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Investigating Factors Affecting Students' Attitudes toward Hybrid Learning

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Abstract
This study aimed at investigating factors including gender, prior experience of hybrid learning, and computer literacy that affect students' attitudes toward hybrid learning with reference to different learning aspects. The study adopted a survey research methodology using a questionnaire and examined 879 students who had enrolled in hybrid English courses in a university. The finding revealed that all factors had an effect on students' attitudes toward hybrid learning. Gender had an effect on attitudes toward four learning aspects - study management, technology, online interaction, and online learning. Prior experience of hybrid learning had an effect on two learning aspects - technology and online learning; and computer literacy had an effect on attitudes toward every learning aspect and had the most effect on the use of technology. Based on the findings, this study provides guidelines and a useful information base for future course improvement.

INTRODUCTION

Technology has been viewed as the normal and expected means of communication and education (Chapelle, 2003). In and out of the classroom, technology has been an important component of the learning process, and it has been used to help and improve language learning (Ahmadi, 2018). It helps students learn independently, outside the classroom (Sharma & Barrett, 2007). Technology has now become the major component of a new way of learning, which is called hybrid learning. Hybrid learning is described as the blending and mixing of the two learning environments which are face-to-face classroom instruction and online environment (Doering, 2006 as cited in Alnajdi, 2014). Hybrid learning has a positive impact on students' academic progress, satisfaction, and communication abilities (Ora et al., 2018). Since this hybrid learning approach has been widely used in higher education, student attitude plays a significant role in a hybrid learning environment. Suwantarathip (2019) found that attitudes toward hybrid learning were the only significant predictor for students' satisfaction with an English course. Understanding attitudes helps determine students' readiness of blended learning. (Birbal et al., 2018; Tang & Chaw, 2013). Students' attitude is a crucial factor to indicate the success of blended learning quality (Nazara & Febriana, 2016).

In light of potential benefits of an investigation of students' attitudes toward hybrid learning, a number of researchers have investigated the factors in relation to attitudes during the past

years. For example, Birbal et al. (2018) investigated student teachers' attitudes towards different aspects of blended learning in Trinidad. The findings showed that there were significant differences in students' attitudes based on their characteristics including sex, part-time/full-time status, primary and secondary specialization, age, and year group. Markovich (2016) also examined if individual differences including age, gender, level of education, disability, computer skills, and employment status exist with respect to the attitudes toward blended learning in adult literacy and basic skills programs. The findings indicated that age and time out of formal education were significantly and positively correlated with preference for face-to-face learning, while level of education was significantly negatively correlated with preference for online learning. In addition, a number of studies have been continuously conducted to explore several important factors with reference to hybrid/blended learning (Asarta & Schmidt, 2020; Gülbahar & Madran, 2009; Kintu & Zhu, 2016; Nikitenko, 2011).

Recently, Bangkok University implemented a hybrid learning approach in teaching general English courses provided for students in different schools and years of study. Our hybrid learning format is a combination of classroom learning and online learning. For classroom learning, students have to come to study in class during the designated class time while online learning is more flexible since students can access self-learning materials through different online platforms whenever and wherever they want. However, to be successful in this learning approach, students must be independent learners, have good time management skills, and be at ease with technology (Napier & Smith, 2009 as cited in Napier et al., 2011). Some students may be required to put in a lot of effort because of being unfamiliar with this approach; moreover, students with low computer literacy may find it challenging to deal with online materials and tasks (Suwantarathip, 2019). Thus, understanding the important factors affecting hybrid learning would be one of the essential elements in implementing this approach. In Thailand, a number of studies investigating the use of blended learning in English language courses have been conducted (Banditvilai, 2016; Chansamrong et al., 2014; Lim, 2015; Promsurin & Vitayapirak, 2015; Rattanasak, 2017; Sucaromana, 2013; Suwannasom & Catane, 2016; Tananuraksakul, 2016; Wichadee, 2018 as cited in Vanichvasin, 2018). The previous studies were carried out at several universities in different scenarios. Several studies examined blended learning and its influence (Banditvilai, 2016; Banyen et al., 2016 as cited in Thomas, 2018), and other studies focused on English acquisition and the development of learning skills (Banyan et al., 2016; Rattanawongsa & Koraneekij, 2015; Tananuraksakul, 2016; Wichadee, 2018 as cited in Thomas, 2018). A few studies explored students' satisfaction (Suwantarathip, 2019; Wichadee, 2018) and examined attitudes toward hybrid learning (Suwannasom & Catane, 2016; Suwantarathip; 2019). During the past years, there were a limited number of studies investigating factors affecting the attitudes toward hybrid learning within the different learning aspects. Therefore, this study aims at addressing the research gap by investigating several important factors including gender, prior experience of hybrid learning, and computer literacy that could affect students' attitudes toward hybrid learning, specifically with reference to six learning aspects, which, in this study, refer to the aspects or dimensions that are related to learning based on students' perception and individual experiences. These learning aspects include classroom learning, online learning, technology, online interaction, learning flexibility, and study management (Tang & Chaw, 2013). It is expected that the findings of the study would provide useful information, which is basically important for planning and developing hybrid courses that would benefit both students and the university.

