



Anonymous versus identified peer assessment via a Facebook-based learning application: Effects on quality of peer feedback, perceived learning, perceived fairness, and attitude toward the system



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ABSTRACT

This study investigated online peer assessment within a Facebook-based learning application, with a focus on the effects of anonymity. First, it examined anonymity's effects on the distributions of affective, cognitive, and meta-cognitive peer feedback. Second, it looked at the effects of anonymity on learners' perceived learning, their perceptions of whether peer assessment was fair, and their attitudes toward the system. The study's two-group experimental design randomly assigned 32 pre-service teachers either to an identifiable condition (with the assessors' full real names attached), or an anonymous condition; and both groups were asked to provide written comments on five assessee's microteaching performance based on videos of their teaching. The results indicated that the anonymous group provided significantly more cognitive feedback (i.e., vague suggestions, the "extension" type of explicit suggestions for improvement), whereas the identifiable group offered more affective feedback (i.e., supporting, opposing) and more metacognitive feedback (i.e., reflective comments). The anonymous group also perceived that they had learned more from peer assessment and had more positive attitudes toward the system, but they also perceived peer comments as being less fair than the identifiable group did. The findings provide important evidence for the cognitive and pedagogical benefits of anonymity in online peer assessment among pre-service teachers.

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1. Introduction

The influences of constructivism have led to a paradigm shift toward assessment as an integral part of learning, and the involvement of learners in assessment activities (Sluijsmans, Brand-Gruwel, van Merriënboer, & Bastiaens, 2003). In this context, much sustained attention has been given to peer assessment, in which "students engage in reflective criticism of the products of other students and provide them with feedback using previously defined criteria" (van der Pol, van den Berg, Admiraal, & Simons, 2008, p. 1805). In the process of peer assessment, learners can socially construct knowledge through giving and receiving peer feedback. Peer feedback can reveal learners' flaws in cognition and cause cognitive disequilibrium, which may motivate them to confront and take action to deal with those flaws, resulting in the resolution of cognitive conflict

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(Zhao, 1998). In the field of teacher professional development, empirical studies have demonstrated that peer assessment can spur pre-service teachers' professional growth and teaching-performance improvement (Al-Barakat & Al-Hassan, 2009; KOC, 2011) and cultivate their abilities to assess teaching and learning (Sluijsmans, Brand-Gruwel, van Merriënboer, & Martens, 2004).

The beneficial aspects of peer assessment can be interfered with by learners' concerns about publically criticizing their peers (Carson & Nelson, 1996; Dochy, Segers, & Sluijsmans, 1999). At the same time, however, assesseees may consider criticism or negative feedback more helpful than positive feedback, as it is more likely to improve the quality of their performance (Wang, 2009). In response to these concerns, anonymity has been advocated as having the potential to limit the negative impact of interpersonal issues arising from peer assessment (e.g., Carvalho, 2013; Vanderhoven, Raes, Montrieux, Rotsaert, & Schellens, 2015; Zhao, 1998). Anonymity has been deemed to allow people to express their opinions freely (e.g., Azechi, 2000; Scott, 2004) and to draw others' attention more directly to the content of their opinions (e.g., Marx, 2001; Scott, 2004).

Anonymity has been studied from a variety of cross-disciplinary perspectives (Scott, Rains, & Haseki, 2011). However, compared to the wealth of research in areas such as social and organizational psychology and computer-mediated communication, education studies have not taken much account of anonymity, perhaps because it has had few applications in traditional face-to-face teaching and learning activities. As noted by Scott (2004), online communication technology makes anonymity increasingly easy to implement, and expanded use of information and communication technologies in education has led to calls for more investigation of the effectiveness of anonymity in educational contexts (Ainsworth, Gelmini-Hornsby, Threapleton, Crook, & O'Malley, 2011; Panadero, Romero, & Strijbos, 2013; Yu, 2012; Yu & Liu, 2009).

Although digital anonymity holds the possibility of enhancing learning through online peer assessment, empirical research comparing the effects of anonymity and identifiability in this area has been relatively limited in quantity (Yu & Wu, 2011). Several variables identified in past studies as influencing peer assessment outcomes have seldom been explored, but are worthy of further exploration here. For example, giving or receiving peer feedback has been shown to contribute to learning performance (Lundstrom & Baker, 2009). The effectiveness of peer assessment depends on the quality of peer feedback, and because different comment types may play different roles in feedback, it is important to identify which of these types is present. Following prior literature (e.g., Cheng, Liang, & Tsai, 2015), the present study analyzes learners' written peer feedback by categorizing it as affective, cognitive, or meta-cognitive. Moreover, it is always vitally important to know how much learners learn from peer assessment. This study focuses on a subjective measure of learning outcome, that is, how much learners felt they had learned from peer assessment. Additionally, fairness issues can raise concerns about the validity of academic assessment, and learners' perceptions of the fairness of peer assessment have therefore been considered important criteria for judging whether peer assessment supports high-quality learning (Hailikari, Postareff, Tuononen, Räisänen, & Lindblom-Ylänne, 2014). Lastly, online systems assist learners to navigate peer-assessment processes and to complete peer-assessment activities. Learners' positive attitudes toward online systems could lead their more appropriate and effective uses of such systems (Chou, 2014), which will, in turn, increase learners' levels of engagement with peer-assessment activities. Hence, it is critical to understand learners' attitudes toward online peer-assessment systems.

The present study uses an experimental research design to distinguish the effects of anonymity as incorporated into Facebook-based online peer assessment of micro-teaching performance, which has not previously been the subject of research of this kind. Then, the following research questions were put forth:

- RQ1: How did the distributions of cognitive, affective and metacognitive peer feedback differ across the anonymous and identifiable experimental conditions?
- RQ2: How did anonymous online peer assessment affect how much learners felt they had learned from peer assessment?
- RQ3: How did anonymous online peer assessment affect learners' perceptions of the fairness of the comments they received?
- RQ4: How did anonymous online peer assessment affect learners' attitudes toward the online peer-assessment learning system that was used?

The results of this study offer insights and concrete suggestions for designing, developing and implementing appropriate instructional strategies and online learning systems that will facilitate effective online peer-assessment activities among pre-service teachers.

2. Literature review

Anonymity is a condition in which the real authors of communication units (e.g., messages) cannot be identified in terms of either their personal identities or their relevance in a social context (Marx, 1999). It has been suggested that anonymity helps create a psychological state of de-individuation, whereby an individual in a group becomes submerged in that group and his or her sense of individual identity diminishes (Festinger, Pepitone, & Newcomb, 1952). Such concealment of individuals' identities might stimulate them to behave differently than they normally do, and in particular, in less inhibited and anti-normative ways. For instance, empirical evidence suggests that anonymous online peer assessment might be linked to rises in the critical nature of peer feedback (e.g., Lu & Bol, 2007; Zhao, 1998). Guardado and Shi's (2007) respondents reported

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