FACTORS INFLUENCING THE ACCEPTANCE OF BLENDED LEARNING BY EARLY CHILDHOOD UNDERGRADUATE STUDENTS

Jueliang Huang[1]
Thanawan Phongsatha[2]

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Abstract: The mixed-method research approach was applied to explore early childhood major students' levels of acceptance and attitudes towards blended learning based on the Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2) and College and University Classroom Environment Inventory (CUCEI). Three hundred sixty-three undergraduate early childhood major students in China participated in the study. The Structural Equation Modeling (SEM) analysis was used to determine which variables in the UTAUT2 and CUCEI significantly impacted blended learning acceptance. The interview data supplemented the findings of the quantitative data. It was found that social influence and classroom environment significantly impacted blended learning acceptance. Results also indicated that blended learning is more likely to be accepted and used because of the ease of its use and the convenience it offers, as well as promoting a better social and classroom environment. However, the blended learning acceptance was not correlated with performance expectancy, effort expectancy, hedonic motivation, facilitating condition, and price value. Based on these findings, the researcher provided suggestions for decision-makers regarding using and accepting blended learning in their institutions. Administrators and educators can use this study's findings to guide their implementation and improvement of blended learning.

Keywords: blended learning; UTAUT2; CUCEI; structural equation modeling; early childhood education

Introduction

In the era of globalization and technological advances, the field of education has been greatly influenced by the changes brought about by these trends, especially in the teaching and learning process. In order to go with the trend,

[1] Hunan Women's University, Changsha, Hunan. Jueliang_Huang@163.com
[2] Ph.D., Assistant Professor, Assumption University of Thailand, thanawan.phongsatha@gmail.com

educators have sought ways to change how they teach by integrating technology into the teaching and learning process. One approach that educators have explored is the so-called blended learning. This is a combination of online and face-to-face learning, which give learners many advantages.

This trend has not been thoroughly investigated yet in the early childhood education file. Students who intend to be teachers of young children have to undergo rigid training to prepare themselves for the challenging tasks ahead of them. They are expected to learn many skills in a limited four years, including psychology, pedagogy, and various kinds of art. Meanwhile, parents demand that their children's teachers give their children the best education because they believe that early childhood education is significantly important for children's development (Farquhar & Gibbons, 2019; Marpinjun et al., 2018). However, the quality of training in early childhood education in many universities in China is not promising (Xia & Hui, 2017). Could the blended classroom be the answer to learning all these skills in four years to function effectively as early childhood education teachers after graduation?

Some universities in China have already adopted the blended classroom model in early childhood education. However, no study has yet been conducted to determine students' attitudes towards the blended learning classroom and what factors influence their acceptance of the blended learning platform. Thus, this study was conducted to answer these questions based on the Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2) and College and University Classroom Environment Inventory (CUCEI).

Literature Review

Blended Learning

Blended learning follows the principle of teachers as facilitators and students as the center of teaching and learning. Students should actively participate in the learning process, actively participate in the learning process, and independently explore other learning tasks (Collis et al., 2005). Students can fully participate in the learning process and become active constructors of knowledge, meaning, and emotional experience. Students are free to ask questions, fully communicate and discuss with others and with the teachers, whether online or offline.

Teaching content is abundant and ample in blended learning. The teaching content is no longer the physical textbooks in the students' hands. The teaching content includes abundant digital resources, which include online courses and journals, traditional teaching resources, and interactive communication

channels to cater to the various requirements of teaching and learning and to meet students' needs (Dziuban et al., 2018; Stein & Graham, 2014; Hrastinski, 2019).

Digital learning resources can provide visual and auditory stimuli in the form of pictures, texts, sounds, images, and films and have the functions of turning abstractions into concrete ones, facilitating students' understanding of concepts and real problem situations. It can effectively help students understand and master knowledge (Kristanto, 2017). Digital learning resources can be shared fast and are regularly updated. These resources foster students' independent, cooperative, and inquiry learning (Lomonosova & Zolkina, 2018).

Blended Learning in Childhood Education

There is a growing demand for qualified early childhood teachers. In order to meet this increasing demand, many educational institutions have developed innovative models such as blended course delivery and online learning. It has been shown by research into blended learning in childhood education that effective and positive learning experiences do contribute to the success of early childhood teachers and higher student engagement (Alayyar et al., 2012). These positive learning experiences motivate them to improve their qualifications as early childhood teachers.

It has been highlighted in early childhood research that the level of staff qualification is correlated with the quality of education for young children (Garner &Rouse, 2016). Highly qualified childhood teachers are likelier to engage in their practice and social interaction with children (McMullen & Alat, 2002). The study of Garner & Rouse (2016) affirmed this notion. They indicated that blended learning created these positive learning experiences among the participants in their study because of the social interactions and relationships formed during the on-campus and online classes. Their study also indicated that the blended nature of the course created a supportive online presence where students could share ideas without inhibitions. These students' positive blended learning experiences could contribute to the preparation of early childhood teachers and be competent in their chosen careers.

Theoretical Framework

The research employed two main theories to explore the acceptance and the attitudes of Chinese undergraduate students toward blended learning. The Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2) and the College and University Classroom Environment Inventory (CUCEI) are two theories. Attitudes towards using blended learning are also included.

Furthermore, the relationship between the UTAUT and learning environments (Yang et al., 2019; Abdullah & Ward, 2016; Al-Gahtani, 2016; Decman, 2015) was also explored.

Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2)
UTAUT 2 is the extension theory of UTAUT by Venkatesh et al. in 2012. The UTAUT is an information systems theory developed by Venkatesh et al. in 2003 to explain the factors associated with technology acceptance and use. The UTAUT model incorporated eight original competing theories and formulated one comprehensive model.

