

Factors Influencing Student Engagement in the Online Learning Environment at Asia-Pacific International University

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ABSTRACT

Student engagement is the key factor in effective active learning. However, most prior research investigators have considered the factors that influence student engagement in the classroom context. Therefore, the current study had the objective to examine the influence of online learning characteristics on students' level of behavioral engagement at Asia-Pacific International University. The variables considered were instructor and student characteristics, course design, learner environment, and course content. The studied sample groups were 385 students at Asia-Pacific International University. Data were collected by questionnaires and the collected data were analyzed and the analysis results were presented in frequency, percentage, mean, standard deviation, correlation coefficients, and regression values. The result showed that instructor characteristics had the highest level of presence, followed by student characteristics, course content, course design, and learner environment. In addition, all the five online learning characteristics, namely, instructor characteristics, student characteristics, course content, learner environment, and course design, influenced the students' level of behavioral engagement. However, only the combination of student characteristics, course content, and course design predicted the students' level of behavioral engagement. Suggestions are provided for future research studies and for those who are interested in studying these variables.

KEYWORDS: Student Behavioral Engagement, Online Learning Characteristics, Asia-Pacific International University

Introduction

The active learning technique is widely used in today's classroom management. It is a learning process based on intellectual creativity concepts (Constructivism) that focuses on the learning process rather than the subject matter. The strategy aims to help learners

connect knowledge or create it by doing real practice through media or learning activities. The learners, in addition to being involved in the activities, also have to interact with their teachers and be involved in interactions among the other learners. The role of teachers would be less in imparting knowledge to learners than in a

lecturing manner, but it consists more in advising, facilitating, and motivating learners to be eager to learn through various activities including preparing a suitable environment for learning. The technique is believed to be more effective in promoting learning than the traditional teacher-centered lecturing style that has a quiet atmosphere because of the teacher's control. Many studies have found students learn better in an active learning context and environment than they do in a passive learning environment (Yahyazade, Mostafa & Attaran, 2014). Active learning allows students to engage in the learning process and interact with the learning activities through a wide range of practices such as analysis, synthesis, brainstorming, exchange of ideas, and case studies. The activities used in active learning should help develop analytical skills, critical thinking, communication and presentation, and proper use of information technology.

Student engagement is the key factor of effective active learning; however, it is a multifaceted phenomenon (Stephenson, Bonnes, Sawatsky, Richards, Schleck, Mandrekar, et al., 2020). A few research findings relate it to both physical and psychological constructs where students utilize physical and psychological energy in order to be kept attentive, involved, and motivated to learn (Astin, 1999). Several works of literature describe student engagement in terms of behavioral, emotional, and cognitive engagement (Fredricks, Blumenfeld & Paris, 2004). Student engagement, as defined by Skinner, Kindermann & Furrer (2008), refers to the quality of a student's connection or involvement in academic endeavors at school and thus with the people, activities, goals, values, and places that make it up. These engagements can be separated into in-class and out-of-class components (Fredricks et al., 2004; Gunuc & Kuzu, 2014).

The consequences of the coronavirus disease 2019 (COVID-19) pandemic are infiltrating every aspect of

our society and daily lives (Ma et al., 2021). In education, online learning has become an important tool for education at all levels, including higher education (Khuankaew & Trail, 2021). This paper presents the results of university students' engagement levels during the online classes where the characteristics are different from the on-site classes. With the ad hoc or temporarily online learning basis, many institutions have chosen the cheaper technologies such as Microsoft Teams and Moodle classroom management to organize the classes during the time of the pandemic. This study investigates the influence of online learning characteristics, which are instructor characteristics, student characteristics, course design, learner environment, and course content, on students' level of behavioral engagement during the typical online classroom that integrated the use of Microsoft Teams and Moodle classroom management.

