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The Twofold Value of IT-Based Peer Assessment in Management Information Systems Education

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Abstract. Feedback is one of the most influential factor when it comes to learning success of students. Especially large-scale classes at universities often lack feedback caused by the scarcity of resources. Even though a lack of feedback is problematic across all domains, especially when educating future IS executives, who are supposed to lead team members by providing effective feedback. In this study, we use IT-based peer assessment (ITPA) in a large-scale class to support students with feedback during their learning-process. Specifically, our results show that participating in ITPA lead to an increase in knowledge on the content of the class of about 28% on average. Furthermore, students train their ability to provide feedback, measured twice, self-reported and as quality of the feedback received – increased significantly during the class.

Keywords: IT-based peer assessment, feedback, higher-education, large-scale class, technology-mediated learning

1 Introduction

In the last years, the number of students has been constantly rising while the amount of lecturers stayed steady [1]. Thus, the current condition at universities is that many classes consist of hundreds of students and are taught by one lecturer [2]. One consequence of these large-scale classes is the lack of feedback for students [3]. According to Hatti et al. [4], feedback is the third most influential factor for student learning success. Despite the known importance of feedback in the learning process, the final exam is often the only time students receive feedback in those classes, and this feedback is often aggregated into a single performance score providing hardly any insights into strengths and areas that need to be improved.

We argue that especially future managers need to develop their own ability to provide feedback to become an effective leader in business [5]. Thus, the lack of feedback is even more crucial in this domain, since it a) hinders learners in assessing their current state of knowledge and identifying areas for improvement, and b) restrains them from improving their own ability to provide feedback to other people. A possible solution to overcome both barriers and to ensure that students of large-scale classes have the possibility to train their ability to provide feedback, as well as to receive

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feedback to assess their current state of knowledge and to adapt their learning process, is IT-based peer assessment (ITPA). To assess the value of using ITPA in large-scale classes, we seek to answer research question of:

RQ1: To what extent does participating in an ITPA help to train the learners' ability to provide feedback?
RQ2: To what extent does participating in an ITPA contribute to the learners' knowledge of the learning contents?

According to Hattie and Timperley [4] feedback is conceptualized as information provided by an agent, for example a lecturer who provides corrective information [4]. Hence, feedback is provided a consequence of students' performance. Whereas the outcome of feedback is an information, specifically relating to the task or process of learning that fills a gap between what is understood and what is aimed to be understood [6].

2 Methodology and ITPA process

ITPA was used in a quasi-experiment with a one-group pretest-posttest design in a large-scale university classes on information systems at Master's level. The quasi-experiment consisted of seven ITPAs, which took place on a regular manner over a time period of one semester and in each participating between 73 and 101 students.

Figure 1 shows the process of an ITPA. All steps shown in the process were conducted within a web-based learn management system (LMS). In the first step each student carries out the self-assessment (SA), using a survey including questions of their perception of their ability to provide feedback. In the second step the student creates the assignment and the LMS sends the completed assignments to the three anonymous peer reviewers – other students of the same class– (the reviewers were randomly selected in each ITPA by the LMS).

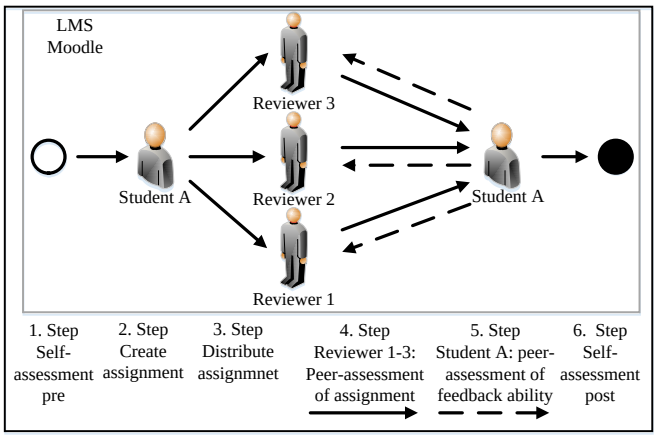

Figure 1. Overview of the ITPA Process

In the fourth step, each reviewer carries out a peer-assessment (PA) of the assignment using a standardized review template. Including questions concerning the strengths and weaknesses of the assignment and how it could be improved. Bevor the students provided their first PA a hands-on instruction of how to provide constructive feedback was carried out. After the PA the reviews are automatically sent back to the respective student by the LMS. In the fifths step, each student revises the initial solution, creates a change history, and rates the quality of the feedback provided by each reviewer based on the same questions as the SA. In the last step, each student carries out another SA. For the post SA the same survey was used as in the pre SA. In case a student did not participate in an ITPA, which leads to a missing value, this was statistically considered (marked as NA in R).

