Academic self-concept and social presence in face-to-face and online learning: Perceptions and effects on students' learning achievement and satisfaction across environments

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ARTICLE INFO

ABSTRACT

The purpose of this study was to examine students' academic self-concept and social presence in face-to-face (FTF) and online version of the same course, and to examine the effects of these two variables on student learning achievement and satisfaction. A total of 257 undergraduate students enrolled in a digital design course were randomly assigned to either of two treatments: one offered FTF instruction, and the other offered online instruction. Individual students' academic self-concept, social presence and attitudes towards course were measured by widely-recognized and reliable scales respectively. Results indicated that both academic self-concept and social presence are important factors that are closely related to students' learning achievement and satisfaction, but they are not equally important. FTF students perceived significantly higher social presence than online students; while no significant difference was found on academic self-concept. The effect of social presence on student learning achievement and satisfaction were stronger in online environment than in FTF environment. There was no significant difference between FTF and online students with regard to the effect of academic self-concept on learning achievement and satisfaction. These findings indicate that compared to FTF students, online students are in greater need of higher-level social presence, which has a strong effect on their learning achievement and satisfaction. Academic self-concept is equally important to both FTF and online students. Online students might need more supports on social interaction rather than self-reflection.

1. Introduction

Self-concept and social presence are both motivational-related factors that play an important role in students' learning (Kornilova, Kornilov, & Chumakova, 2009; Yamada, 2009). The former one relates to students' perception of themselves and the latter one relates to students' perception of the relationship with others. There might be differences in students' self-concept and social presence between face-to-face (FTF) learning and online learning because physical environmental differences often cause different psychological effects on students (Lim, Morris, & Kupritz, 2007; Relan & Gillani, 1997). What's more, a further question about whether self-concept or social presence is more important to students' learning achievement and attitude in these two environments is raised. The answer to this question might enhance our understandings of FTF and online students' psychological mechanisms. Based on the findings, instructors will be able to provide helpful supports for students to obtain better learning achievements and higher satisfaction towards course in either FTF or online learning. Therefore, a study is needed to examine the effects of academic self-concept and social presence on student learning achievement and satisfaction, and compare students' psychological mechanisms across environments.

This paper intends to make contributions in the following three aspects: First of all, measuring and comparing FTF and online students' academic self-concept and social presence might help to clearly and accurately present the difference of students' perception on themselves and their classmates between different learning environments. Second, exploring the effects of academic self-concept and social presence on students' learning achievement and satisfaction between FTF and online learning will enable us to better understand learners'

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psychological mechanism across environments, which may serve as a base for more in-depth analysis and the other future studies. Third, the instructional methods and psychological supporting strategies for traditional FTF learning is much more mature than those for online learning. If the differences between FTF and online learners' psychological mechanism could be found out, then we can refer to the traditional instructional strategies more effectively and further enrich the online learning theories.

1.1. Academic self-concept

Students' self-concept was defined by Shavelson, Hubner, and Stanton (1976) as an individual's perceptions of himself based on experience and interactions with the outside world. Based on this definition, Marsh, Byrne and Shavelson (1988), Marsh (1992) gathered a large amount of empirical evidence to divide self-concept into three aspects, namely social, physical and academic self-concept. Among these three aspects, academic self-concept refers to students' interest, enjoyment and perceptions of his/her own competency in a given academic domain. It was identified as the most important aspect in the context of education because it has a higher correlation with learners' academic achievement than other aspects of self-concept (Lyon, 1993).

It has been indicated that higher academic self-concept will result on better academic achievement, either on academic grade points or test scores (Cokley & Patel, 2007; Kornilova et al., 2009; Lyon, 1993). Some other studies found that academic self-concept was not only a cause but also an effect of students' academic achievement (Guay, Marsh, & Boivin, 2003). Although reciprocal effects were supported, the effect of prior self-concept on subsequent achievement were demonstrated to be stronger than the corresponding effect of prior achievement on subsequent self-concept (Marsh, Trautwein, Ludtke, Koller, & Baumert, 2005).

