

An analysis of online learning self-efficacy in the case of Vietnamese university students

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ABSTRACT

Given the recent emergence of online learning during the pandemic, attention has been given to self-efficacy, which refers to learners' perceptions of their abilities to complete a specific task successfully (W. A. Zimmerman & Kulikowich, 2016). Self-efficacy is found to be predictive of learners' achievement outcomes as well as their learning satisfaction, particularly in online settings in which learners are required to socially interact mainly via digital platforms. However, little research has been conducted to investigate the role of learners' self-efficacy in the online learning environment in Vietnam. Therefore, this paper aims to explore the online self-efficacy of 544 Vietnamese undergraduates and its relationship with their gender and online prior experiences. The study adopted a validated questionnaire measuring online learning self-efficacy, highlighting five aspects: course completion, social interactions, online tool management, interactions with instructors, and academic socialization. The findings reveal an overall moderate belief of online self-efficacy from participants in all dimensions. Results regarding the associations between online self-efficacy with other variables are also discussed, and implications for online learning and teaching are provided.

1. Introduction

Amidst the outbreak of Corona Virus disease, online learning has emerged as a panacea for the crisis (Dhawan, 2020). Online learning, according to Singh and Thurman (2019), refers to any kind of educational instructions delivered in a virtual environment through the use of the Internet for the purpose of learning and teaching; and the interactivity can take place both synchronously and asynchronously. This means that most educational institutions have to adapt to the transition and transform their instructional practices to meet the requirements of this online learning mode. In the Vietnamese context in which this study was conducted, a combination of the synchronous and asynchronous classroom has also been utilized widely in universities and colleges (Hoang & Le, 2021; Le, 2021). Students not only have the opportunities to interact with peers and instructors, and engage in the lessons in real-time but also access materials or discuss with friends on a learning management system. The two delivery modes both have merits and constraints (McVay, 2004); yet, this blended mode has been considered to be the best option for the current situations so far. Under these virtual circumstances, learners are required to be more independent

and autonomous to achieve academic success (Muliyah, Aminatu, Nasution, & Hastomo, 2020). As Cropley and Kahl (1983) pointed out that compared to a conventional face-to-face classroom, the features of the virtual classroom are quite distinctive regarding some selected psychological dimensions such as motivation, learning process, and communication process. As one of the key motivational factors, self-efficacy essentially contributes to learners' academic achievement in self-regulated online learning processes (B. J. Zimmerman, 2000). In particular, according to Kundu (2020), self-efficacy has a crucial part to play for successful online learners in the Asian contexts, where the learning cultures have been permanently placed a heavy emphasis on teachers' roles. This is also the case for Vietnamese learners who mostly rely on teachers in traditional learning environments.

Given the significant role of self-efficacy in providing learners intrinsic motivation to sustain in the online learning environments, it is essential to explore this concept among learners, especially Vietnamese learners, in order to help them nurture and strengthen their self-efficacy in every online learning activity. Several attempts have been made to explore factors affecting online self-efficacy (Kundu, 2020; Peechapol, Na-Songkhla, Sujiva, & Luangsodsai, 2018) as well as dimensions of online self-efficacy (Hodges, 2008; Tsai, Cho, Marra, & Shen, 2020). Meanwhile, other research investigated the connection between online self-efficacy and online learning experience (W. A. Zimmerman & Kulikowich, 2016) and learning satisfaction (Aldhahi, Alqahtani, Baattaiah, & Al-Mohammed, 2021; Jan, 2015; Shen, Cho, Tsai, & Marra, 2013), self-regulated strategies and task value (D. Lee, Watson, & Watson, 2020). These studies suggest that online self-efficacy strongly predicts learners' satisfaction with e-learning and is positively correlated with the online learning experience. In addition, critical factors in deciding online self-efficacy are learning experiences and knowledge, social impact, interaction, feedback and reward, learner attitude, and motivation (Kundu, 2020). The concept is found to be multidimensional and reflects the sophisticated and multifaceted condition of virtual learning. The prominent point is that online self-efficacy is necessary for learners in such a challenging learning environment as virtual classrooms, in which peer interaction and interaction between learners and instructors, are limited and indirect (Shen et al., 2013). Recent work by Vietnamese researchers has been also carried out to explore self-efficacy in online learning in terms of different aspects: technology self-efficacy (Doan, 2021), computer self-efficacy (Ho et al., 2020), English self-efficacy (Kim, Wang, & Truong, 2021; Truong & Wang, 2019). A recent study by Nguyen and Phan (2020) examined the changes in students' self-efficacy in performing TOIEC tests after they were exposed to a preparation course.