Attitudes toward hybrid learning within six learning aspects

According to the study of Tang and Chaw (2013), which investigated the student attitudes in the scope of blended learning, it suggests that attitudes can be examined within six learning aspects: learning flexibility, online learning, study management, technology, online interaction, and classroom learning. The first learning aspect is *Learning Flexibility*. Students must be given access to one of the following learning elements: time, place, pace, learning style, content, assessment, and pathways (Chen, 2003). Students can access learning material on the Web at any time as needed (Akkoyunlu & Yilmaz-Soylu, 2008). The second learning aspect is *Online Learning*. Online learning is described as "a type of delivery method used in distance education as it allows the synchronous and asynchronous exchange of resources over a communication network" (Khan, 1998 as cited in Oncu & Cakir, 2011, p.1098). Online learning covers a wide range of technology including computer-based learning, web-based learning, virtual classroom, and digital collaborations (Urdan & Weggen, 2000 as cited in Omar et al., 2012). The third learning aspect is *Study Management*. Tsai (2010, as cited in Tang & Chaw, 2013) described this aspect as "a self-regulated learning process in which learners make an effort to plan, to manage, and to direct learning activities as well as to share learning responsibility with their instructors" (p.82). The fourth learning aspect is *Technology*. It covers a wide range of recent technologies, such as computers, Internet, and web-based programs. Using technology outside the language classroom can make learners more autonomous as it allows language practice and study away from the confines of the classroom (Sharma & Barrett, 2007). The fifth learning aspect is *Online Interaction*. It includes interactions between students-students and students-teachers in online environments. Online interaction has its own distinctive communicative characteristics as it shows very intense relational dynamics and a strong sense of social participation (Gunawardena, 1995; Kiesler et al., 1984 as cited in Trentin, 2006). The sixth learning aspect is *Classroom Learning*. Classroom setting provides more motivation, encouragement, and direction and it is particularly dynamic as it allows real-time face-to-face instruction and immediate response from the teachers (Paul & Jefferson, 2019).

Prior studies related to students' attitudes toward hybrid learning have been reported by a number of researchers. For example, Tang and Chaw (2013) examined the attitude of students towards six different learning aspects that could influence their readiness for blended learning and the results showed that students who have a positive attitude towards online learning, study management, online interaction, and learning flexibility tend to adapt to blended learning. Birbal et al. (2018) investigated the attitudes of student teachers towards several dimensions of blended learning and the results revealed that learning flexibly was rated as the most important aspect and there was a significant positive correlation between online learning and online interaction and technology. Karaaslan and Kılıç (2019) investigated students' attitudes towards blended learning with respect to six learning aspects and found that high-achievers had a tendency to hold positive attitudes towards all aspects whereas low-achievers needed more face-to-face in-class time, interaction, and study management support. Hirata and Hirata (2008) investigated Japanese university students' attitudes towards a hybrid learning course and the findings revealed that most students preferred the flexible online component to the conventional language courses, and that the combination between in-class instructions and online lessons was effective. Based on detailed classifications of the learning aspects and

previous studies related to the attitudes, this study attempts to investigate students' attitudes toward hybrid learning with reference to the six learning aspects.

Factors affecting attitudes toward hybrid learning

In a hybrid learning setting, various factors, such as age, gender, employment status, level of education, year group, prior learning experience, and computer skills, that could affect students' attitudes have been studied (Birbal et al., 2018; Markovich, 2016; Nikitenko, 2011). One of the most widely explored factors related to students' attitudes is gender, which is described as the biological traits of men and women as well as their behavioral, social, and psychological characteristics (O'Neill & Blake-Beard, 2002, as cited in Borna & White, 2003). In this study, gender refers to the biological sex of students, either male or female, as identified in the university's personal data. Previous studies dealing with gender differences have been conducted in past years. Birbal et al. (2018) examined students' attitudes towards blended learning and reported that there was a significant difference between male and female attitudes in online learning, in which male students had a more positive attitude than females. Al-Fadhi (2008) found that there was a significant difference related to gender in students' attitudes towards e-learning in Kuwait University. Female students' mean scores were higher than those of male students and female students were very positive in evaluating the e-learning elements of the course. However, Nikitenko (2011) investigated graduate students' attitudes toward online learning and blended learning and found no differences in attitudes based on gender. Kintu and Zhu (2016) indicated that there were no statistically significant differences between male and female learners in their attitudes towards blended learning. Ora, et al. (2018) investigated students' perception on hybrid learning and found that there were no significant differences between male and female students on the perception of hybrid learning and the components of the hybrid learning.

Prior experience of hybrid learning is another factor that has been investigated. Prior learning experience is used to refer to previous online learning experiences (Nikitenko, 2011) or students' previous experience with online and blended courses (Asarta & Schmidt, 2020). In this study, prior experience of hybrid learning refers to students' prior experience with hybrid courses that students have taken in the university. Previous studies reported mixed findings of prior learning experiences. Holley and Oliver (2010) indicated that students' success in an online learning environment largely depends on the students' prior learning experiences. Haverila (2011) investigated undergraduate students in a public institution of higher education and found out that a prior e-learning experience significantly correlates with perceived learning outcomes. While Nikitenko (2011) surveyed graduate and undergraduate students but found no significant correlations between students' attitudes towards online learning/blended learning and previous online experience. Asarta and Schmidt (2020) reported that no effects from having previous experiences with online and blended courses were found with regard to student outcome in blended courses. In the current study, students may have or may have never taken hybrid courses before. Those with prior hybrid experience may be familiar with the hybrid learning format. According to Muilenburga and Bergeb (2005), most students, after experiencing just one online class, may either overcome several barriers or overestimate the barriers before enrolling in any online classes.