Purposes

Several studies (e.g. Conner, 2016; Finn, 1989) have pointed out that a student's connection or involvement in academic activities first happens within oneself in terms of emotional and cognitive engagement, then these inner engagements would express or lead to the action of behavioral engagement. However, most studies have investigated student engagement in terms of their overall engagement or the collective of behavioral, emotional, and cognitive engagement (e.g. Conner, 2016; Fredricks et al., 2004; Skinner et al., 2008). There is limited literature that mainly focuses on behavioral engagement. This study investigated student engagement as assessed from student behavior in participation in the online classroom.

In addition, most studies have investigated the factors that influence student engagement in the classroom context. This study investigated the factors that influence students' level of behavioral engagement in the online classroom. In

addition, existing studies have pointed out several different factors and characteristics such as physical classroom environment (e.g. class size, facility, noise (Pilotti, Anderson, Hardy, Murphy, & Vincent, 2017), student (Booliger & Wasilik, 2009), teacher (Deka, 2021), and curriculum design (Liu, et al., 2010). However, they have yet to reach a final agreement on these factors and to conclusively determine what factors affect student engagement in an online learning environment.

Therefore, this study has the objective to determine the influence of online learning characteristics, which are instructor characteristics, student characteristics, course design, learner environment, and course content, on students' level of behavioral engagement.

Hypothesis

Six hypotheses were generated for this study as follows.

H1: Instructor characteristics can influence the students' level of behavioral engagement.

H2: Student characteristics can influence the students' level of behavioral engagement.

H3: Course design can influence the students' level of behavioral engagement.

H4: Learner environment can influence the students' level of behavioral engagement.

H5: Course content can influence the students' level of behavioral engagement.

H6: Students' level of behavioral engagement can be predicted by the combination of online learning characteristics namely instructor characteristics, student characteristics, course design, learner environment, and course content.

Benefit of Research

This study provides beneficial observations for both research and school

administrators and teachers to understand the online learning characteristics that students experience and provide relevant information to better support the online learning needs of students and increase student engagement in the class. In particular, student characteristics, course design, and course content are more important to influence student behavioral engagement. School administrators and teachers should carefully design the online course, present relevant course content, and promote student involvement. Addressing these areas would shed light on the extent of challenges that students experience in a full online learning space, particularly within the context of the Covid-19 pandemic.

In terms of research implications, three key differences set the current study apart from previous studies. First, most studies have investigated student engagement from the overall engagement or the collective of behavioral, emotional, and cognitive engagement. This study focuses mainly on behavioral engagement. Second, most studies have operated student engagement as a predictor of student performance. This study investigates student engagement from the context of the output/outcome of the teaching and learning experiences by students. Third, it sheds light on the online learning characteristics that students experience in an online learning space and their impact on student behavioral engagement. The results of this study add value to the literature that student characteristics, course design, and course content are more important in their influence on student behavioral engagement. Instructor characteristics and learner environment are the least relevant to influence student engagement in the online learning environment.

Research Process

This is a survey-based study in which data were collected through the

online survey using Google forms at Asia-Pacific International University. This research examined the effects of the online learning characteristics on student engagement in online learning among college students at the Asia-Pacific International University, Saraburi, Thailand.

Population and Sample

At the end of January 2022, the total number of students, who have been experiencing online learning via Moodle and Microsoft Teams since March 2020 at Asia-Pacific International University, was 932 students.

The sample size for conducting the correlation analysis is based on Taro Yamane (1973)'s formula. To get the sample size from the total number of students at the Asia-Pacific International University, a confidence level of 95% and 5% sampling error were considered. Therefore, the sample size was 280 for this study.

Since there is a variety of students' characteristics, a quota sampling technique was conducted with the program of study and year in the university.

The data were collected from students at Asia-Pacific International University through an online survey using Google forms, from March 2 to 16, 2022. The Google link was sent to the Dean of each faculty with a request for a specific sample for each study program. The Dean then forwarded the link to the students. The total number of samples that the online survey link was distributed was 450. The number of respondents was 385.