Taken all together, this study seeks to explore the perceptions of self-efficacy of Vietnamese university learners' who have certain experiences in online courses during the pandemic. The originality of this research is that it, for the first time, investigates the beliefs of online self-efficacy of Vietnamese undergraduates regarding five dimensions: course completion, social interactions, online tool management, interactions with instructors, and academic socialization. This study also contributes to a deeper understanding of the connection between online self-efficacy and other variables, including gender and prior online learning experiences in the Vietnamese contexts. In line with these goals, the study aims to answer the following research questions:

1. How do students perceive their self-efficacy in online courses?
2. Is there any relationship between students' perceived self-efficacy and their gender and their prior online learning experiences?

2. Theoretical basis

2.1. Self-efficacy in online learning

According to Schunk (1991), self-efficacy is often described as perceived capabilities within a particular situation. In academic settings, B. J. Zimmerman (2000) demonstrates that students' self-efficacy is essential in predicting numerous forms of motivation regarding the choice and the effort they make as well as their level of persistence and their emotional reactions. In other words, self-efficacy impacts learners' selection of activities, efforts, and persistence (Bandura, 1982). That is to say, students who judge themselves efficacious are likely to fearlessly undertake various tasks, constantly endeavor to face challenges, and firmly persist in overcoming obstacles (Bandura, 1982). In this sense, online learners who are highly self-efficacious will devote more cognitive effort and deal with instructional resources without much guidance from the teachers. Numerous attempts have been made to determine the dimensions of online self-efficacy to build a valid measure for this construct (e.g., Hodges, 2008; Kundu, 2020; Peechapol et al., 2018; Shen et al., 2013; Tsai et al., 2020; W. A. Zimmerman & Kulikowich, 2016). The most common identified facets are technology use, online learning environment, and interactions. These dimensions significantly contribute to understanding the concept of self-efficacy in online settings. The current study also evaluates learners' online self-efficacy within these constructs.

Indeed, self-efficacy is the key to academic achievements in online education (Kundu, 2020). Research has shown that self-efficacy is positively associated with successful learning performance and learner satisfaction in online education. For instance, the investigation into self-efficacy among 338 students with the diverse online learning experience of W. A. Zimmerman and Kulikowich (2016) unraveled that students who are more self-efficacious tend to succeed in online courses regardless of their prior experiences. The three subscales in self-efficacy measured in the study were online learning, time management, and technology use. In a similar vein, Jan (2015) found a positive association between academic self-efficacy and satisfaction with online learning but not computer self-efficacy. In particular, among 103 participants, those aged 35 and above reported a stronger sense of academic self-efficacy than younger ones. This positive correlation lends support to what Ho et al. (2020) and Aldhahi et al. (2021) discovered in their research during the online learning due to the coronavirus pandemic. However, Aldhahi et al. (2021) discovered that key factors predicting learner satisfaction are self-efficacy in time management and technology use. Unlike the abovementioned studies, C. Y. Lee (2015) considers self-efficacy as a dynamic and unstable trait and examines its changes across a semester. It was discovered that self-efficacy regarding course content is prone to change while self-efficacy in using only technologies varies over time, depending on their level of confidence in technology use. This finding was confirmed by the study of Nguyen and Phan (2020), who also demonstrated that 94 Vietnamese learners' TOEIC self-efficacy improved moderately after the test preparation course. Other studies conducted in Vietnam also seek to explore self-efficacy in a variety of domains. To illustrate, investigating factors affecting learners' online interaction, Pham (2020) reveals that Internet self-efficacy was the most influential. Meanwhile, the outcomes of Doan's study (2021) show that technology self-efficacy has a bearing on learners' intention to take an online course in both direct and indirect manners. Similarly, Truong and Wang (2019), and Kim et al. (2021) provide more insights into the English self-efficacy of Vietnamese students, who tend to report their English self-efficacy at a moderate level due to the inherent culture of being humble.

