The Comparison of Students' Perceived Levels of Self-Efficacy in Live, Online and Live Online Courses

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Abstract

Education during the COVID-19 pandemic has been greatly disrupted. While live courses where students meet face-to-face in classrooms are physically limited, online courses become more popular where students learn from pre-recorded videos at their own pace. In contrast, live online classes are learning modes where students and teachers meet via webinar tools such as zoom, skype, google meet, Webex, teams, to name a few. This study compared students' perceived levels of self-efficacy in these three different settings. Self-efficacy is defined as a belief in one's ability to accomplish a task, which can be influenced by mastery experiences, verbal persuasion, vicarious experiences, and physiological states. An online questionnaire with 12 closed-ended statements based on a 5-Likert scale was developed, representing the four factors in the three learning modes. A total of 105 voluntary responses were received. A paired sample t-test determined statistical differences in the mean scores. The results at the significance level of 95% showed that the mean score of mastery experiences was the greatest in live courses (4.5), followed by live online (4.4) and online courses (3.3). The same was observed in vicarious experiences where live courses gained the most significant mean (4.5), followed by live online (4.3) and online courses (1.7). The means of verbal persuasion between life (4.5) and live online courses (4.3) did not differ significantly, but the lowest was in online courses (1.6).

Interestingly, the reverse trend was found in psychological states in which the greatest was seen online (4.7), followed by live online (4.5) and live courses (3.6). The analysis above was based upon students who had no technical difficulties accessing live online courses. However, this may not apply to contexts where internet connection is problematic. For educational implications, the findings revealed that live online courses are the most appropriate learning mode during the pandemic. In contrast, online courses are associated with lower levels of mastery experiences, vicarious experiences, and verbal persuasion perceived by learners, whereas live courses lowered psychological states.

Keywords: self-efficacy, live courses, online courses, live online courses

INTRODUCTION

Technological advancement helps ease and improve education in various aspects. Recently, digital transformation in learning has become more practically evident, driven by the pandemic of COVID-19. As a result, schools in multiple countries have been closed, making learning activities become entirely online. This study compared students' perceptions towards their self-efficacy in three modes of learning: live, online, and live online courses. A live course is referred to as a setting where students meet teachers face-to-face and have full access to hands-on activities in the classroom as well as interaction with peers. An online course is referred to as ubiquitous learning, which can occur at anytime and anywhere through a computer or mobile device. This mode relies exclusively on self-regulated learning. Students have to set their schedule when to review online

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learning materials. Unless they take an active role in interacting with their teachers by themselves, constructive feedback and queries are impossible. Finally, a live online course adopts the nature of ubiquity, where learning can take place anywhere. However, time to study is regularly scheduled, like live classes. Also, the spirit of a live course where students meet with their teachers and peers remains intact, but through an online system.

Complaints have been recently made by many students when their classes have to go online. This also raises concerns among parents and teachers. However, instead of focusing on students' rather superficial preferences, this study aimed to explore how these three learning modes affect students' self-efficacy. The hypothesis used in this study is that students are more likely to develop their self-efficacy more effectively in live courses where they can fully interact with others. On the other hand, online courses may potentially lower this. Interestingly, no empirical results have shown how live online courses affect students' self-efficacy. Thus, its position compared to the other two has been unexplored. However, it is assumed that live online courses can perhaps remain the strengths of online classes while minimizing the limitations of online lessons. Therefore, this study is to close this gap using statistical analysis.

LITERATURE REVIEW

Fundamentally, self-efficacy refers to the belief in one's own ability to accomplish a particular task successfully and the influence in one's own behavior in order to avoid adverse outcomes or unsatisfactory performances (Bandura, 1977). Bandura and Schunk (1981) explain that people who have a low level of self-efficacy tend to avoid challenging tasks. In contrast, others who attain a high level of self-efficacy are more likely to accept challenges that they have to encounter and work persistently toward their goals, which results in achieving more desirable outcomes. Lazarus and Launier (1978) also suggest that people who perceive that they are inefficacious and undermined by obstacles, especially in stressful circumstances, tend to surrender to challenges and withdraw their action from participation. According to the social learning perspective, Bandura (1982a) posits four primary sources of self-efficacy: mastery experiences, vicarious experiences, verbal persuasion, and physiological states. The interrelationship between these four aspects builds up one's self-efficacy, which individuals' performances can constantly evaluate. Schunk (1989) suggests that if a task is successful, efficacy will be heightened until it reaches the point where failure does not impact them.