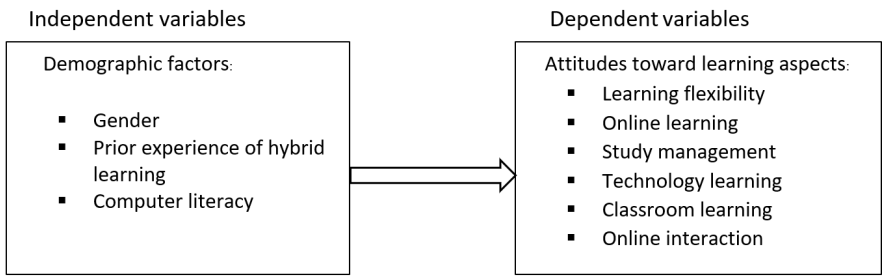
As hybrid learning is an integration between online learning and a traditional classroom learning, inevitably, computer literacy is considered important to this approach. Computer literacy has been defined by different researchers. Son et al. (2010) defined computer literacy as "the ability to use computers at an adequate level for creation, communication and collaboration in a literate society" (p.27). Dincer (2016) stated that "computer literacy is the level of knowledge and skill regarding effective use of computer and technologies for individuals' aims" (p.294). Taylor et al. (2011 as cited in Dincer, 2016) stated it is the ability to use applications such as Word, Excel, and Internet Explorer when dealing with several works in daily lives. Ryan and Capra (2001 as cited in Dincer, 2016) indicated that it is the ability to find information using a computer and the Web and analyze this information. Following those definitions of computer literacy mentioned by the researchers, computer literacy, in this study, refers to the level of ability and skills regarding the use of computers, applications such as Word, the Internet, and multimedia. Previous studies on computer literacy or computer skills have been conducted. Gülbahar and Madran (2009) examining the perception of students taking hybrid courses found that the perceived communication, collaboration, and satisfaction levels of students vary according to the levels of computer and Internet literacy. However, Al-Fadhi (2008) investigated the impact of computer competency on students' attitudes toward e-learning and found no correlation between these two variables. Markovich (2016) reported that there was no correlation between computer skills and total face-to-face learning attitude score or total online learning attitude score.

Based on the previous studies, there are still no conclusive findings about these three factors that could affect the students' attitudes; this study, therefore, further investigates them so as to find which factors affect students' attitudes with reference to the different learning aspects.

Objectives of the study

This study attempts to examine the factors that could affect students' attitudes toward hybrid learning. It will be guided by three research questions:

1. What is the underlying factor structure of the attitudes toward hybrid learning?
2. What are students' attitudes toward hybrid learning with reference to learning aspects?
3. Do gender, prior experience of hybrid learning, and computer literacy have an effect on students' attitudes toward hybrid learning?



CONCEPTUAL FRAMEWORK OF RESEARCH

The context of the study

Bangkok University is a private university providing a creative learning environment with a wide range of Thai and International programs. In recent years, the hybrid learning approach was implemented in teaching general English courses for students in our university. This approach has been developed and adjusted with the aims of seeking an appropriate way to enhance students' language skills and develop related skills such as creative thinking, teamwork, etc.

In the hybrid learning format, the face-to-face classroom is where a teacher moderates and delivers information and knowledge. Class activities are conducted to help students engage in class, develop focused skills, and practice teamwork and collaboration. For online learning, students can access learning materials and complete self-learning through various online platforms. The first platform is Open Courseware (OCW), developed by the university. It is a digital publication that collects learning materials for courses. Each online week, students are required to visit OCW, follow instructions, and complete quizzes. Another platform is Speexx, which is an online language training and testing. It can be accessed anywhere and anytime. The last platform is Cambridge One, which is an online self-study platform that students can access to practice using English in their own time. During the semester, students learn through the designated platforms as required for each English course. In the hybrid course, students learn in a face-to-face classroom in weeks 1, 2, 4, 6, 9, 11, 13 and 15 and visit the OCW site for self-study learning in weeks 3, 5, 7, 10, 12 and 14. However, during the time of the Covid-19 pandemic crisis, the university has shifted from the face-to-face classroom to an online mode for only a few classes remaining in the semester. In this regard, online conference platforms such as Google Meet, Zoom, etc. were used as virtual classrooms in order to give teachers and students ways to access class sessions in order to complete some classroom activities as required.

RESEARCH METHODOLOGY

This is a quantitative study which employed a survey research methodology.

Participants

Random sampling was used to select 879 students taking General English courses using a hybrid learning approach in the second semester of the academic year 2019 at Bangkok University. During the final session of the semester, online questionnaires were sent out to the participants studying in the researcher's own classes and in some other instructors' classes with their permission. These participants were asked to complete the questionnaires voluntarily and they were informed that their answers would be used for research purposes only.

