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# Stability of attitudes and participation in online university courses: Gender and location effects

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ABSTRACT

Learning and knowledge creation in higher education is increasingly supported and enhanced by participation in online courses. Current participation theories insufficiently explain the influence of individual factors such as students' attitudes towards online courses during the learning process. Moreover, the role of students' gender and location needs additional clarification. Hence, this study examines the stability and interrelationship of students' attitudes and participation during online university courses, and the moderating influence of gender and location. The participation of $N = 156$ graduate students engaged in online courses was assessed based on the employed learning script, and their attitudes toward the courses were measured by questionnaire survey at six data points. Students' attitudes were largely stable throughout the courses; their participation was less stable, following the online course script. Surprisingly, no significant correlation between attitudes and participation could be identified. Gender effects comprised male students' more stable attitudes, and female students' more stable participation. Location effects resulted in higher stability of both attitudes and participation of remote students, although their participation was lower as compared to local students. These results point at possible critical individual aspects of online learning. For educational research, they suggest a re-conceptualization of attitude theories and models in online settings.

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## 1. Introduction

Learning and knowledge creation in higher education is increasingly supported and enhanced by the use of educational technologies. In order to develop collective expertise (Hakkarainen, Lallimo, Toikka, & White, 2011), university students are stimulated to participate in technology-based and online learning environments, to collaboratively explore and reflect on various topics that materialize as objects in these settings (Muukkonen, Lakkala, & Paavola, 2011). Recently, Hrastinski (2009) proposed a theory of participation, identifying its behavioral components (Hrastinski & Jaldemark, 2012) and reviewing empirical evidence that online participation drives online learning (Hrastinski, 2009). He further stated that online participation is supported by physical and psychological tools, as well as "by all kinds of engaging activities". However, little research has examined the individual prerequisites of participation, especially those impacting students' engagement, such as their attitudes towards online courses.

Available research on attitudes and technology has focused so far on users' expectancies of performance vs. effort, on their intentions to use the technology and, in some cases, on their actual use behavior (e.g., Venkatesh, Thong, & Xu, 2012). However, Bagozzi (2007) observes that the current conceptualization of the involved constructs is oversimplified; and indeed, little attitude-related research (e.g., Pynoo et al., 2012) has been conducted in complex educational settings, as in those described by Hrastinski (2009). Also, as Bagozzi (2007) further comments, the attitude influence on technology usage has been most uncritically assumed; little empirical evidence has been provided with respect to this influence in general, and to its size and limitations in particular. Even less is known about the way in which the influence of attitudes is moderated by individual factors such as users' gender and location – two variables that were otherwise considered in numerous online learning studies (e.g., Goel, Zhang, & Templeton, 2012; González-Gómez, Guardiola, Rodríguez, & Montero Alonso, 2012; Kimbrough,

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Guadagno, Muscanell, & Dill, 2013). Another issue of participation research in online learning environments is the stability of attitudes and participation during the online learning process. While decreases in participation (i.e., attrition and dropout) have been previously described (Nistor & Neubauer, 2010), a closer look at this phenomenon is still necessary.

Against this background, this study continues a previous one (Nistor & Neubauer, 2010), providing additional findings on students' attitudes towards, and participation in online university courses. Special attention is dedicated to the stability and the interrelationship of attitudes and participation during the learning process, and to the moderating effects of students' gender and location. The conclusions pertain, at the practical level, to the feasibility and facilitation of online learning in higher education. At the theoretical level, they question the applicability domain of previous attitude theories and models in educational contexts, and suggest their re-conceptualization and extension.

## 2. Literature review

### 2.1. Students' participation in online university courses

To define participation in online learning environments, Hrastinski (2009) adopts Wenger's (1998) definition of participation in communities of practice as "referring to the process of taking part, and also to the relations with others that reflect this process". In this sense, participation is a complex process "that includes, for example, doing, talking, thinking, feeling and belonging" (Hrastinski, 2009, p. 79). Hrastinski and Jaldemark (2012) identify information exchange, task management and social support as basic dimensions of participation. Similarly, Muukkonen et al. (2011) describe participation in technology-based environments as constructed upon several layers of pedagogical infrastructure: technical, social, epistemological and cognitive infrastructure. Thus, the learning environment offers an implicit script (Fischer, Kollar, Stegmann, & Wecker, 2013), to which learners entirely or partially comply while, as implied by several models of educational technology use (e.g., Venkatesh et al., 2012), they tend to minimize their effort. Against the background of specific course scripts, participation is typically operationalized as students' responses to assignments such as uploading essays or posting their comments to discussion forums (Hrastinski, 2009; Nistor & Neubauer, 2010). For a more detailed measurement of students' communicative participation, several researchers additionally count students' messages, and the words or characters in each message (Caspi, Chajut, & Saporta, 2008; Nistor & Neubauer, 2010; Remesal & Colomina, 2013).

