especially benefit from the use of the aforementioned process to provide trainees with quality feedback regarding their projects while not increasing the instructors' workload. In this way students are more involved in the educational process, feel less isolated and more part of the online community. In this paper, an online peer assessment platform is presented. This platform has been designed to support the Learning Management System of the course is user-friendly and provide all the necessary functionality to online deliver the peer assessment procedure. It is thus expected to enhance the educational experience of both the instructors and the trainees.

Key words: Peer Assessment, e-Learning, Online Educational Platform.

INTRODUCTION

The advent of the World Wide Web has introduced new possibilities for providing education to large amounts of students. E-learning presents significant advantages compared to classical education in that it can provide educational services to students without posing spatiotemporal restrictions. The above have led to the increased popularity levels of this type of education and have contributed to its adoption by many educational institutions worldwide. However, due to the fact that e-learning lacks face-to-face communication, it has been observed that learners do not receive the same amounts of feedback regarding the quality of their work, as they would typically receive in traditional education courses.

A solution to this problem can be achieved through the use of peer assessment. According to this methodology, students evaluate each others' work, acting as both reviewers and authors. Peer assessment has been found to benefit the educational procedure since students receive more feedback and gain deeper understanding of the course material [1 - 3]. Instructors also benefit from this methodology, since the quality of the projects they need to assess is better, a fact that decreases the workload for this task and enables them to focus on more constructive aspects of their work.

In this paper, an online peer assessment platform and its functionality are presented. The rest of this paper is organized as follows: The second section describes the course upon which the peer assessment platform was applied, as well as the methodology steps followed. The next section provides a detailed description of the online platform. The final section concludes the paper and provides possible future extensions of this work.

PEER ASSESSMENT FOR E-LEARNING COURSES

The developed platform was used in an introductory level e-learning course on "Web Design". The course is provided by the Multimedia Technology Laboratory e-learning team of the National Technical University of Athens [4], through the Moodle open-source LMS platform [5].

The course is offered twice a year: at the Spring and Fall semesters. It is of introductory level and is targeted towards adults of various educational backgrounds that range from high-school graduates to master degree holders. It consists of seven educational sections, during which learners are presented with the educational material. At the end of each educational section, students are required to submit a project, in the form of a web site, using the material taught in this section.

Then, students are requested to participate in the peer assessment procedure. Specifically, learners are asked to provide comments on two randomly selected projects

of their fellow classmates. Thus, at the end of a peer assessment step each student will have reviewed two projects and will have received the comments of two reviewers. Students grade each others' projects by filling in a form with questions regarding the design, technical soundness, functionality and overall impression of the project under evaluation. Each question is answered through a five item Likert scale, ranging from 1 (negative impression) to 5 (positive impression). To evaluate if the reviewer has helped the author to enhance the quality of his work, each student is asked to rate the reviewer's comments, regarding his perceived degree of usefulness. It should be noted that students are considered potential reviewers for the peer assessment procedure of a section, only if they have submitted a project for this particular section. Finally, to prevent vandalism, the peer assessment procedure is validated by the instructors who can read and, if necessary, edit student comments prior to sending them the authors.

PLATFORM DESCRIPTION

The developed platform has been designed to facilitate students and instructors to implement the peer assessment procedure. The platform has been developed through the PHP and AJAX technologies.

To this end, the platform can support different Learning Management Systems and automatically extract student data regarding submitted projects and possible reviewers. The platform uses a database, separate from the one used by the LMS, to store the necessary data. This local data storing feature helps in reducing the response times of the platform and ensures its independency from the LMS used in a specific course.

The developed platform can be used by both the instructors and the students. The first have access to a number of tools that help them organize and administer the peer assessment procedure of a class while the second view a more simplified aspect of the platform.

Instructor's View

The teacher has the following options:

- **Course Overview:** Using this feature, the instructor can see the course description, which includes general information regarding the course goals and material.
- **Insert and edit questions:** Through this option, the teacher is able to edit the review form that the reviewers will be asked to fill in, upon evaluating the project of their fellow students.
- **Peer assessment overview:** This option is one of the most important and most frequently used. Through this platform function, the trainer is able to view the number of submitted projects per section, the possible reviewers per project, as well as the number of projects that have not yet been commented by a reviewer (Figure 1).
- **Section overview:** Through this functionality the instructor can select and manage a specific course section. The actions that can be taken in this level are: assigning reviewers to authors, viewing and validating new uploaded comments.
- **Student overview:** According to this function, the teacher can see the total number of projects that each student has been assigned to review, the number of projects that the student has not commented and the total number of comments that this trainee has submitted. This option has been designed to be available from every page of the platform, using the AJAX technology, enabling the instructor to view the status of the students whenever it is necessary (Figure 2).

- E-mail notifications: Using this functionality, the instructors can send e-mails to the students to inform them about a new comment or a new project for review.
- Platform messages: The platform displays messages to the instructor regarding the number of comments that need to be validated and projects that have not yet been matched with a reviewer.



Fig.1. Peer assessment overview - instructor view



Fig.2. Section and student overview – instructor view

Student's view

Upon entering the platform, students view the start page that informs them about the peer assessment procedure in detail (Figure 3). It consists of general guidelines and frequently asked questions regarding the procedure. The student view of the platform is less complex and consists of fewer functions compared to the view of the instructor, in order to familiarize students with the whole procedure and motivate them to participate.



Fig.3. Peer assessment instructions – student view

The platform provides the following options to the student:

- Read the reviewer comments: Through this functionality students can view the comments that the reviewers have made on their assignments and rate the quality of each review received.
- Evaluate projects: According to this option, students make comments on the projects that they have been assigned to.
- Platform messages: Through this option, students are informed about new reviews on their assignments and about projects that they need to evaluate (Figure 4).

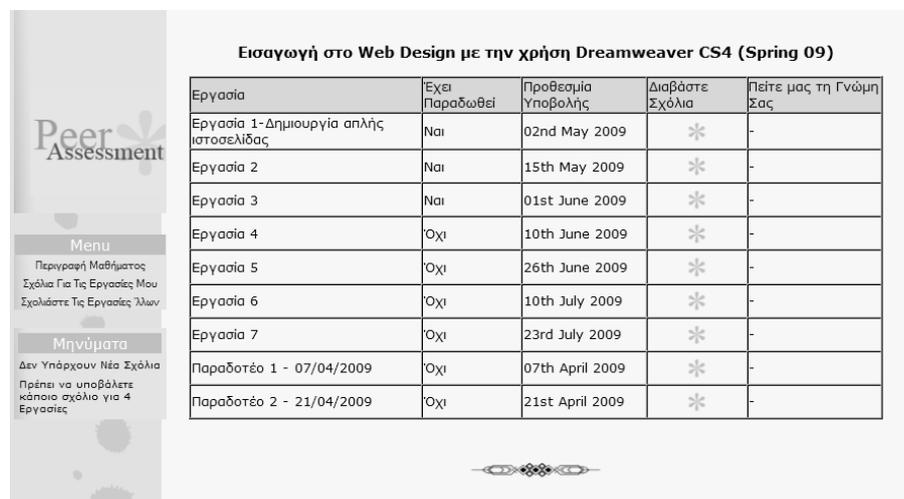


Fig.4. Platform functionality – student view

CONCLUSION

In this paper, an online peer assessment platform for e-learning environments has been presented. The developed platform is user-friendly and is expected to benefit the educational procedure in terms of increasing the quality level of the submitted projects and reducing instructor workload. Future work may include examining the platform usefulness in a large-scale e-learning environment and enhancing it with adaptive characteristics based on the specific needs of each student.

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