2.2. The theory of self-efficacy

According to the theory of self-efficacy by Bandura (1982, 1999, 2001), "people avoid activities that they believe exceed their coping capabilities, but they undertake and perform

assuredly those that they judge themselves capable of managing” (Bandura, 1982, p. 123). That is to say, learners who are less self-efficacious to accomplish an assignment may avoid doing that, while those with a stronger belief in their capability tend to readily fulfill it. Furthermore, whether self-efficacy is judged accurately or improperly, it is based on four main sources of information. They are performance achievements, observational experiences, articulated persuasion, and physiological and affective state (Bandura, 1982). The theory also states that in specific circumstances, the best predictors of behavior are the self-perceptions of individuals within those situations. In other words, learners may perceive their self-efficacy varying from task to task, relying on a certain amount of the four mentioned inputs (Schunk, 1991). Specifically, in the field of online learning, what learners accumulate from their prior online experience, what they notice during interactions with peers and instructors, what kind of feedback they receive, and how much physical and mental stress they suffer all can reinforce or diminish their self-efficacy.

2.3. Self-efficacy and gender

The link between self-efficacy and gender has yielded some contradictory results. Some studies reported gender variation, while others identified no significant difference regarding their association with self-efficacy. In the former strand, female students show a significantly stronger sense of online self-efficacy than male students (e.g., Fletcher, 2005; Jan, 2015; Shen et al., 2013). However, the findings of Kreth, Spirou, Budenstein, and Melkers (2019) demonstrate that men are likely to be more self-efficacious than women. This inconsistency is possible because of the distinct characteristics of their participants. The participants in Kreth et al. (2019) were graduates of computer sciences learning, while participants’ discipline in other studies varied. In the second strand, no gender difference is identified considering their beliefs in self-efficacy. Hung, Chou, Chen, and Own (2010) revealed that both male and female students had the same levels of computer self-efficacy, while Artino (2008) found no positive association between learning self-efficacy and gender among 646 students. Likewise, the study of Truong and Wang (2019) suggests that female students are as self-efficacious as male students. All in all, this relationship remains debatable and needs more research to be done for validation.

2.4. Self-efficacy and prior online learning experience

The growing body of literature has shown that learners’ previous online learning experiences can predict the level of their online self-efficacy. Specifically, the results of Fletcher (2005) highlight that previous online learning can affect online self-efficacy. Meanwhile, a significant positive association between online self-efficacy and the number of prior online courses in studies by Taipjutorus (2014) and W. A. Zimmerman and Kulikowich (2016). In the same manner, Jan (2015) and Shen et al. (2013) detect a positive relationship between prior experience and academic self-efficacy and computer self-efficacy. In the Vietnamese context, the investigations into the English language self-efficacy of Vietnamese learners (e.g., Nguyen & Phan, 2020; Truong & Wang, 2019) also indicate that mastery experience is found to be the most powerful source of self-efficacy. However, the two studies examined self-efficacy in English learning in face-to-face classrooms. Therefore, to fill the gap, the current study was conducted to contribute to the existing literature about the correlation between online self-efficacy and prior online learning courses taken by learners.

3. Research method

3.1. Pedagogical setting and participants

A total of 544 Vietnamese undergraduates, including 253 freshmen, 234 sophomores, and 50 seniors in two private universities in Ho Cho Minh City, participated in this study. They were

from various majors, and all took a different number of online courses. The mean number of their previous online courses was 8.22. Among them, 318 (58.5%) students were female, and 226 (41.5%) were male. Their mean age was 18.79. Currently, all the online courses in the two universities have been delivered synchronously and asynchronously. Face-to-face lessons have been replaced by online lessons through Microsoft Teams, which means that teachers and students have live sessions for all the courses. Besides, interactions between teachers and learners can occur in the learning management system in which assignments and resources can be uploaded, and discussion forum can be initiated.