Instruments

The survey instrument consisted of two sections. Section 1 addressed the demographic variables of gender, program, major, and class level. Section 2 involved Likert-type statements, which measured the student's perception of online learning characteristics which involve instructor characteristics, student characteristics, course design, learner environment, and course content. Then, the last part of section 2 involved question items related to student behavioral engagement. The Likert scale employed in this study was a 5-point scale with 1 = Strongly Disagree ranging through to 5 = Strongly Agree. These measurement items were adapted from previously validated instruments, as well as items written by the researcher. Before the final version of the survey questionnaire, the tools were checked by three qualified persons for content validity, coverage and content accuracy, language suitability, and the Item-Objective Congruence (IOC). Out of 26 measurement items, 19 items scored 1.00, 5 items scored 0.67, and only one item scored 0.33. Then, the researcher modified the item that scored below 0.50 and also a few items with a score of 0.67 in order to achieve better clarity according to the advice of the qualified persons. After modifying the content and language of the tool as instructed, the researcher administered the questionnaire to a group of 30 students at the Asia-Pacific International University, Saraburi, Thailand, who have been experiencing online learning via Moodle and Microsoft Teams, in order to check the reliability of the tool and find Cronbach's alpha coefficient. The Cronbach's alpha coefficient values of the tried out of 30 respondents are shown in Table 1.

Table 1 Reliability Value of 30 Respondents and 385 Respondents (Cronbach's alpha coefficient)

Variable	30 Respondents	385 Respondents
Instructor characteristics	0.900	0.835
Student characteristics	0.771	0.856
Course design	0.872	0.876
Learner environment	0.850	0.790
Course content	0.897	0.896
Student behavioral engagement	0.830	0.895

The Cronbach's alpha coefficients in Table 1 show that the confidence value of the 30 questionnaires was between 0.771 to 0.900 and the 385 questionnaires were between 0.790 to 0.896. Cho and Kim (2015) indicated that if the questionnaire's confidence value is greater than 0.7, the questionnaire has content validity and an acceptable level of confidence.

Data Analysis

The data were analyzed by a computer statistical calculating software program. Descriptive statistic was used to describe the information of the respondents and the variables. It is presented in the form of a table showing frequency, percentage, mean, and standard deviation.

The analysis of the ability to explain the student behavioral engagement from the online learning characteristics (instructor characteristics, student characteristics, course design, learner environment, and course content) was assessed using multiple regression analysis.

Analysis of Demographic Information

Table 2 shows the demographic information of the respondents.

Most of the participants were females, representing 61.3% of the total 385 respondents, taking Bachelor of Nursing Science (Thai Program), representing 32.2%, second-year students in the graduate programs (65.5%), and freshman students in the undergraduate programs (30.6%).

Table 2 The number and the percentage of the respondents classified by their characteristics (n=385)

Personal Characteristics	Number	Percentage
Gender		
Male	149	38.7
Female	236	61.3
Study Program		
Bachelor of Science Program in Bioscience (International Program)	26	6.8
Bachelor of Arts Program in English (International Program)	21	5.5
Bachelor of Arts Program in English (Thai Program)	58	15.1
Bachelor of Nursing Science (Thai Program)	124	32.2
Bachelor of Science Program in Information Technology (International Program)	40	10.4
Bachelor of Arts in Teaching (International Program)	22	5.7
Bachelor of Arts in Christian Studies (International Program)	20	5.2
Bachelor of Business Administration (International Program)	26	6.8
Bachelor of Business Administration (Thai Program)	15	3.9
Bachelor of Accountancy (Thai Program)	4	1.0
Master of Education	8	2.1
Master of Business Administration	21	5.5
Class Level for Graduate Students (N=29)		
1 st Year	10	34.5

2 nd Year	19	65.5
Class Level for Undergraduate Program (N=356)		
Freshman	109	30.6
Sophomore	67	18.8
Junior	87	24.4
Senior	93	26.1

Analysis of the Online Learning Characteristics and Student Behavioral Engagement

The results of the analysis, as shown in Table 3, revealed the mean level

and standard deviation of the online learning characteristics and student behavioral engagement.

