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Relationship among E-Learning Systems, Self-Regulation, and Loneliness in a Blended Learning Context

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Abstract

The growing popularity of e-learning has led to unforeseen consequences. With the rise of e-learning has also come a rise in loneliness among students who are isolated socially. However, there is little data in the context of blended learning with e-learning attitudes and loneliness. Therefore, the purpose of this study was to examine the relationships of loneliness and e-learning self-regulation with e-learning systems in a blended learning context. Using structural equation modeling, a sample was drawn from 148 university students based in Thailand. The results indicated that loneliness has no relationship with e-learning self-regulation and no direct or indirect relationship with e-learning systems. The final model explained 41% of the variance of e-learning systems. This indicates that loneliness may not be a significant factor when schools switch to blended learning rather than fully online teaching.

Introduction

Due in part to the global Covid-19 pandemic, there has been a huge shift towards e-learning use among higher education institutions (Education, 2020. As with any transition, there have been challenges that schools have faced as the move to an online milieu. For example, there have been concerns with lost revenue, frustrated faculty, and a general lack of preparedness of tertiary institutions to meet the demands of the current crisis (Gwamba et al., 2018).

For students, some of the problems involve struggles to access and utilize the e-learning platform, an inability to work in isolation and a sense of loneliness as many opportunities for socializing have been removed due to the closure of campuses and social distancing measures (Hall & Batty, 2020; Hobbs, 2020). In other words, without the structure of a traditional learning environment and the socializing opportunities that come with this type of setting, many students appear to lack the self-control or self-regulation to navigate e-learning alone. Nevertheless, some schools have not completely forgone the traditional teaching experience but instead have moved to a blended learning experience in which students have a mixture of online and face-to-face learning opportunities.

Therefore, the purpose of this study is to examine the relationships among attitudes towards e-learning, self- regulation, and loneliness in the context of a blended learning. With the almost wholesale adoption of e-learning, at least partially, by most universities and

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colleges, there is a growing need for research into students' perception of the use of blended learning approach along with other concepts that may be associated with it. As such, institutions and educators need to be aware of the relationships among the variables in this study to inform of best practices.

E-Learning

E-learning is a distinct type of online learning in which there is an emphasis on facilitating a learning experience through a learning management system such as Moodle (Sangrà et al., 2012). Blended learning is a combination of e-learning and traditional teaching. An example of blended learning is a teacher who uses online activities and perhaps a learning management system while also continuing to meet students face-to-face, provide non-electronic assignments, and/or share content in a lecture style. Blended learning is a type of e-learning in that the context is not fully online. When e-learning is done well, it can develop thinking skills, encourage collaboration, and help students to develop empathy (Gachago et al., 2017). However, there are also many complaints that students have about e-learning.

Many students have a negative view of e-learning (Abbasi et al., 2020). Complaints include struggles with access, incompetence of the teachers, and a lack of social presence of the teaches online (Harrison et al., 2017). Social presence may be crucial given that many students are not able to socialize locally due to Covid-19 lock- down orders. These complaints about e-learning are compounded when students begin to take multiple courses online (Dumford & Miller, 2018). However, the use of certain instructional strategies such as forums and when possible, the flipped classroom were found to be associated positively with e-learning satisfaction (Chen et al., 2016) when used in a blended learning context.

The quality of the e-learning system is a main predictor of the overall quality of a student's e-learning experience (Sáiz-Manzanares et al., 2019). Courses that encourage collaboration through projects opens the door to social interaction, which may alleviate social isolation (Sáiz-Manzanares et al., 2019). As the quality improves, there is a corresponding increase in the use of the learning management system (LMS) (Thongsri et al., 2019). Therefore, if students can connect socially in a course, it may be beneficial to the student's perception of the course while also providing opportunities to connect with others who are facing similar challenges.

With blended learning, one of the main challenges seems to be finding the appropriate mixture of e-learning with traditional teaching approaches (Serrano et al., 2019). If the balance is inappropriate for the context, it could be detrimental to the students. Properly trained faculty can help to make sure that teachers are actively engaged with blended learning and thus supporting students appropriately (Evans et al., 2020).

Students who are successful online usually are highly motivated, show signs of self-regulation and higher self-efficacy (Broadbent, 2017). If students lack strong digital skills, it can be an indicator that they may struggle to learn online (H. J. Kim et al., 2019). Older students are concerned with navigating technology, on the other hand, younger students value clear instructions to guide their progress (Barczyk et al., 2017). Students at various levels academically have also been found to have diverse levels of motivation (Kew et al., 2018). This shows that what makes an e-learning system good or bad depends partially on student demographics and these are concepts that one needs to be aware of in the blended learning context as well.