3.2. Design of the study

According to Hodges (2008), self-efficacy measures are typically presented as surveys on which respondents evaluate their competence to successfully perform a given task. In this study, the measure was the questionnaire adapted from Shen et al. (2013). It contained five dimensions of online self-efficacy regarding students' ability to complete an online course (08 items), to socialize with peers (05 items), to handle tools in CMS (05 items), to interact with instructors online (05 items), to interact with classmates for academic purposes (06 items). The items in the online self-efficacy measurement were ranked on a five-point Likert scale from 1 (Strongly Agree) to 5 (Strong Disagree). High scores indicated a high level of confidence or self-efficacy in performing the tasks.

The rationale for choosing this questionnaire was two-fold. The primary reason was its validity and reliability for measuring online self-efficacy, as was validated by Tsai et al. (2020). Another reason was its relevance to the context of this study in which learners took the online courses in both synchronous and asynchronous mode, which means that a variety of activities need to be taken to gain good achievements in the courses. As self-efficacy beliefs are situation-specific (Hodges, 2008), the adopted survey was appropriate for students to evaluate their self-efficacy in every single activity.

Cronbach's was run to examine the internal consistency of all the items. The values ranged from .89 to .91 across the dimensions suggesting that the reliability of the survey was high.

3.3. Data collection and analysis

Students were required to fill out the online questionnaire, which was in Vietnamese, via Google forms. Explanations about the purposes of the study as well as clarifications of some items in the survey were given. They were asked to report their level of confidence when involved in various activities in online courses. The survey took approximately 15 minutes to complete. After that, all responses were collected, coded, and analyzed by SPSS 18. Descriptive statistics were calculated, and Pearson correlational tests were run to see the relationship between the variables. T-test was also run to see any difference between males and females in perceiving their online self-efficacy.

4. Research results

4.1. Students' belief in online self-efficacy

Participants' responses about their self-percept of efficacy are presented in Table 1. On a five-point Likert scale, students reported their self-efficacy at a moderate level in all five domains: the ability to complete online courses with $M = 3.75$ ($SD = .67$), the ability to interact socially with peers with $M = 3.81$ ($SD = .69$), their ability to handle tasks in the course management system with $M = 4.08$ ($SD = .68$), their ability to communicate with instructors $M = 3.90$ ($SD = .69$), and their ability to interact with friends for academic purposes with $M = 3.88$ ($SD = .67$). Overall, the

respondents only showed an average self-efficacy in online learning, which concurs with the findings of Truong and Wang (2019). A possible explanation is that Asian culture has a part to play in affecting the teaching practice, which results in such behavior and attitude among learners. Another probability is that students have relied on teachers for decades. This well-established habit may lead to a medium of confidence in dealing with tasks in virtual environments.

Out of the five aspects, students felt most self-efficacious in coping with all the activities in the learning management system. This indicates that millennials are likely to be good at digital tools and can make use of these skills to serve their learning. In contrast, it was suggested that students had the least self-efficacy in fulfilling the requirement of the online courses, especially the item “You can understand complex concepts” with $M = 3.25$ ($SD = .93$), and the item “I can keep up with the course schedule” with $M = 3.50$ ($SD = .88$). This suggests that students seem not to be familiar with online learning despite certain online experiences reported.

Table 1

Descriptive statistics and Mean of online self-efficacy in five dimensions

	Mean	Std. Deviation	N
Number of online courses	8.22	6.31	544
Course completion	3.75	.67	544
Social interaction	3.81	.69	544
Online tool management	4.08	.68	544
Instructor interaction	3.90	.69	544
Academic socialization	3.88	.67	544

Source: Data analysis result of the research

4.2. The relationship between gender and online self-efficacy

Results from the correlation analyses are demonstrated in Table 2. The data indicate that all five dimensions of online learning self-efficacy were significantly related to one another (range from $r = .613$ to $r = .761$). However, as shown in Table 2, gender was not significantly correlated with online self-efficacy in all aspects. This is consistent with the findings of Artino (2008), suggesting no correlation between gender and online self-efficacy.