Table 1 shows the demographic information of respondents. 32.88% of the respondents were

males, while 67.12% were female. 37.88% of them did not have any experience of hybrid learning, while 62.12% had some prior experience of hybrid learning.

Table 1

The respondents' demographic information

		Number	Percentage
Gender	Male	289	32.88
	Female	590	67.12
Prior experience of hybrid learning	Yes	546	62.12
	No	333	37.88
		879	100.00

With regard to computer literacy, students were asked to rate ten items and their responses were subsequently analyzed. The finding revealed a mean score of 3.10 with a standard deviation of .72 as shown in Table 2. The overall mean score of students' computer literacy was at a good level (1.00 - 1.50 = poor, 1.51 – 2.50 = average, 2.51 – 3.50 = good, 3.51 - 4.00 = very good), and three activities students were able to do the best in were watching video clips or movies via computers (M = 3.32), using search engines (M = 3.29), and accessing websites (M = 3.26).

Table 2

Means and standard deviations of computer literacy

Statement	Mean	SD.
1. General computer use	3.02	.723
2. Using Microsoft word	2.95	.719
3. Using PowerPoint	2.88	.748
4. Typing and using the keyboard	2.99	.718
5. Using email	3.04	.714
6. Downloading, uploading, and saving multimedia files	3.01	.767
7. Watching video clips or movies via computers	3.32	.711
8. Listening via computers	3.20	.715
9. Using search engines	3.29	.674
10. Accessing websites	3.26	.684
Total	**3.10**	**0.72**

Instrument

The research instrument used to collect data was a questionnaire which consisted of three sections. The first section asked about gender and prior experience of hybrid learning. The second section examined students' computer literacy. Students were asked to rate ten items on a four-point scale ranging from poor (1) to very good (4). The third section investigated students' attitudes toward hybrid learning. The items in this section were adapted from the Tang and Chaw (2013) questionnaire. Their questionnaire consisted of 34 items measuring students' attitudes toward six learning aspects. However, for this study, some items were adjusted and added in order to elicit students' attitudes in our university context.

A questionnaire with 40 items was pilot-tested with a sample group of 41 students and calculated for proper reliability. As a result, three items with a value of Cronbach's alpha lower than 0.20 were eliminated. After all adjustments, the final questionnaire consisted of a total of 37 items that measured students' attitudes toward six learning aspects: learning flexibility (3 items), online learning (10 items), study management (6 items), technology (7 items), classroom learning (5 items), and online interaction (6 items). All items were measured using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The reliability coefficients of Cronbach's alpha for sections two and three were 0.925 and 0.937, respectively.

Data analysis

Descriptive statistics were used to report mean score and standard deviations of computer literacy and attitudes toward learning aspects. The levels of the agreement in attitudes toward learning aspects of hybrid learning perceived by participants are based on the following ranges: 1.00 - 1.50 = very low, 1.51 - 2.50 = low, 2.51 - 3.50 = moderate, 3.51 - 4.50 = high, and 4.51 - 5.00 = very high. Exploratory factor analysis was employed to identify the factor structure of hybrid learning. The statistical tests were performed with the Statistical Package for Social Sciences. Structural equation modeling (SEM) was used to identify the effects of factors including gender, prior experience of hybrid learning, and computer literacy on the attitudes.

Exploratory factor analysis (EFA)

To identify the underlying factor structure of hybrid learning, Exploratory Factor Analysis (EFA) is conducted. EFA is used when there is not enough theoretical and empirical information to hypothesize how many factors underlie the set of observable variables and which variables form which factor (Dimitrov, 2012). In this study, although the number of factors has been identified and categorized into different groups, some items of each category have been added and adjusted. Thus, EFA has been conducted to explore the number of factors in accordance with items. In the instrument containing 37 items, students were asked to indicate their attitudes toward different aspects of hybrid learning. Then the students' responses were factor-analyzed. The factors with Eigenvalue above 1 have been extracted using principal component analysis and rotated using oblique criterion. Consequently, the factor analysis revealed seven factors. The Kaiser-Meyer-Oklin measure of sampling adequacy was .942 which is above the recommended value of .6 (Hair et al., 2009) and the Bartlett's test of sphericity was significant (Chi-Square (666) = 20367.063), $p < .05$. Given these overall indicators, it was feasible to perform exploratory factor analysis. The factors explained 66.039% of the variance. (This variance is acceptable in exploratory factor analysis if the variance explained is 60%). The construction of the seven factors was guided by a factor loading cut-off of .250, the meaningfulness of each item on the dimension, and the reliability score of each factor (Bastick & Matalon, 2007). The initial eigenvalues showed that factor 1 explained 33.45% of the variance; factor 2, 12.84%; factor 3, 5.38%; factor 4, 5.00%; factor 5, 3.52%; factor 6, 3.11%; and factor 7, 2.73% of the total item variance.

Structural equation modeling (SEM)

In the study, structural equation modeling (SEM) is used to explain relationships between attitudes toward hybrid learning within seven learning aspects and factors including gender, prior experience of hybrid learning and computer literacy. In this regard, covariance matrix is used as the basis for analysis (CB-SEM: Covariance-Based SEM) to fit the observed data to the extent that the model-implied covariance matrix is equivalent or almost equivalent to the empirical covariance matrix. The goal was a fit between the hypothesized model and the observed covariance matrix generated from the empirical data (Hair et al., 2016).