In Asia, there have been several unique challenges to e-learning. Such issues, as the level of technology available in some countries has limited access (Adan & Anwar, 2020). In addition, students favor the use of mobile devices over laptops, which makes the completion of e-learning tasks much more difficult at times (Kapasia et al., 2020). Within Thailand, performance expectancy and social influences have been found to be associated with e- learning use (Thongsri & Bao, 2019). In addition, students who were more comfortable online also had higher technology self-efficacy (Thongsri & Bao, 2019). There is also evidence in Thailand that using an online learning systems may benefit thinking skills (Kew et al., 2018). In general, as in other contexts, Thailand's use of e-learning has shown promise, but it would be beneficial to examine closely other factors regarding student's attitudes towards e-learning use, such as students' attitudes of e-learning use when the context is blended learning.

Self-Regulation

Self-regulation is a person's perception of their ability to organize their time, set goals, and problem-solve solutions (Khusainova & Ivutina, 2016). Self -regulation can take place in a variety of contexts, such as between the student and the content, between students, and between students and the teacher (Cho & Cho, 2017). Several studies divide students into groups based on the level of self-regulation the students have in both the traditional classroom and an e-learning environment (D.

Kim et al., 2018). In an academic setting, self -regulation can be beneficial for students, yet this is not always the case (Brown et al., 2016).

Self-regulation has been examined in relation to technology use. For example, self-regulation has been found to be negatively associated with cellphone addiction (Gökçearslan et al., 2016). This relationship between cellphones and self-regulation is important because cellphones are used for e-learning by many students. Other research has found that students do not use digital technology for self-regulation purposes (Yot-Domínguez & Marcelo, 2017). Rather, students will use social support as a form of self-regulation. Social support is defined as the number of people a person believes he or she can turn to for help when facing a problem. Therefore, if social support is lacking, it is possible that there may be a general sense of loneliness, and self-regulation may falter (Yot- Domínguez & Marcelo, 2017). Often, social support could be absent in a context in which online learning is happening and may be partially absent if blended learning is taking place.

Several studies have found ways to support the development of self-regulation skills. Longitudinal research has found the benefits of developing programs for developing self-regulation that lasts over the traditional four years of undergraduate studies (Wibrowski et al., 2017). Extracurricular activities are also beneficial for developing self - regulation (Guilmette et al., 2019). However, during the Covid-19 lock -down many if not all extracurricular activities are suspended. Yet, in the context of blended learning, the effect may be partially due to the reduced but not fully eliminated access to social opportunities.

In the context of e-learning, helping students in the use of digital tools can help to enhance effective self- regulated skills (So et al., 2019). Students who possess self-regulation often have academic success when studying online (Broadbent, 2017). Another study found that course quality and service quality influence self-regulation.

(Albelbisi & Yusop, 2019). Therefore, a well-planned course with adequate social support or presence can be beneficial to students who must study online. Whether the context is fully online or blended does not appear to be an important factor.

In Asia, self-regulation has been found to be a predictor of future academic achievement (Fryer et al., 2016). One study in China found that students who had a positive image of their English language learning also had higher self-regulation when studying online (Zheng et al., 2018). In Thailand, the use of the flipped classroom was found useful for developing self-regulation skills, however, this form of instruction is limited to a blended learning context and is not usable in all situations (Samruayruen et al., 2013). Blended learning in Thailand was found to be positively associated with study management, which is a characteristic of self-regulation (Samruayruen et al., 2013).

Loneliness

Loneliness is defined as a dissatisfaction a person has in terms of the quantity and or quality of their social relationships (Thomas et al., 2020). In the context of e -learning, social presence, which is defined as a sense that the teacher is available to help the student online, or a lack thereof, can contribute to loneliness (Öztok & Kehrwald, 2017). Symptoms of loneliness can include sleeplessness, mental distress, and anxiety (Hayley et al., 2017; McIntyre et al., 2018).

Various approaches have been taken to enhance social presence in e-learning to reduce feelings of loneliness. However, some learning management systems, such as Moodle, do not include tools such as a social network, which would help it to be considered as a fully social software platform (Aljawarneh, 2020). One study changed the base Moodle software with plugins that encouraged socializing and found that the addition of the plugins improved student satisfaction with the course (Weidlich & Bastiaens, 2019). Other studies have found comparable results using Facebook groups outside of a LMS (Akcaoglu & Lee, 2018). Caution needs to be considered when utilizing Facebook for socialization purposes, as addiction to Facebook is positively correlated with loneliness (Shettar et al., 2017).

