

The implementation and evaluation of a mobile self- and peer-assessment system

1. Introduction

The paper explores the potential of mobile technology to enhance self-assessment and peer-assessment in educational settings. Traditional assessment methods are often limited by time and logistical constraints. By leveraging mobile technology, students can assess their own and peers' work more flexibly and efficiently. The study introduces a **Mobile Assessment Participation System (MAPS)**, designed for use on **Personal Digital Assistants (PDAs)**, as a tool to facilitate these assessments.

2. Research Objectives

The study aims to:

1. **Develop and implement MAPS** to support self- and peer-assessment in a mobile learning environment.
2. **Evaluate the effectiveness** of the system in improving assessment participation, efficiency, and feedback quality.
3. **Analyze the benefits and challenges** of using mobile devices for assessment purposes.

3. Design and Features of MAPS

MAPS was designed as a digital platform to support self- and peer-assessment via **PDAs**. Key features include:

- **Flexible access:** Students can complete assessments anytime, anywhere.
- **Structured evaluation criteria:** Predefined rubrics guide the assessment process.
- **Anonymous peer assessment:** Reduces bias in evaluations.
- **Instant feedback:** Facilitates reflection and iterative improvement.

System Implementation

MAPS was integrated into a **teacher-education course** at a university in Taiwan. **37 students** participated in the assessment of their final projects using the system. The assessment was conducted **twice** (in two rounds) to allow students to improve their work based on feedback.

4. Research Methodology

Participants

- **37 students** enrolled in a teacher-education course.
- They used MAPS for self- and peer-assessment of final projects.

Assessment Process

1. **First Round of Assessment**
 - Students assessed their own work and their peers' projects using MAPS.
 - The teacher also graded the projects for comparison.
 - Feedback was provided based on predefined criteria.
2. **Project Revision**
 - Students revised their work based on the feedback received.
3. **Second Round of Assessment**
 - Another round of self- and peer-assessment was conducted.
 - The teacher graded the revised projects again.

Data Collection

- **Questionnaires:** To gather students' opinions on using MAPS.
- **Interviews:** Conducted with selected students for in-depth insights.
- **Grade Comparisons:** Teacher-assigned grades were compared with self- and peer-assessed grades.

5. Findings and Results

Positive Outcomes

1. **Enhanced Flexibility**
 - Students could conduct assessments at their own pace and convenience.
 - Reduced classroom time spent on assessments.
2. **Improved Time Management**
 - Mobile assessments allowed students to distribute their workload more effectively.
3. **Encouraged Self-Reflection**
 - Self-assessment prompted students to critically evaluate their own work.
 - Peer feedback provided new perspectives on their strengths and weaknesses.

6. Conclusion and Recommendations (Key takeaways)

- **Mobile self- and peer-assessment systems offer significant advantages**, such as flexibility, improved time management, and enhanced student reflection.
- **Challenges remain in ensuring fair and accurate peer evaluations**, requiring training in assessment literacy.
- **A hybrid approach (combining teacher, self-, and peer-assessment) may be most effective** for improving evaluation reliability.

Future Recommendations

1. **Further development of the system** to enhance user-friendliness.
2. **Training students in effective assessment techniques** to improve the quality of feedback.

3. **Investigating other mobile platforms (e.g., smartphones and tablets)** for a broader adoption of the system.

7. Implications for Education

- **Encourages active student participation** in the learning and assessment process.
- **Prepares students for lifelong learning** by fostering self-evaluation skills.
- **Demonstrates the potential of mobile technology** in enhancing traditional assessment methods.

Drawbacks of the Paper:

While the study presents a valuable framework for mobile-based self- and peer-assessment, there are **several limitations** that could be addressed in future research:

1. Small Sample Size and Limited Generalizability

- The study only involved **37 pre-service teachers** from two courses, which is a **small sample size**.
- The findings may not generalize well to **different educational levels, subjects, or larger student groups**.

2. Lack of Teacher Involvement in Assessment

- The study **did not compare teacher-assigned scores with peer and self-assessment scores** until the final project submission.
- **Instructor feedback was absent** during the assessment process, which could have helped validate the reliability of peer-assessment.

3. Concerns About Peer-Assessment Objectivity

- **64.71% of students were neutral about the fairness of peer assessment**, indicating **distrust** in peer grading.
- The study does not explore potential **biases**, such as friendships, popularity, or personal conflicts affecting grading.

4. Limited Analysis of Long-Term Learning Effects

- The study only assessed **short-term improvements** in self- and peer-assessment through **two rounds of evaluation**.
- It does not examine **whether students retained assessment skills or improved their critical thinking over time**.

5. Technological and Practical Challenges

- **Internet connectivity issues** affected three students, indicating **technical dependency** as a potential weakness.

- The **cost of PDAs** and infrastructure requirements might make **scalability difficult**, especially in resource-limited settings.
- The **round-table presentation format caused noise and distractions**, potentially reducing assessment accuracy.

6. No Direct Comparison with Traditional Methods

- The study does not **directly compare** MAPS-based assessment with **paper-based or other digital assessment methods**.
- It is unclear whether **MAPS is significantly more effective than existing alternatives** like Learning Management Systems (LMS) or web-based assessment tools.

7. Weak Correlation Between Self, Peer, and Instructor Grades

- **No significant correlation** was found between **peer/self-assessment scores and teacher scores**, raising concerns about **assessment reliability**.
- This suggests that **students might not fully understand assessment criteria** despite discussing rubrics beforehand.

8. No Incentivization and Reputation score were considered hence motivation and fairness were missing.