There are several criteria for determining the fit index. In this study, the following criteria were applied: P value (p) is greater than 0.05; Relative Chi-square (Relative Chi-Sq.) is less than 2; Goodness of Fit Index (GFI) greater than 0.95 suggests a good fit, Adjusted Goodness of Fit Index (AGFI) greater than 0.90 suggests a good fit, Comparative Fit Index (CFI) greater than 0.95 suggests a good fit; and Root Mean Square Error of Approximation (RMSEA) is less than .05 (Kline, 2010). The reliability of the calculated statistics depends on the goodness of fit. If the hypothesized model and empirical data do not have goodness of fit, then the statistics lack the reliability, so for CB-SEM analysis, the goodness of fit statistics must be considered first before any other statistics are considered subsequently. The goodness of fit statistics revealed that Chi-square = .498 (df = 1), thus, p = .480 was greater than .05; Relative Chi-Sq. = .498 was less than 2; GFI = 1.000 was greater than 0.95; AGFI = .994 was greater than 0.90; CFI = 1.000 was greater than 0.95; and RMSEA = .000 was less than .05. All statistics met the criteria of all goodness of fit indexes meaning that the hypothesized model and empirical data have goodness of fit. Therefore, the hypotheses can be tested, and other statistics can be considered further.

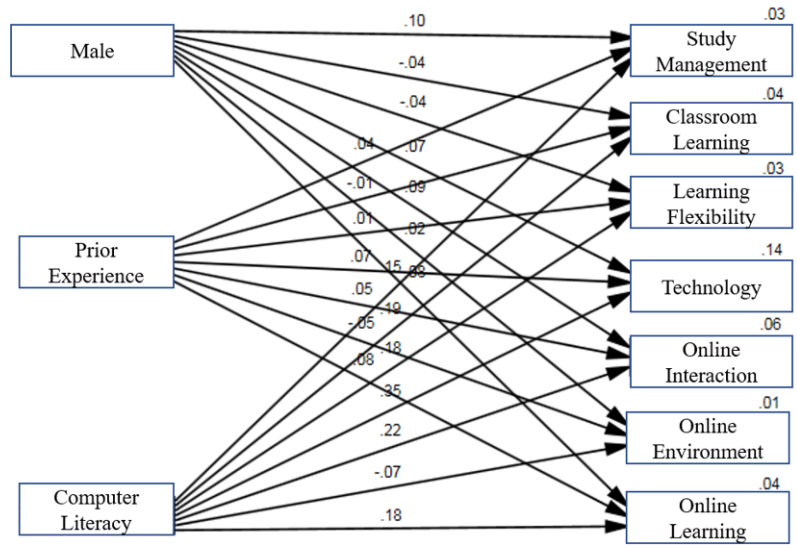


Figure 2 The causal relationship model

The results of the hypothesis testing between three independent variables comprising gender, prior experience of hybrid learning, and computer literacy and seven dependent variables, i.e., study management, classroom learning, learning flexibility, technology, online interaction, online environment and online learning, revealed that being male affected four dependent variables: study management, technology, online interaction and online learning; prior experience of hybrid learning affected two dependent variables: technology and online learning; and computer literacy affected every dependent variable. The dependent variable that was most affected by the three independent variables was technology (R-square = .14), while the other dependent variables were similarly affected (R-square is between .01 - .06).

FINDINGS

The findings of the study will be presented based on the research questions as follows.

1. The underlying factor structure of the attitudes toward hybrid learning

The data of students' attitudes toward hybrid learning were analyzed by exploratory factor analysis (EFA) and the findings were presented in Table 3. The factor labels are study management (Factor 1 with 6 items); classroom learning (Factor 2 with 5 items); learning flexibility (Factor 3 with 3 items); technology (Factor 4 with 7 items); online interaction (Factor 5 with 5 items); online environment (Factor 6 with 4 items), and online learning (Factor 7 with 5 items).

Table 3

Factors and factor loadings of the attitudes toward hybrid learning

Items	Factors	Factor loadings						
		1	2	3	4	5	6	7
	Factor 1: Study management (6)							
19	Online learning encourages me to become self-disciplined.	0.917						
18	Online learning makes me more responsible for my studies.	0.889						
17	Online learning encourages me to make plans.	0.761						
16	Online learning motivates me to prepare well for my studies.	0.757						
14	I organize my time better when studying online.	0.688						
15	I can study over and over again online.	0.529						
	Factor 2: Classroom learning (5)							
30	I learn better through lecturer-directed classroom-based activities.		0.869					

