E-PEER: A WEB-BASED PEER EVALUATION SYSTEM FOR GROUP ASSIGNMENT

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FACULTY OF COMPUTING AND INFORMATICS
UNIVERSITI MALAYSIA SABAH
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DECLARATION

I, the undersigned, solemnly declare that the project report is based on my own work completed during our study under the supervision of Dr Norazlina Khamis.

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ABSTRACT

Malaysia's higher education institutions are fast evolving as most of them take into account a number of key external elements, such as soft skills. Teamwork is one of the fundamental soft skills that must be assessed among undergraduates. Teamwork is often a crucial component of the learning process, as students learn to work together using their own qualities and skills despite any personal disagreement. The peer evaluation assessment method can be used to assess these individual skills. However, the traditional process of evaluation was carried out with pen and paper which was time-consuming and intensive, especially in classes with a large number of students. Therefore, an emerging alternatives and techniques are available when examining the evaluation methods in new primary education education systems by developing a peer evaluation tool system. Peer evaluation is an important educational activity, especially in social learning situations, group work, and project-based learning. It has the potential to encourage critical thinking and reflection, as well as broadening students' perspectives and understanding, as well as increasing engagement and interactivity.

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ABSTRAK

Institusi pengajian tinggi di Malaysia berubah dengan pesat kerana kebanyakan institusi mengambil kira beberapa faktor luaran utama seperti kemahiran insaniah. Salah satu kemahiran insaniah yang penting dalam kalangan mahasiswa yang perlu dinilai ialah kerja berpasukan. Dalam proses pembelajaran, kerja berpasukan selalunya merupakan bahagian penting di mana pelajar belajar bekerjasama menggunakan kemahiran individu mereka walaupun terdapat sebarang konflik peribadi. Kemahiran individu ini boleh dinilai melalui kaedah penilaian penilaian rakan sebaya. Namun begitu, proses penilaian tradisional telah dijalankan dengan menggunakan pen dan kertas yang memakan masa dan intensif terutamanya di kelas yang mempunyai bilangan pelajar yang ramai. Oleh itu, alternatif dan teknik yang baru tersedia apabila mengkaji kaedah penilaian dalam sistem pendidikan dengan membangunkan sistem alat penilaian rakan sebaya. Penilaian rakan sebaya ialah aktiviti pendidikan yang penting, terutamanya dalam situasi pembelajaran sosial, kerja kumpulan, dan pembelajaran berasaskan projek. Ia berpotensi untuk menggalakkan pemikiran kritis dan refleksi, serta meluaskan perspektif dan pemahaman pelajar, serta meningkatkan penglibatan dan interaktiviti.

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CHAPTER 1

INTRODUCTION

1.1 Problem Background

Traditionally, the process of evaluation was carried out with pen and paper which was time-consuming and intensive, especially in classes with a large number of students. A practice that is commonly used by the instructor is to evaluate a project and assigns the same grade to everyone in the group. Although this assessment method is simple and easy, it has a number of disadvantages. Firstly, There's an issue of social loafing and free riders. When students understand that they are only evaluated as a group, not individually, but they have at least one hardworking group member, they are even less likely to commit to their tasks fairly. Secondly, this evaluation method cannot differentiate between team members' contribution. Some students contribute more and some students contribute less throughout the assessment time, but they are all received the same grades. This shows that their efforts are not represented accurately.

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1.2 Problem Statement

Several problems has been identified to satisfy the project objectives includes:

- Manual(traditional) method is time consuming.
- Most of the assessment methods only measure overall performance despite there are some team and individual performance should be considered.
- Students are likely assigned the same grades with all members by instructor. That peer evaluation method usefulness is less reliable.
- Students often doubt the objectivity of forms in traditional evaluation, as comments are generally not required and students have no training in assessment.
- Students feel that the traditional evaluation forms do not allow them to explain their exact opinion to the peer.

1.3 Project Objective

1. To design modules for peer evaluation for group assignment.
2. To develop a web-based Peer Evaluation Tool System.
3. To evaluate the usability of the proposed system by using questionnaire approach.

1.4 Project Scope

This system is a web-based system that targeted to the UMS students. This system can only be used within UMS. There are several modules that has been identified for this project. The modules (Table 1.1) consists of:

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Table 1.1 List of modules and description

Modules	Description
User	User consists of admin, instructor and students. Role of these users are: ● Admin: Managing system account (add, edit and delete users), provides access to control features, settings & configuration of a website. ● Instructor: Create, edit and delete form, groups and assessment. ● Student: Take assessment (do peer evaluation) and submit assessment.
Form	Form can be created in Likert Scale. The score range can be determined and each description of the score can be set. The form can be created, edited and removed.
Group	Groups can be created in a collection and students can be assign to it. Group can be edited and deleted.
Assessment	● Assessment can be created, forms and groups can be assign to it. Group can be edited and deleted. ● Students can take assessment and do evaluation of their peers.

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1.5 Expected Outcomes

By the end of this project, a web-based peer evaluation tool will be developed. It can be used by students who work in a group project.

1.6 Conclusion

In conclusion, this chapter describes the first approach of the project development. The motivation leads to the problem statements and objectives that will become the idea to develop this project. The project scopes describes the limitation of this project.