When social presence is missing in a course, students have reported a lack of socialization, feeling lost, and shared an impression of being "othered" in their learning experience (Adnan & Anwar, 2020; Reid et al., 2016). When the students perceived social presence positively, there was a corresponding positive association with satisfaction with the course, knowledge gain, active learning, and interactions with other students, not just the teacher (Molinillo et al., 2018; Song et al., 2019).

Blended learning has been used specifically to help ameliorate the psychological distress some are facing from a full online learning experience (Araújo et al., 2020). Interactive learning can also help with the feelings of isolation experienced by students (Mu et al., 2019). Lastly, in the context of Thailand, a study found

a positive association between loneliness and internet addiction (Simcharoen et al., 2018). However, there is not a large body of research into loneliness or a lack of social presence in e-learning in Thailand which implies that a closer examination of loneliness in the context of blended learning could help in understanding this problem.

It is important to note as well that many studies have focused on loneliness in the context of fully online learning experiences. Few if any studies have looked at loneliness in a blended learning context.

Objectives

This study aimed to explore perceptions of e-learning use when the context involves blended learning rather than full e-learning. As such, the research questions for this study are as follows.

1. What are the participant's perceptions of e-learning systems, self-regulation, and loneliness?

2. What are the relationships among self-regulation and loneliness with perceptions of e-learning systems in a blended learning context?

Conceptual framework

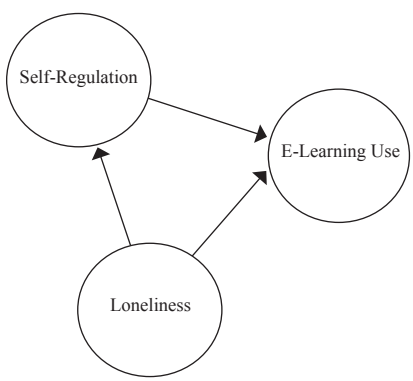

Figure 1 Conceptual framework

Research methodology

Population and samples

The setting of this study was a university in Thailand that utilized blended learning. The sample of 148 respondents was derived using stratified sampling based on gender.

Research instrument

A cross-sectional survey design was employed in this study. Data was collected by the researcher through the distribution of a survey to the participants at the university. The instrument included two sections. Section 1 addressed demographic variables such as class level, gender, and major. Section 2 of the instrument consisted of 60 Likert-type statements that measure each respondents' perception of one of the three latent variables of the study (e-learning system, self-regulation, and loneliness. The 5- point Likert -scale used for the statements was scaled as: 1 strongly disagree, 2 disagree, 3 neutral, 4 agree, 5 strongly agree.

The attitudes towards e-learning scale was developed by Chou (2014). This scale measures e-learning systems. Sample items include "I am satisfied with e-learning functions." As well as "I feel confident about using the Moodle systems." The 16-item scale has a Cronbach alpha of 0.9.

The self-regulation scale was developed by Barnard et. al, (2009). This scale measures a respondent's perception of their online self-regulation. Sample items include "I don't compromise the quality of my work because it is online" and "I prepare my questions before joining in discussion forum." The 24-item scale has a Cronbach's alpha of 0.89.

The loneliness scale was developed by Russell et al., (1978). This scale measures respondents' perception of loneliness. Sample items include "I feel left out" and "I feel isolated from others." The 20-item scale has a Cronbach's alpha of 0.96.

Data analysis

Descriptive statistics were calculated. A model was developed using path analysis, which is a form of structural equation modeling (SEM). For the model, first, the measurement model is analyzed using confirmatory factor analysis. Second, the structural model is analyzed by examining the relationships between the latent variables. The strength of measurement and structural model were assessed using various fit indices.

Results

In the sample, 65% were female and 35% were male. In terms of class level, 26% were freshmen, 40% were sophomores, 15% were juniors, and 19% were seniors. For majors, business was 9% of the sample, education 23%, English 55%, religion 1%, information technology 5%, and science 7%.

The descriptive results showed that for attitudes towards e-learning systems the participants are neutral towards the statements ($M = 3.47$, $SD = 0.55$, 95% CI [3.38, 3.56]). For example, participants indicated that they were neutral towards the statement "I feel confident

about using the online learning contents" (M = 3.47, SD = 0.89, 95% CI [3.33, 3.63]). In addition, participants were also neutral in their response to the statement "I intend to use e- learning content to assist my learning in the future" (M = 3.64, SD = 0.88, 95% CI [3.50, 3.79]).