First and foremost, personal accomplishments are influenced by the principle of *mastery experiences*. This source of progress in self-efficacy is the most effective method to develop a strong sense of efficacy. Individuals' efficacy will surge if they can accomplish the task by using their own skills and abilities to handle new challenges. However, occasional failure at the early course of events will lower efficacy, unless they are diligent and determined enough to overcome these mistakes as skills are being developed (Bandura,1982b). At a particular stage where the skills are fully intensified, these can be applied to other completely different situations that require similar competency levels (Bandura, Jeffery, & Gajdos, 1975). In addition, mastery experience also refers to how individuals interpret their own performance in a particular task which may influence self-efficacy. An example of this would be how different students perceive their test results as the way to improve and vice versa (Bandura,1977).

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Secondly, although mastery experience is the most effective means to cultivate self-efficacy, another source of confidence in one's ability should also be considered, and that is *vicarious experience*. People tend to develop their self-efficacy from the experiences and knowledge of others (Rosenthal and Zimmerman, 1978). When people observe a model accomplishing a particular task without any negative impact to them, the notion will be induced that if they dedicate more time and effort to the same task that the model achieved, they are also likely to improve or even achieve the same task as well (Bandura & Barab, 1973). On the other hand, if the model that has the similar competency fails the task, the observer's judgement will be reduced in spite of their high effort (Brown & Inouye, 1978). However, vicarious experience must be presented in the environment that is excluded from social comparison of one's own capabilities. Otherwise, the expectation generated by the model alone will be less influential (Kazdin,1973). In addition, the more apparent the task performed by the model, the higher chance of developing self-efficacy juxtaposed to that of the model with ambiguous actions in terms of consequences (Kazdin, 1974c).

Furthermore, *verbal persuasion* is the constructive impact that someone's words are positively affecting self-efficacy. Even though this resource has limitations in its effectiveness, it relies on whether the praise or verbal encouragement is practical or not (Bandura,1982a). This type of resource is appropriate for people who have high self-esteem and know that they are capable of participating in a certain challenge (Chambliss & Murray, 1979a, 1979b) and also those who do not rely on their innate ability (Martocchio, 1994). Verbal persuasion can be more efficient if they are linked with action. That is to say, when people are being encouraged verbally but there are no challenges being faced, self-efficacy is less likely to be developed (Meyer,1992).

Lastly, our *physiological state* and emotional arousal in different circumstances are also aspects to be considered. People tend to envision success when there is no arousal. In contrast, in a situation where there are high levels of stress or adverse situations, self-efficacy will be lowered (Bandura,1982b). However, these factors can be reduced if individuals can develop skills to cope with these threatening circumstances. In order to achieve these skills, one must confront their fear and anxiety so that they gain personal experiences from these situations (Averill, 1973; Szpiler & Epstein, 1976).

RESEARCH METHOD

A self-administered online questionnaire was distributed to high school students residing in Bangkok, Thailand. A total of 105 responses was received which included 17.1%, 56.2%, and 15.2% of students in grades 10, 11, and 12, respectively. The remaining number included school leavers. The sampling method used in this study was a convenience sampling method taking information from those easy to reach and willing to take part in the online survey during the COVID-19 pandemic. The respondents were informed about the purpose of this study before proceeding with their online response so that their assumed consent could be implied. This survey included 12 questionnaire statements which were designed to be close-ended 5-point Likert-type scales ranging from strongly disagree (scale 1) to strongly agree (scale 5). The statements were divided into four categories, comprising mastery experience, vicarious experience, verbal persuasion, and physiological states.