3 Results

The graph in Figure 2 shows the survey results for the question "How do you assess your personal ability to provide feedback to your peers?". The first measurement t0 is the baseline measurement in which the students were asked to self-assess their ability in providing feedback. The data of t0 represents that no ITPA is used at all and t1 that the ITPA is used one time. The students benefited using ITPA one time significantly ($p < .001$). Moreover, using ITPA multiple times, even further enhances the students' ability which shows the increase for SA and PA from t1 to t7 ($p < .05$). Figure 3 shows the survey results of "What is your current state of knowledge concerning the current learning unit?". The results show that students benefit from using ITPA in terms of perceived knowledge growth. The study showed a statistically highly significant increase of in average 28.3 percent from the pre-measurement to the post-measurement of the students' current state of knowledge concerning the current learning unit.

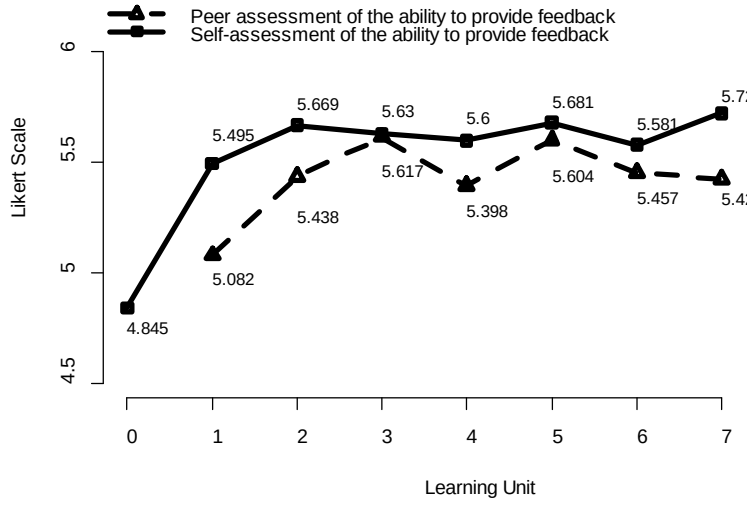

Figure 2. How do you assess your personal ability to provide feedback to your peers?

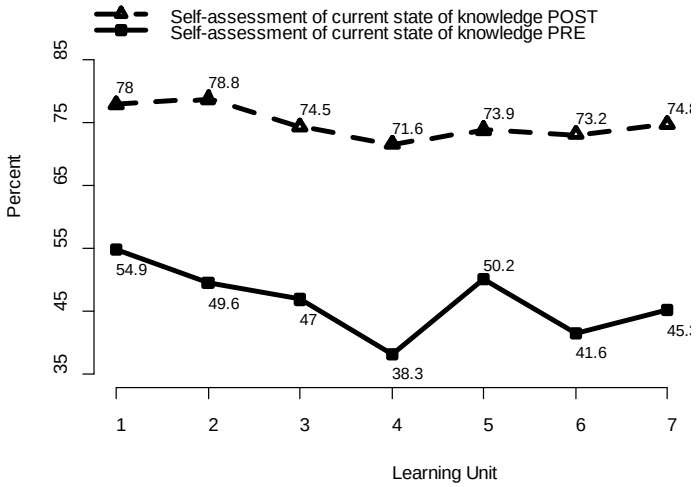

Figure 3. What is your current state of knowledge concerning the current learning unit?

4 Conclusion

This paper describes the usage of ITPA in large-scale classes to train the student's ability to provide feedback. The results show that using ITPA could enable the lecturer to support students in their learning process in a resource-saving way and to provide an environment in which students can anonymously train their ability to provide feedback. Furthermore, the results show that students using ITPA have a perceived increase of knowledge concerning the particular learning unit. With our paper we contribute to the body of literature of feedback in higher-education by providing empirical results from our quasi-experiment.

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