An independent sample t-test was also run to analyze the gender variation in online learning self-efficacy. No significant difference was identified, which lends support to what Truong and Wang (2019) discovered. Their results suggest that male and female students are equally self-efficacious. However, this finding contradicts some previous studies (e.g., Fletcher, 2005; Jan, 2015; Kreth et al., 2019; Shen et al., 2013) demonstrating gender variation in self-efficacy. This inconsistency can be explained by the fact that distinct gender differences may be observable on the condition that they specialize in a specific domain that showcases their sexual characteristics based on their experience. To illustrate, male participants in Kreth et al. (2019) were reported to be more self-efficacious than females in the computer course for graduates. However, the respondents in the current study were mainly freshmen and sophomores, which means that the specialization in their majors is not quite distinctive. This may contribute to no gender difference in their online self-efficacy in all dimensions.

Table 2

The correlation matrix of variables

Variables	1	2	3	4	5	6	7
1. Gender	1						
2. Number of online courses	.064	1					
3. OSE in course completion	.006	.026	1				
4. OSE in peer interactions	.035	.042	.655**	1			
5. OSE in online tool management	.054	.035	.692**	.613**	1		
6. OSE in instructor interactions	.038	.000	.688**	.709**	.707**	1	
7. OSE in academic socialization	.017	.033	.730**	.761**	.669**	.741**	1

Source: Data analysis result of the research

4.3. The relationship between prior experiences and online self-efficacy

Respondents revealed that, on the whole, they took 8.22 online courses (SD = 6.31). Correlational analysis shows that the number of prior online courses taken by participants was not associated with online self-efficacy in all dimensions (Table 2). The findings indicate that regardless of the student's status, their online learning experience did not influence how self-efficacious they were in the virtual classroom. This is inconsistent with the results in some prior studies (e.g., Jan, 2015; Shen et al., 2013; W. A. Zimmerman & Kulikowich, 2016), demonstrating a positive relationship between prior experience and online self-efficacy. A possible explanation for this discrepancy is due to the unique experience learners underwent during online courses in a certain teaching context. Each education institution may exploit different platforms and implement different approaches to virtual learning. At the same time, being a freshman does not mean a lack of online learning experiences because these first-year students might have been involved in virtual classrooms during high school. Besides, most online courses the students in the study took were held during the epidemic when online learning mode seemed to be a temporary replacement and lacks preparation. This partly explains the fact that no correlation was detected.

5. Conclusion

In sum, the purpose of the study is to explore the beliefs of online self-efficacy of 544 Vietnamese undergraduates and its relationship with gender and prior online experiences. The study shows that the overall, students reported their self-efficacy at a modest level. The results also indicate that no significant relationship was detected between online self-efficacy and gender. Students' prior online learning experience was found not to be related to their online self-efficacy. In light of these findings, the study has some practical implications for online education policies and pedagogy. Given the fact that self-efficacy has a pivotal role in obtaining success in online learning (Peterson & Arnn, 2004), it is important to strengthen the students' online self-efficacy. Based on the principles suggested by Bandura (1982), self-efficacy can be enhanced through self-mastery, verbal persuasion, and observational experiences. However, in the study, although the students took a number of online courses, these attainments are unlikely to impact the way they perceive their self-efficacy. This implies that the quality of online courses, including the contents, the management, and the evaluation system, needs considering for improvements by educational institutions. Moreover, teachers have a crucial part to play in building students' self-efficacy in online learning environments in which there is less interaction compared to face-to-face settings. Teachers should provide thorough instructions, offer various opportunities for practice, and give

persuasive feedback. In this way, teachers also promote vicarious learning when students involve in peer interaction. Altogether, these techniques hopefully can make students feel more efficacious in their virtual learning, resulting in more learning satisfaction and higher achievements.

Despite its significant contributions, this study has some limitations. In the study, prior experiences of participants include both synchronous and asynchronous modes. Further research can be conducted to examine the effects of each mode of delivery separately on learners' self-efficacy. Besides, the study did not explore the connection between online self-efficacy and academic status because it was later discovered that the assessment criteria of the two universities are different. Future work can be carried out to validate this association.

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