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It is important to note that the participants were informed about the research purpose. They voluntarily decided to take part in this process of data collection. In addition, the participants were aware of their right to withdraw their participation at any time that they felt they would like to. All the information of the participants was kept confidential. Only the researchers could gain access to the data. No personal identification can be found in this study because only numerical data is presented.

FINDINGS AND DISCUSSION

With reference to Table 1, the comparison of levels of mastery experience in the three learning modes varied statistically. The level of mastery experience in live courses was shown to be the highest (x = 4.5), at the significance level of 95% (see Table 2 for the paired t-test results), followed by the mean gained in live online courses (x = 4.4). The level of mastery experience was found to be the lowest in online courses (x = 3.3). The results here are not surprising. This is due to the fact that in live courses, students can interact with peers as well as teachers. Hands-on activities can be made available for students to gain first hand experiences (Piyawattanaviroj et al., 2019; Threekunprapa & Yasir, 2020a, 2020b; Changtong et al., 2020). Unlike online courses, students are kept passive in their mode of learning. They only interact with pre-recorded videos, making the development of mastery experience insufficient (Maneejak & Yasri, 2019). Interestingly, although statistically lower than the mean in live courses, live online courses appeared to attract a great level of agreement when mastery experience is considered. Therefore, it is argued here that the development of mastery experience in live and online courses are more-or-less the same. When live online courses are managed properly, students can be exposed to meaningful learning experience, which can then maintain their self-efficacy in a positive level (Seangdeang & Yasri, 2019).

Table 1. The mean of self-efficacy factors in three modes of learning comprise live courses, online courses, and live online courses. (N=105)

	Mastery Experience	Vicarious Experience	Verbal Persuasion	Psychological State
Live courses	4.5	4.5	4.5	3.6
Online courses	3.3	1.7	1.6	4.5
Live online courses	4.4	4.3	4.3	4.7

Moving on to the level of vicarious experience, the same trend was found as mentioned above. The level of vicarious experience in live courses was shown to be the highest (x = 4.5), at the significance level of 95% (see Table 3), followed by the mean gained in live online courses (x = 4.3). In contrast, the level of vicarious experience was the lowest in online courses (x = 1.7). Two key findings emerged in this section. First, although the level of self-efficacy based on vicarious experience in live online courses was statistically lower than that of the level found in live courses, both are considered a high level. Students can visualize useful examples both from teachers and peers when they can actually see each other regardless of the platform where they meet (Maneejak,

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& Yasri, 2020). This could be done effectively either online or on-site. The matter is that if teachers can use the live online platform to allow students to visually interact with each other, they come up with more or less the same result. Second, a great concern is now raised in this study. The level of self-efficacy in respect of vicarious experience has gone down to as low as 1.7 which is considered critical. Despite the fact that students can visually perceive the recorded screen and perhaps animation, without meaningful interaction, students are unlikely to develop their various experience (Praputpittaya & Yasri, 2020). We argue here that it is not what they see that matters, but how they interact with what they can see. Live online courses are successful in this respect.

Verbal persuasion was found to be the most surprising. This is because the mean score gained in live courses (x = 4.5) was not statistically different from that gained in live online courses (x = 4.3) at the significance level of 95% (see Table 4). However, the level of self-efficacy in the area of verbal persuasion in online courses was statistically the lowest (x = 1.6). Once again, this result shows that live courses and live online courses are equally effective in encouraging students through verbal persuasion. On the other hand, the aspect of self-efficacy fails to develop in online courses. The lack of interaction is believed to be the major cause for this undesirable outcome. Students are unable to have meaningful conversation with their peers as well as teachers. In contrast, in live online courses, this can be done through turning on a microphone to speak up, or through the means of chat messages. In our own experience, students tend to use the former less, but the latter more. Important, this is the mode of discussion that students in this present time prefer the most.

Finally, another interesting result was found in this study. Students reported to be the most psychologically and physiologically comfortable in live online courses, as the mean score was found to be statistically the highest (x = 4.7) at the significance level of 95% (see Table 5). The mean score gained in online courses was the second (x = 4.5). Interestingly, statistically the lowest was the mean score gained in live courses (x = 3.6). A possible explanation for this is that students are behind the screen, which allows them to be as they are. The atmosphere is supportive as they can stay at home. In contrast, in live courses, students may be pressured by other students where social anxiety might be intense. On top of that, students in this present time are considered digital natives who are comfortable with using technology (Maleesut et al., 2019). Therefore, this online platform becomes their intrinsic mode of learning and suits their learning habits naturally.