Items	Factors	Factor loadings						
		1	2	3	4	5	6	7
28	I like the fast feedback when I meet my lecturer in person in a face-to-face setting.		0.848					
31	I learn better when someone guides me personally in a face-to-face setting.		0.844					
29	I find learning through collaboration with others face-to-face is more effective.		0.809					
27	I have a sense of community when I meet other students in the classroom.		0.669					
	Factor 3: Learning flexibility (3)							
2	I like to study at my own pace.			0.881				
3	I would like to decide when I want to study.			0.834				
1	I would like to decide where I want to study.			0.758				
	Factor 4: Technology (7)							
23	The application of these technologies is in a satisfactory speed.				-0.897			
22	The technologies used for hybrid learning are user-friendly.				-0.884			
21	I am familiar with using technologies in learning.				-0.766			
20	I believe technology is useful for learning.				-0.646			
24	I feel that technical problems that occurred when I studied online are not frequent.				-0.64			
26	I find social networking is a useful communication tool in learning.				-0.55			
25	I think we should use technologies in learning.				-0.503			
	Factor 5: Online interaction (5)							
37	I appreciate easy online access to my lecturer.					0.784		
35	I would like to interact with other students outside the classroom.					0.777		
34	I would like to interact with my lecturer online.					0.77		
36	I find it easy to communicate with others online.					0.737		
33	I am comfortable in using technologies to exchange knowledge with others.					0.384		

Items	Factors	Factor loadings						
		1	2	3	4	5	6	7
	Factor 6: Online environment (4)							
11	I find it very difficult to study online.						0.811	
10	I get bored when studying online.						0.768	
32	I feel isolated in an online learning environment.						0.68	
4	I believe classroom learning is more effective than online learning.						0.471	
	Factor 7: Online learning (5)							
8	I would like lecture time in the classroom to be reduced.							-0.715
9	I would like to have my classes online rather than in the classroom.							-0.643
7	I like online learning as it provides richer instructional content.							-0.545
5	I am comfortable with self-directed learning.							-0.523
6	I do not resist having my lessons online.							-0.29
	Eigenvalue	12.38	4.75	1.99	1.85	1.3	1.15	1.01
	% of Variance	33.45	12.84	5.38	5.00	3.52	3.11	2.73

The findings showed that for Factor 1 (study management), Factor 2 (classroom learning), Factor 3 (learning flexibility), and Factor 4 (technology), all items loaded as hypothesized. However, Factor 5 (online interaction) now consisted of 5 items as item 32 ("I feel isolated in an online learning environment") loaded on Factor 6 (online environment), a new factor which was generated. Factor 7 (online learning) consisted of 5 items as item 4 ("I believe classroom learning is more effective than online learning"), item 10 ("I get bored when studying online"), and item 11 ("I find it very difficult to study online") loaded on Factor 6. The items in this new factor related to issues such as boredom, difficulty, isolation, and having less effectiveness when studying in an online environment. As the items in this factor were negative, the coding was reversed for the purpose of analysis with 1 being strongly agree and 5 being strongly disagree. All in all, this factor now consisted of 4 items. Of the 37 items, two did not load on any of the factors and were excluded from subsequent analysis. These were "I find online learning useful for language skill development" and "I am able to understand course related information when it is presented in video format".

2. Students' attitudes toward hybrid learning with reference to learning aspects

The means and standard deviation of different learning aspects perceived by students were shown in Table 4. The mean scores of three learning aspects — learning flexibility, classroom learning, and technology — ranged from 3.97 to 3.73, which indicated a high level of perception toward these learning aspects. When considering all the learning aspects, learning flexibility received the highest mean score, standing out as the most favorable learning aspect, while online learning received the lowest mean score of 3.09 indicating a moderate level of perception.

Table 4

Mean and standard deviation (SD) of attitudes toward learning aspects

Learning aspects	N	Mean	SD	Level
Learning flexibility	879	3.97	0.807	high
Classroom learning	879	3.96	0.825	high
Technology	879	3.73	0.81	high
Online environment	879	3.48	0.92	moderate
Online interaction	879	3.21	0.852	moderate
Study management	879	3.13	1.017	moderate
Online learning	879	3.09	0.905	moderate

3. An effect of gender, prior experience of hybrid learning, and computer literacy on students' attitudes toward hybrid learning

From Table 5, the findings revealed that the males have statistically significant effects on four dependable variables: study management at a significance level of 0.01 ($t = 2.95$, $p < .01$) with Beta = 0.10; technology at a significance level of 0.05 ($t = 2.12$, $p < .05$) with Beta = 0.07; online interaction at a significance level of 0.05 ($t = 2.80$, $p < .05$) with Beta = 0.09; and online learning at a significance level of 0.05 ($t = 2.36$, $p < .05$) with Beta = 0.08. Beta values of all variables showing a positive sign means that the male respondents have higher mean scores than the female respondents. Prior experience of hybrid learning has an effect on two dependent variables which are technology and online learning. It affects technology at a significance level of 0.05 ($p < .05$) and it affects online learning at a significance level of 0.05 ($p < .05$). Computer literacy affects six dependent variables which are study management, technology, classroom learning, online learning, and online interaction at a significance level at 0.01 ($p < .01$), while it affects online environment at a significance level at 0.05 ($p < .05$) with Beta showing a negative sign because all question items are negative (reverse coded items). Among all of the dependent variables, technology is the most affected by computer literacy with Beta = 0.35, followed by online interaction with Beta = 0.22. Other dependent variables have Beta values that are not much different.