Table 3 Online Learning Characteristics and Student Behavioral Engagement (n = 385)

Variables	\bar{X}	SD	Perception Level
Learning Characteristics			
Instructor characteristics	4.15	0.68	High level
Student characteristics	4.05	0.70	High level
Course design	4.04	0.75	High level
Learner environment	3.98	0.73	High level
Course content	4.05	0.73	High level
Overall Learning Characteristics	4.06	0.64	High level
Student behavioral engagement	3.84	0.83	High level

The perceptions of Asia-Pacific International University's students toward the online learning characteristics that impacted the student behavioral engagement were at a high level (\bar{X} more than 3.50). When considering each of the online learning characteristic items, it was found that instructor characteristics had the highest level ($\bar{X} = 4.15$), followed by student characteristics ($\bar{X} = 4.05$) and course content ($\bar{X} = 4.05$), and finally course design ($\bar{X} = 4.04$). The learner environment mean value was at the lowest level ($\bar{X} = 3.98$) compared to the rest of the student perceptions. The overall learning characteristics mean value was at a high level ($\bar{X} = 4.06$). The perception of Asia-Pacific International's students toward the student behavioral engagement was also at a lower level ($\bar{X} = 3.84$) than all the online learning characteristics.

The Regression Analysis of the Relationship between the Online Learning Characteristics and the Student Behavioral Engagement

The results of multiple regression analysis, as shown in Table 4 indicate generated mix results. The adjusted R square was 0.585 which means it was able to jointly predict successful performances in 58.5% of instances, with statistical significance at the 0.01 level, and with a standard error in forecasting equal to ± 0.534 . When considering the predictor regression coefficient, it was found that three predictors influenced student behavioral engagement significantly at the 0.01 level. These predictors were student behavioral engagement (Beta = 0.270, $p = 0.000$), course design (Beta = 0.242, $p = 0.000$), and course content (Beta = 0.289, $p = 0.000$). Other online learning characteristics such as instructor characteristics and learner environment were not statistically significant. Thus, Alternative Hypothesis 2, 3, and 5 were supported by student behavioral engagement, course design, and course content.

The results of regression analysis of the relationship between the overall online

learning characteristics and the student behavioral engagement, as shown in Table 4, indicate that overall online learning characteristics, including instructor characteristics, student characteristics, course design, learner environment, and course content positively influence student behavioral engagement, is significant with a statistical significance at the 0.01 level.

Thus, Alternative Hypothesis 6 was supported. Students' level of behavioral engagement can be predicted by the combination of online learning characteristics namely instructor characteristics, student characteristics, course design, learner environment, and course content (Beta = 0.989, $p = 0.000$).

Table 4 Simple and Multiple Regression Analysis between Online Learning Characteristics and Student Behavioral Engagement (n = 385)

Variable		Coefficient	P-Value		Adjusted RSquared
Dependent	Independent		t-Stat	F-Stat	
Student behavioral engagement	Instructor characteristics	0.102	1.660	109.410*	0.585
	Student characteristics	0.270	3.945*		
	Course design	0.242	3.552*		
	Learner environment	0.075	1.346		
	Course content	0.289	4.159*		
	Overall Learning Characteristics	0.989	23.266*	541.295	0.585