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CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The peer assessment/evaluation tool allows students to review other students work to gain an understanding of other students' perspectives and to improve their critical evaluation skills. Peer-assessment is a method for increasing responsibility among students in a group. In peer assessments, students also learn how their works are graded while grading their friends (Poon, McNaught, Lam, & Kwan, 2009).Peer assessment also prepares students for life after university by allowing them to develop the ability to evaluate the performance and impact of their own work as well as the work of others.There are two aspects of peer review which are reviewing others' work and receiving reviews from others which provide qualitatively different learning benefits.Fortunately, when peer review is used, these two aspects come together because students will normally take on the roles of both reviewer and reviewee. The type of is one in which students make evaluative judgments about the work of other students and provide written feedback commentary. Peer review relies heavily on judgement and commentary. Peer review, on the other hand, would be much more effective if it is structured as part of a wider process that includes dialogue and ensures that students have opportunities to respond on peer comments.

2.1.1 Advantages

i. Encourages students to reflect critically on each others work.
ii. Helps students develop their judgmental and soft skills when they assess the work of other group members.
iii. Students can generated more feedback compared to one or two teachers.
iv. Teachers' marking time and workload are reduced.

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v. Fairness of assessment can be maintained as everyone has the chance to assess each other.

2.1.2 Disadvantages

i. Peer pressure and friendship can cause an impact on a student's grade reliability.
ii. Students may have a tendency to give everyone the same grade (for example, there may be collusion in return for good grades).
iii. Students are not experienced in assessing each other.
iv. When it comes to group projects, students may cheat.
v. Fairness may be affected because extroverted students are frequently given higher grades and quieter students are given lower grades.

2.2 History of Peer Review

The Royal Society of Edinburgh, which published a collection of peer-reviewed medical articles in 1731, pioneered peer review in scholarly publication. Despite this early start, editors had the final say on whether an article was published or not until after World War II in many scientific journal publications. "Science and The Journal of the American Medical Association did not use outside reviewers until after 1940," according to the outsider. (Spier, 2002).The Lancet did not begin using peer-review until 1976. (Benos et al., 2006). After the war and into the 1950s and 1960s, article specialisation increased, as did competition for journal space. Technological advancements (such as photocopying) made it easier to provide extra copies of articles to reviewers. Everything from scholarly papers to grant applications to tenure decisions now undergoes peer assessment. It has been "elevated to the rank of a 'principle,' a unifying idea for a strikingly splintered area," according to the article (Biagioli, 2002).

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2.3 Review of existing system

2.3.1 Existing system: Canvas

Canvas is a mechanism that allows students to peer review each other's work. It makes use of the same thorough online annotation capabilities that Speedgrader provides. With a simple click, instructors can assign students by name to assess each other's work, or have reviews dispersed randomly. This randomization process can be pre-programmed to happen after all of the original assignments have been submitted. From the Peer Review section of the assignment, a teacher can see which reviews have been completed and click to read them.

2.3.2 Existing system: iPeer

iPeer is a web tool that integrates with Canvas and allows educators to create and distribute rubric-based peer evaluations. Instructors can display students the comments they received from their peers, as well as convert this feedback into participation marks or grades.

2.3.3 Existing system: peerScholar

PeerScholar is a powerful online pedagogical tool that helps your students develop critical and creative thinking skills. It is based on scholarly research. Writing, evaluating, and reflecting are the three phase that peerScholar uses to help with this.

Phase 1: Writing is the first phase. Students log onto the system and are given an assignment to complete in the first phase. This assignment is customized to your course's teaching objectives and can take several forms, including a written response to an open-ended question, a case review, or any type of multimedia project. Students are also given a grading rubric for evaluating their peers' assignments in Phase 2 throughout this stage.

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Phase 2: Assessing Students begin the evaluation step when the writing phase is completed. Students can improve their critical-thinking skills and their capacity to undertake quality-based discrimination throughout this stage.

Phase 3: Taking Stock Students can log back onto peerScholar as soon as the evaluation process is completed to get their peers' evaluations and written feedback. They are not required to wait weeks for grades and feedback, at which time the potential to learn may be lost. Students may be given the option to modify and resubmit their work based on the comments, as well as submit a brief reflection piece explaining how they used their peers' input in their revision, depending on your preferences as an instructor.

2.3.4 Comparison of existing system

In this section, peer evaluation existing systems will be reviewed. This section will shows comparison of three existing systems which are CANVA, I-PEER and peerScholar. The comparison will be done in term of limitation usability of the system.

Table 2.2 Comparison of existing systems

CANVAS	iPEER	peerScholar
● Canvas will not automatically assign late submission for peer review. ● There is no currently way to set a deadline by which peer reviews needs to be completed.	● It is not possible to manage assignment submission or evaluate individual student assignments. ● iPeer is designed for group peer review and does not perform well for individual student assignments in large classes. ● The iPeer platform	● The rating scale for all rubric criteria is the same; for example, criterion 1 cannot be rated on a 2-point scale and criterion 2 cannot be evaluated on a 4-point scale.

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	does not have a training component.	

2.4 Conclusion

In this chapter, literature review is done by reviewing the background, history, advantage and disadvantage of peer review/assessment. Besides, comparison of existing systems also has been reviewed in order to gain information and idea about how to improve the future system.

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CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter will be discussing about the methodology that will be used to develop the system. In this project, Waterfall Model will be used. The phases involved in this methodology will be explained in more detail that includes Phase 1: Planning, Phase 2: Analysis and Design, Phase 3: Implementation and Development and Phase 4: Evaluation.

3.2 Introduction to Waterfall Model

The waterfall model is a breakdown of the project activities in linear sequential phases in which each phase corresponds to the results of the previous one and corresponds to a task specialization.

3.2.1 Phase 1: Planning

In this phase, planning are to map out the specification documents that includes identifying the problem background, problem statement, the modules, and the expected outcomes of this project development. These documents can be referred in Chapter 1.

3.2.2 Phase 2: Analysis and Design

Once planning is complete, process of analysis will be performed. This phase is also the part of the project that identify the overall direction that the project will take

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