Table 5

Standardized Coefficients (Beta), Unstandardized Coefficients (B), Standard Error (S.E.), t-statistic (t), P-value (p)

Path	Beta	B	S.E.	t	p
Male → Study management	0.10	0.21	0.07	2.95**	0.00
Male → Classroom learning	-0.04	-0.07	0.06	-1.11	0.27
Male → Learning flexibility	-0.04	-0.08	0.06	-1.33	0.19
Male → Technology	0.07	0.11	0.05	2.12*	0.03
Male → Online interaction	0.09	0.17	0.06	2.80*	0.01
Male → Online environment	0.02	0.04	0.07	0.61	0.55
Male → Online learning	0.08	0.15	0.06	2.36*	0.02
Prior experience → Study management	0.04	0.09	0.07	1.22	0.22
Prior experience→ Classroom learning	-0.01	-0.01	0.06	-0.24	0.81
Prior experience→ Learning flexibility	0.01	0.02	0.06	0.32	0.75
Prior experience → Technology	0.07	0.12	0.05	2.35*	0.02

Path	Beta	B	S.E.	t	p
Prior experience → Online interaction	0.05	0.09	0.06	1.55	0.12
Prior experience → Online environment	-0.05	-0.09	0.06	-1.44	0.15
Prior experience → Online learning	0.08	0.14	0.06	2.30*	0.02
Computer literacy → Study management	0.15	0.28	0.06	4.54**	0.00
Computer literacy → Classroom learning	0.19	0.28	0.05	5.57**	0.00
Computer literacy → Learning flexibility	0.18	0.26	0.05	5.27**	0.00
Computer literacy → Technology	0.35	0.52	0.05	11.26**	0.00
Computer literacy → Online interaction	0.22	0.33	0.05	6.53**	0.00
Computer literacy → Online environment	-0.07	-0.12	0.06	-2.08*	0.04
Computer literacy → Online learning	0.18	0.29	0.05	5.37**	0.00

* = Significant at the 0.05 level. ** = Significant at the 0.01 level.

Note: Male and prior experience of hybrid learning are dummy variables. Male refers to gender variable (male =1 and female = 0); Prior experience refers to having prior experience of hybrid learning (yes = 1 and no = 0); Computer literacy is a quantitative valuable.

DISCUSSION

Based on the research questions, there are three important issues to be discussed as follows:

1. The underlying structure of students' attitudes toward hybrid learning

The findings supported all six of the constructs of hybrid learning as hypothesized from the original instrument. These are online learning, classroom learning, online interaction, technology, study management, and learning flexibility. The findings indicated that these constructs are considered important for students as they had positive views toward all constructs in hybrid learning. Students having positive attitudes were more likely to adapt to blended learning (Tang & Chaw, 2013). However, some items loaded on a new construct which was named *online environment* as suggested in the study of Birbal et al. (2018). The content of items in this new construct was related to boredom, isolation, difficulty, and having less learning effectiveness as perceived by students in the online environment. The finding is in accordance with a study of Birbal et al. (2018) which revealed that feelings of boredom, isolation, and difficulty were experienced by students in an online environment. According to Wong (2020), online learning was effective in developing learner autonomy; however, because there was no social and physical interaction with teachers and peers in a real classroom setting, the need for relatedness or arousal was not met. The findings can be explained that some students may not feel comfortable because they are not familiar with online learning as this approach is still new and in a pioneer stage of language learning context, but maybe this approach is suitable for autonomous learners. This study suggests that when creating online materials, activities, assignments, or technology integrated in a course, the design and level of difficulty should be taken into consideration in order to keep students engaged and to attract their attention on learning online. In addition, teachers may need to facilitate what students need or give some advice to their students when they confront any problems or obstacles. According to Omar et al. (2012), teachers can create mentors online to support students' engagement as students

may need support and guidance from their teachers. This will help improve students' interest and increase their participation in online learning activities. This study also suggests that online interactions should be encouraged to increase motivation, participation, and socialization in learning. Online social networking or social technologies could be incorporated in order to share, discuss, give, or receive immediate feedback on teaching and learning. Palloff and Pratt (1999) point out that the key to the learning process are the interactions among students themselves and between teacher-students, and collaboration in learning would result from these interactions.

2. Students' attitude toward hybrid learning with reference to learning aspects

For all different learning aspects of the attitudes toward hybrid learning, learning flexibility received the highest mean score ($\overline{x}$ = 3.97). The finding points out that learning flexibility is considered the most important aspect for students in online learning. Similar findings were found in the studies of Birbal et al. (2018) and Karaaslan and Kılıç (2019) which investigated students' attitudes toward blended learning. The finding can be explained that this aspect allows students to control their learning at their own time and at their own pace and they can access learning materials wherever and whenever they want. With learning flexibility, students can access information anytime and anywhere via mobile technologies to perform authentic activities (Martin & Ertzberger, 2013, Saran et al., 2012 as cited in Karaaslan & Kılıç, 2019). Classroom learning received the second highest mean score ($\overline{x}$ = 3.96) while online learning received the lowest mean score ($\overline{x}$ = 3.09). This finding points out that classroom learning is still considered important and desired by students because this aspect provides the benefits of language learning as Paul and Jefferson (2019) indicated that classroom learning provides more motivation, encouragement, and direction. Additionally, Nazara and Febriana (2016) indicated that through face-to-face instructions students can gain a better understanding of course material because information and experiences can be exchanged through body language, gesture, etc., and this aspect can help strengthen the teachers-students-peers' relationship and encourage the direct in-person contact which is not available in an online setting. In addition, due to the sudden changes in learning styles during the Covid-19 situation, some students may feel unfamiliar with the new online platforms or new technologies as they were introduced. Thus, this study suggests that students should be prepared or given training prior to attending hybrid courses regarding how the technology works or how each platform operates so as to understand the functioning of the technology or platform and to overcome any challenges that may occur during their learning process.