Exploring the participation behaviors of online learners, Yukselturk and Top (2012) classified them in clusters defined by a combination of gender and other individual characteristics, thus emphasizing the gender effects. In spite of women's lower perceptions of self-efficacy, their participation, and especially their use of computer-mediated communication, was more intensive. This finding is consistent with further studies (e.g., Caspi et al., 2008; Crocco, Cramer, & Meier, 2008; González-Gómez et al., 2012; Kimbrough et al., 2013) and it is explained as women's gender-specific preference for written communication, resulting in better communication with instructors and co-learners, and in more intensive information exchange. However, these findings are somewhat inconsistent, with several researchers (e.g., Prinsen, Volman, & Terwel, 2007) reporting more intensive participation of male students.

Learning technologies enable a student-centered approach of participation across diverse locations (Reushle & Loch, 2008). However, while performance may be similar for online and on-lecture students, students' responses to assignments appear to be less participative in online than in classroom environments (Stowell, Addison, & Smith, 2012). Comparing remote and local online students, Crawford and McKenzie (2011) found corresponding differences in the reliability and speed of their Internet connections, in their confidence and ease with using computers and the Internet, and in their perceptions of online participation. Besides infrastructure differences, communication media constrains participation and impose higher costs for the development of a shared knowledge background (Clark & Brennan, 1991). In consequence, remote online students appear as a distinct learner subgroup performing less intensive participation than both local online and local on-lecture students (Nistor & Neubauer, 2010).

### 2.2. Students' attitudes towards online courses

In general, an attitude is an evaluation of an object of thought (Bohner & Dickel, 2011). Attitudes towards online courses can be defined as student's perceptions pertaining to the course experience and the perceived value of the education received while attending the educational institution, which further predicts academic success and retention (Astin, 1993; Bollinger & Martindale, 2004; Ke & Kwak, 2012). If the learning environment is new to the student, his or her attitudes may be highly positive, due to their curiosity or interest towards a new learning form. Also, a self-selection may occur, such that students who have negative attitudes prior to admission may avoid entering optional courses. During the process of learning, students develop attitudes towards the online courses based on their experiences with, and evaluations of the specific course. In the long term, while accumulating experience in diverse courses, students may develop more general attitudes towards online learning and educational technologies. From the available studies, some focus on attitudes towards specific learning environments (e.g., Ke & Kwak, 2012), others on general attitudes towards educational technologies (e.g., Bollinger & Martindale, 2004). So far, the differences and the relationship between the two perspectives are seldom discussed – one such discussion being provided by Ke and Kwak (2012).

The most frequently studied attitudes towards online courses are students' satisfaction with, and acceptance of the courses. Most satisfaction surveys directly ask ("How satisfied are you with…?") for corresponding ratings by means of a single, global item (e.g., Bollinger & Martindale, 2004; Martínez-Caro & Campuzano-Bolarín, 2011) or employing several items that are either related to different design elements of the course (e.g., Bulu, 2012; González-Gómez et al., 2012; Ke & Kwak, 2012) or to various dimensions of the learning experience (bad vs. good, positive vs. negative, meaningful vs. meaningless, etc.; Nistor & Neubauer, 2010). Acceptance inventories are usually based on general technology acceptance models (such as Venkatesh et al., 2012) and include subscales referring to students' intention to use the online course, as well as their course-related expectations of performance and effort (e.g., Huang, Hood, & Yoo, 2012; Pynoo et al., 2012).

Gender differences in students' attitudes towards online learning may be due to differences in self-efficacy and anxiety. Many researchers (e.g., Huang et al., 2012; Li & Kirkup, 2007; Rozendaal, Minnaert, & Boekaerts, 2003) find that male students are more confident in their

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