In addition, results of several studies found that learners with higher academic self-concept tended to have higher levels of satisfaction. According to Parker, Martin, and Marsh (2008), students' academic self-concept was found to be substantially associated with their satisfaction, since the higher the student's academic self-concept, the more interested he/she was in learning, and the more satisfied he/she was with school. Other researchers also pointed out that students with higher academic self-concept were expected to choose more challenging educational environments and show greater persistence and effort in academic tasks, which may lead to students' overall satisfaction (Trautwein, Lüdtke, Kastens, & Koller, 2006).

Task persistence is particularly important in online courses because online students might easily feel isolated and lose their confidence and patience since they have limited opportunity to communicate and get direct encouragement from their instructors and classmates. Given that online courses require greater task persistence, which is related to academic self-concept, it is possible that the effect of academic self-concept on student learning and attitudes in online courses may be greater than in FTF courses. In a similar vein, Lim, et al. (2007) indicated that the limited capacity of online instruction to engage learners in learning events need to be considered unless the learners were self-motivated active learners, and possessed strong organizational skills in their learning habits. Therefore, learners with low academic self-concept might not be able to perform well and might be less satisfied with the online course compared to the FTF course. While students' academic self-concept in both FTF and online courses seems important to examine, there are very limited studies comparing the effect of academic self-concept on student learning and attitudes in FTF vs. online courses. This is one thing that we are going to examine in this study.

1.2. Social presence

Rather than focus on one's feelings about himself/herself in a specific academic domain, social presence emphasizes more on the feelings of the relationship with others. Social presence was originally defined by Short, Williams, and Christie (1976) as "degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships" (p.65). Later, it was redefined in the context of learning by Garison and Anderson (2003) as "the ability of learners to project themselves socially and emotionally as 'real' people into a community of learners" (p. 94). With the prevalent recognition of the significance of communication cues and immediate responses in the learning process, social presence has received more and more attention in both traditional FTF instruction and in the field of distance education (Gunawardena & Zittle, 1997; Richardson & Swan, 2003; Rourke, Anderson, Garrison, & Archer, 1999; Tu, 2002).

Previous research has demonstrated the positive relationship between students' social presence and their academic achievement. Gough (1975) stated that students who score high on the social presence scale tend to be clever, enthusiastic, imaginative, spontaneous, active, and expressive. Also, social presence was identified as an important factor for improving learning (Gunawardena & McIsaac, 2004) by motivating learners, enhancing the sense of active community, promoting learners' engagement (Hall & Herrington, 2010), and facilitating interaction such as requests for help (Leh, 2001). Lomicka and Lord (2007) suggested that social presence enhances the interaction between learners, which, in turn, affects learning performance. It has also been found that social presence effectively promotes interaction in communicative language learning and leads to better learning performance such as the frequency of utterances and reciprocal grammatical modification (Yamada, 2009).

In contrast, there are some empirical studies that have not found significant results in the relationship between social presence and course performance. For example, Johnson and colleagues failed to obtain significant results in their empirical research to indicate the effect of social presence on students' course performance (Johnson, Hornik, & Salas, 2008). Moreover, Mackey and Freyberg (2010) also pointed out that cognitive learning is not affected by social presence according to their study. The insignificant findings may be either due to the nature of the quizzes given (Johnson et al., 2008) or the engineering course content selected to be taught (Mackey & Freyberg, 2010). Certain kinds of courses or knowledge do not require a rich sharing learning environment, thus social presence might not have much effect on learning. Even though the insignificant results were obtained, these authors still suggested that enhancing social presence may help improve the overall learning experience and make learning more enjoyable for students.

Additional research has found that social presence is a very strong predictor of students' satisfaction towards course. For example, in Johnson et al. (2008)'s research, the evidence suggested that creating and maintaining a shared learning space within an e-learning environment is important for enhancing participants' satisfaction. Moreover, Gunawardena and Zittle (1997) found a very strong relationship between learners' perceived social presence and their overall satisfaction in a text-based medium. In addition, social presence was consistently associated with learner satisfaction in multimedia instruction (Steffey, 2001). Also, Arbaugh (2001) suggested that social