Note: * statistical significance at 0.01

Conclusion

Five online learning characteristics: Instructor characteristics; student characteristics; course design; learner environment; and course content were applied in this study. These were the characteristics reported in the literature. The results were in line with the literature in the normal face-to-face classroom (e.g. Drago et al., 2002; Groves et al., 2015; Jones & Kelley, 2003; Reeve, 2006; Skinner et al., 2008; Wang & Neihart, 2015) that the perceptions of students toward these online learning characteristics were at important levels. It showed that whether in the normal face-to-face classroom or online learning, these learning characteristics are normally present at schools. For Asia-Pacific International University, instructor characteristics had the highest level of importance followed by student characteristics, course content, course

design, and learner environment. This may be because teaching involved online teaching and learning which involved the combination of Moodle platform and Microsoft Team Live. Instructors and students were always present in the virtual classrooms. Besides, course design and course content were developed before the university entered into the online teaching and learning mode. However, most students had been in the university's dormitory with the standard information technology facilities being used in conjunction with the normal face-to-face classroom period. Some students did not have a personal computer and had to spend time in the university's computer laboratory for online learning. That might be the reason for the lower score relating to the learner environment.

Further, though the perception of Asia-Pacific International University's students toward the student behavioral

engagement was at a high level, it was at the lowest score compared to all the online learning characteristics. This result is similar to several works reported in the literature (e.g., Ahlfeldt, Mehta, & Sellnow, 2005; Mandernach, 2015; Tian, Lu, Yin, & Li, 2020). For example, Tian et al. (2020) studied student engagement of Chinese international undergraduate students in China. Their study results revealed that student engagement was at a lower level when the traditional “lecturing” method was used compared with engagement using the “active learning” method. Additionally, their study reported students in humanities, social science, education, and pure science disciplines displayed lower student engagement levels than life sciences and medical disciplines. These facts also reflect on the “lecture” method. The majority of students are in the humanities and social science disciplines at Asia-Pacific International University.

The results of the multiple regression analysis were both similar and contradictory to previous studies. The results indicated that three out of five online learning characteristics can influence student behavioral engagement. These online learning characteristics were student characteristics, course design, and course content. The findings were similar to the findings reported in other research papers on student characteristics (Groves, Sellars, Smith & Barber, 2015; Russel & Slater, 2011); course content (Drago, Peltier, & Sorensen, 2002); and course design (Skinner et al., 2008). However, the findings were different from the findings reported in other research papers on instructor characteristics (Reeve, 2006; Skinner, Kindermann, Connell, & Wellborn, 2009; Stefanou, Perencevich, DiCintio & Turner, 2004); and learner environment (Najeeb, 2013; Wang & Neihart, 2015). That means students’ level of behavioral engagement, however, cannot be predicted by the combination of the five online learning characteristics. Only the combination of student

characteristics, course design, and course content can predict student behavioral engagement. In other words, whenever all these online learning characteristics exist at the same time, student characteristics, course design, and course content are more important to influence student behavioral engagement. The findings differ slightly from some research paper results. For example, Nortvig, Petersen, & Balle, (2018) found that the factors for student engagement during online learning included the presence of educators, interactions between students, teachers, and content, and deliberate connections between online and offline activities and between campus-related and practice-related activities. In another example, Corso et al. (2013) investigated factors contributing to student engagement in US secondary schools. Among several proposed factors, they found the combination of student, teacher, and content factors influence student engagement. Deka (2021) investigated factors that might influence student engagement in online learning during the COVID-19 pandemic period in India. The study revealed that among the online learning factors, which include instructor, student, course design, learner environment, course content, administrative support, and technical support, only three factors were of outstanding importance to predict student engagement. These factors were the combination of instructor factor, student factor, and course content. The main difference between this study and other studies was the instructor factor. It might be implied that, at Asia-Pacific International University, an instructor is not the most important factor in the online classroom. Students can engage in the lesson and with each other depending on student characteristics, course design, and course content.

Recommendation

The research was conducted at Asia-Pacific International University, Thailand, and was based on the perception of college students on the practices of online learning characteristics and the student behavioral engagement during the Covid-19 pandemic. Since the investigation was on one institution and

during the temporary online learning setting with Moodle and MS Team, future research should confirm the findings of the importance of online learning characteristics and student behavioral engagement by investigating different contexts with more durable online learning modes.

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