For loneliness, participants disagreed with the statements that indicated the thought they were alone (M = 2.65, SD = 0.87, 95% CI [2.51, 2.79]). For example, participants disagreed with the statement that "I am no longer close to anyone" (M = 2.47, SD = 1.15, 95% CI [2.28, 2.66]). Furthermore, participants also disagreed with the statement "I feel completely alone" (M = 2.50, SD = 1.21, 95% CI [2.31, 2.70]).

The participants of this study showed neutral views towards e-learning self-regulation (M = 3.50, SD = 0.49, 95% CI [3.42, 3.57]). In one statement, respondents showed neutrality towards the statement "I set standards for my assignments in online courses" (M = 3.52, SD = 0.92, 95% CI [3.37, 3.67]). However, some agreement was expressed for the statement "I set goals to help me manage study time for my online courses" (M = 3.66, SD = 0.87, 95% CI [3.51, 3.80]).

Table 1 shows the means, standard deviations, and correlation of the latent variables. The correlations of loneliness with the other variables were weak, while the correlation between the two variables addressing e-learning is moderately strong in the positive direction.

Table 1 Means, standard deviations, and correlations with confidence interval

Variable	*M*	*SD*	1	2
1. Self-Regulation	3.50	0.49		
2. Loneliness	2.65	0.87	.08 [-.08, .24]	
3. E-Learning	3.48	0.55	.57** [.45, .67]	.14 [-.02, .29]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$. ** indicates $p < .01$.

The results of the structural model indicated a good fit $\chi 2$ (296 = 478), $p < .05$, Tucker–Lewis Index (TLI = 0.90), incremental fit index (IFI = 0.91), comparative fit index (CFI = 0.90), root mean square error of approximation (RMSEA = 0.06), 95% confidence interval (CI [0.05, 0.07]). The structural model assessed the regression weight between the latent variables. It was found that loneliness was not with e-learning self-regulation (b = 0.05), t(296 = 0.52 p = .60) or with attitudes towards e -learning systems (b = 0.08), t (296 = 1.3 p = .19). However, e-learning self-regulation was found to be directly associated positively with e-learning systems (b = 0.42), t (296 = 4.41), $p < .01$. In all, the current model explained 41% of attitudes with e-learning systems.

Discussion

There are several significant findings in thisstudy. First, loneliness appears not to be correlated with e-learning use, attitudes, or self-regulation in a blended learning context. This contrasts with what has been found in at least one other study (Reid et al., 2016). The reasons for this discrepancy may include the possibility that students have found ways to socialize and connect despite the social distancing measures in place during the time of this study. Another explanation may be that the teachers demonstrated a strong social presence in the blended learning format in a way that lessen perceptions of isolation.

A second finding was the importance of e-learning self-regulation. When students set goals for their learning in the online context and make sure to understand requirements, they also have a more positive experience with using a learning management system. This finding is consistent with the results found by Broadbent (2017). Students who have self-regulation skills may find the transition to e-learning less difficult as they have the self-control needed to monitor their progress without direct intervention from the teacher.

A third finding was the neutrality of the responses for all three variables of this study. The participants were neutral for the variables that address self-regulation and e-learning use attitudes while showing mild disagreement with loneliness. Such results may be based on the context of the study. As the study was conducted in a majority Buddhist country that values taking a middle road in terms of worldview, this mindset may have led to the neutral response of the participants as taking a strong position is often avoided in this context (Thummathai et al., 2020).

In terms of recommendations. Schools may want to consider helping students to develop self-regulation skills as this may help with having to study online. Tools that could be used are seminars, workshops, study halls, and mentoring in which students are taught how to manage their time, set goals, and how to select a place to study. Students need to experience self-regulation through seeing and doing this in order to allow students success when they need to be alone when they study.

Regarding loneliness, supporting loneliness in

terms of e-learning needs to be done on a case-by-case basis. In the context of this study there is little evidence that the general population is experiencing loneliness. However, this does not exclude everyone. Supporting lonely students can involve supplying limit social opportunities as well as psychological support when necessary. Schools should be proactive in identifying struggling students who may not fully appreciate the independent learning environment.

For further studies, a closer look at loneliness and e-learning attitudes in the context of Asia may be beneficial. Perhaps there are cultural reasons for this weak relationship that can be ascertain. In addition, the inclusion of other variables such as academic performance may provide more clues while also considering other forms of analysis rather than SEM.

There are also some limitations to this study. There was an assumption that all participants in this study were truthful in their survey responses. In addition, SEM is sensitive to sample size and it is possible that with a larger sample size will more likely lead to significance of regression weights. The purpose of this study was to examine the relationship of loneliness with e-learning self-regulation and attitudes towards e-learning. The results indicate that in the context of Thailand, loneliness has no influence on self- regulation or attitudes towards e-learning.

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