3. Factors affecting the attitudes toward learning aspects

Gender has an effect on the attitudes toward study management, technology, online interaction, and online learning. That is, the mean scores of male students were higher than those of female students. The findings are partly in accordance with a prior study (Birbal et al., 2018). The findings can be explained that most learning aspects are related to the use of online platforms and technology, in which male students are more experienced and tend to use more technology or computer skills than females do as a result of their confidence and computer self-efficacy in learning. Birbal et al. (2018) pointed out that females are made to believe that

computers are the domain of males and the study of Yau and Cheng (2012) revealed that male students more than females were more confident in using technology for learning.
Prior experience of hybrid learning has an effect on the attitudes toward two learning aspects. The mean scores of students who had prior experience of hybrid learning were higher than those of students who did not have experience before in terms of technology and online learning. The findings partly agree with the studies of Holley and Oliver (2010) and Haverila (2010) which reported prior learning experiences in relation to performance in online learning. The findings can be explained that students with prior hybrid learning experience may be familiar with the use of technology and online learning in the hybrid learning format. Muilenburg and Berge (2005) explained that students who experienced just one online class may overcome many barriers in online learning. Thus, the finding suggests that particular attention should be given to students having no prior experience of hybrid learning in order to help them handle online learning and technology integrated in hybrid learning successfully.

Computer literacy affects every learning aspect, of which technology has the highest mean scores. The findings support the literature which indicated that student attitude toward participating in online learning is related to a student's previous computer knowledge (Selim, 2007 as cited in Omar et al., 2012). Students with a high level of comfort and confidence using technologies perceived fewer barriers to online learning (Muilenburg & Berge, 2005). Eliveria et al. (2019) revealed that students must have adequate technology skills and confidence in order to have a satisfactory learning experience. The finding indicates that computer literacy is an essential skill in hybrid learning as students tend to use computers and technology to get access to course materials, complete their tasks, plan their studies, and interact with teachers and peers. The findings suggest that students need to acquire enough computer literacy in order to operate particular systems, web-based programs or applications as required in their courses, and they also need to be exposed to and be familiar with technologies because this may help students find comfort and confidence in learning and increase students' productivity in a hybrid learning environment.

The findings point out some issues that need to be considered in utilizing this approach in terms of designing course content, activities, and technology integrated in a course. However, in order to deal with a diversity of students, the study suggests that teachers and course designers should be mindful of students' individual differences in terms of gender, prior experience of hybrid learning, and computer literacy. According to Kubat (2018), teachers should be aware of some variables which are individual differences and take them into consideration when planning an effective and productive learning-teaching process. This study suggests that some small training workshops conducted before offering hybrid classes can be given to all students in order to provide some basic knowledge together with the computer skills necessary for their learning. In addition, since students have become more autonomous in hybrid learning, the roles of teachers should be changed. According to Sharma (2019), teachers should change their roles from knowledge provider to coach, mentor, facilitator, evaluator, analyzer of student data, etc. in order to provide guidance for students in learning how to learn. For course designers, the study suggests that the design of the course content, materials, and activities should be appropriate and flexible to adjust based on students' backgrounds and abilities. Finally, evaluating the course content, learning materials, and

activities reflecting different aspects of hybrid learning should be regularly done in order to get feedback and revise them.

CONCLUSION

Being that more educational institutions are now gearing up in the direction of hybrid learning as a means of developing teaching and learning in higher education, understanding students' attitudes toward hybrid learning and factors affecting such attitudes toward hybrid learning is important in implementing this approach. This study investigated factors including gender, prior experience of hybrid learning, and computer literacy that had an effect on students' attitudes toward hybrid learning. The findings revealed that all factors affect the attitudes toward various learning aspects. Computer literacy plays a significant role in hybrid learning because this factor had an effect on students' attitudes toward all learning aspects, especially technology which had the highest mean score. The findings also point out some issues that need to be considered in implementing this approach in terms of course content, activities, and technology integrated in the course. It is expected that these guidelines will be useful for instructors, course designers or students themselves in making future course improvements and maybe in adapting to any rapid changes due to and during an unforeseen circumstance. Moreover, the information obtained may also provide an information base for future studies in related fields. This study examined Bangkok University students' attitudes and factors; therefore, this study could be replicated with other groups of students in other universities. A comparison of the findings may give us more understanding of students' attitudes and factors and provide common guidelines for implementing a hybrid learning approach in language courses. In addition, there should be an investigation on other factors that may affect the attitudes, such as age, motivation, learning styles, etc. Furthermore, this study collected data via a questionnaire. A more in-depth study should be carried out to obtain comprehensive information and other instruments such as in-depth interviews, tests, and direct observation are recommended to be included in further studies.

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