Furthermore, the mean score of 105 respondents, as shown in Table 2 was used to perform paired-sample T-tests with 95% significance level in order to investigate the mean score of self-efficacy factors whether each of the learning methods was statistically different or not. According to Table 3, the data analysis from paired sample T-tests (N = 105) shows that the average of mastery experience in live courses, live online courses and online courses were all statistically different from each other at 95% significance level with the T-test score of t = 0.00.

Table 2. T-test shows comparison of mean in mastery experience in each mode of learning (N=105).

Mastery experience	Live courses	Online courses	Live online courses
Live courses		0.00	0.00
Online courses	0.00		0.00
Live online courses	0.00	0.00	

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By comparing the mean score of vicarious experience in live courses, online courses, and live online courses using paired T-test, it was evident that the mean score of the three methods of learning clearly differed with 95% significance level (t = 0.00) as shown in Table 3.

Table 3. T-test of the mean in vicarious experience in each mode of learning (N=105).

Vicarious experience	Live courses	Online courses	Live online courses
Live courses		0.00	0.00
Online courses	0.00		0.00
Live online courses	0.00	0.00	

Taken together, interestingly, when comparing the mean score of verbal persuasion from 105 respondents using T-test, the result revealed that live course and live online course were statistically similar to each other as t = 0.06 (see Table 4). However, the comparison of verbal persuasion between online courses and live courses was significantly different. Likewise, online courses and live online courses demonstrated the same pattern in terms of verbal persuasion, as shown in Table 4.

Table 4. T-test of the mean in verbal persuasion in each mode of learning (N=105).

Verbal persuasion	Live courses	Online courses	Live online courses
Live courses		0.00	0.06
Online courses	0.00		0.00
Live online courses	0.06	0.00	

Focusing on physiological states, the T-test proved that mean scores of physiological states in live courses, online courses and live online courses were all statistically different from each other. Despite the fact that online courses and live online courses show t = 0.01, it is still regarded as statistically different (see Table 5) at the significance level of 95%.

Table 5. T-test of the mean in Physiological state in each mode of learning (N=105).

Physiological state	Live courses	Online courses	Live online courses
Live courses		0.00	0.00
Online courses	0.00		0.01
Live online courses	0.00	0.01	

CONCLUSION

The purpose of this study is to compare high school students' perceived levels of self-efficacy (a belief in one's ability to accomplish a certain task) in three different settings: live courses (conventional face-to-face classrooms), online courses (asynchronous online classes) and live online courses (synchronous online classes). This study provides statistical evidence in the comparison of self-efficacy in different modes of learning based on 105 high school students. The

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results of mean score are evident that live courses can help students to maintain the level of mastery experience, vicarious experience, and verbal persuasion the most. In contrast, online courses potentially lower the level of self-efficacy in many aspects, including mastery experience, vicarious experience, and verbal persuasion. However, live online courses can retain the level of self-efficacy in verbal persuasion and physiological state. Furthermore, when the mean comparison is made in terms of verbal persuasion, individuals will experience the same level of encouragement in both live courses and live online courses. These results could be implemented to support students and improve the educational system. As proven, live online courses are the most effective mode of learning due to the consistency of the self-efficacy level in every aspect. Secondly, the traditional learning method in live courses heightens the level of mastery experience, vicarious experience, and verbal persuasion. However, this method might cause discomfort that negatively affects individuals' learning progress. This study suggests that this factor could be overcome by encountering these undesirable circumstances. Last but not least, despite the fact that online courses lower many aspects of self-efficacy, students are most comfortable and confident in this mode of learning. There are also limitations in this study that should be considered. This analysis method was based upon students who had no internet difficulties accessing online courses. In other words, these findings might not be applicable to contexts where internet connection is problematic.

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