The UTAUT2 consists of seven significant factors defined as follows: *Performance expectancy* is defined as a personal perspective on the benefits and usefulness of using a technology product to lead to the desired achievement, which can be associated with time efficiency, quality of output, good organization, and augmenting productivity. *Effort expectancy* is defined as the level of difficulty required or how easy to use technology. When technology use requires little effort, the usage rate will increase. *Social influence* is associated with social norms, which can impact people's thoughts and attitudes. The individual may prefer to adopt the technology due to social influence. *Facilitating conditions* relate to the degree of support and assistance people receive in the use of technology. *Hedonic motivation* refers to pleasure and enjoyment that came from utilizing technology. *The price value* is defined as money and outgoings for utilizing technology. *Habit* refers to the custom in which people are used to performing a behavior automatically. However, it was found in the pilot study conducted by the researcher that Chinese students do not have much experience with blended learning because blended learning as an innovative teaching method has only recently sprung up. Therefore, the researcher deleted the experience variable.

College and University Classroom Environment Inventory (CUCEI)
To determine students' attitudes toward the classroom environment, CUCEI was used, which consisted of 49 questions in seven dimensions. The original edition of the CUCEI was established by Treagust & Fraser (1986) when they did research in elementary and secondary schools. Later, Fraser (1994) developed the completed CUCEI based on Treagust & Fraser's research and used it to conduct research among college and university students.

The seven dimensions were defined as follows: *Students' cohesiveness* is defined as the level to which students know, help, and treat classmates in a class. *Individualization* is the degree to which students have the right to make decisions by themselves and deal with things differently. *Innovation* refers to

new activities and original teaching techniques applied in the class. *Involvement* is the degree of students' participation and engagement in class. *Personalization* shows that instructors interact with each student personally and differently according to students' personalities and welfare. *Satisfaction* refers to the class's enjoyment and achievement. Finally, *task orientation* is defined as a well-managed and organized teaching activity.

The classroom environment can influence students' perspectives of blended learning based on much research. This is why UTAUT 2 and CUCEI were combined to investigate the acceptance of blended learning by undergraduate early childhood students. For instance, Oliveira et al. (2014) found that environmental factors influence adoption intention on the use of blended learning. Yeop et al. (2019) found that the classroom environment plays a significant role in the acceptance of blended learning; thus, it is necessary to investigate its role. Yang et al. (2019) found that effort expectancy, social influence, and connected classroom climate (CCC) significantly impacted students' acceptance of cloud classrooms based on UTAUT and CCC theories. In order to fill the gap that Yang et al.'s (2019) research did not cover, this research utilized the CUCEI to analyze the blended learning classroom environment in detail.

UTAUT 2 and CUCEI were chosen as the most appropriate instruments to answer the following research questions:

1. How do the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), which includes performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value, and habit, influence acceptance of blended learning in early childhood program by early childhood majors in China?
2. How do the College and University Classroom Environment Inventory (CUCEI) which includes individualization, innovation, involvement, cohesiveness, personalization, and task orientation, influence acceptance of blended learning in early childhood programs by early childhood majors in China?

Hypotheses

The research hypotheses for the research are as follows.

H1: The level of performance expectancy is positively related to the degree of blended classroom acceptance.

H2: The level of effort expectancy is positively related to the degree of blended classroom acceptance.

H3: The level of social influence is positively related to the degree of blended

classroom acceptance.

H4: The facilitating level is positively related to the degree of blended classroom acceptance.

H5: The level of hedonic motivation is positively related to the degree of blended classroom acceptance.

H6: The level of price value is positively related to the degree of blended classroom acceptance.

H7: The level of CUCEI is positively related to the degree of blended classroom acceptance.

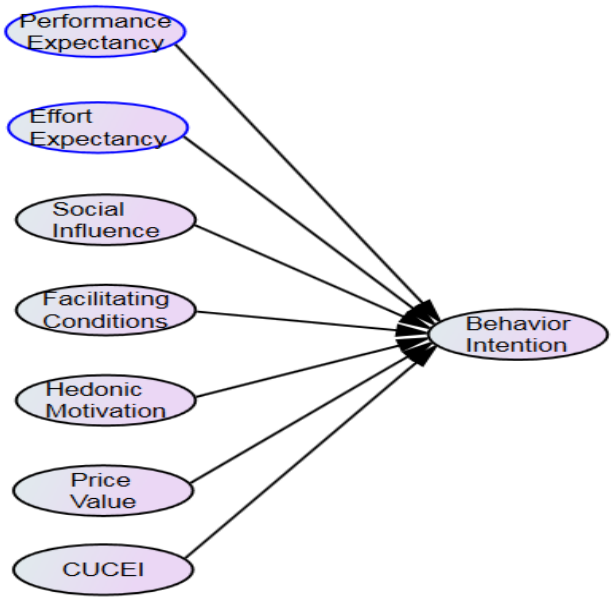

Figure 1. ***Conceptual Framework***

Methodology

Research Design

The study utilized a mixed-method design to collect data. A survey questionnaire was used to collect quantitative data, and an in-depth interview was conducted to collect qualitative data.

Participants

Participants were 363 college students majoring in early childhood from 7 provinces in China willing to join the study and answered the survey questionnaire. The seven provinces include Guangzhou, Sichuan, Fujian, Hunan, Shanghai, Beijing, and Shangdong, which house most large and

medium-sized colleges and universities in China. The researcher received 376 completed questionnaires answered online. However, 13 questionnaires were omitted due to incomplete responses. Thus, the valid questionnaires received for the study was 95% (n=363). The sample was 59 freshmen, 168 sophomores, 63 juniors, and 73 senior college students. In addition to the quantitative data, qualitative data were also collected from five students who volunteered to be interviewed. The interview session was conducted virtually and physically due to the COVID-19 pandemic, which limited traveling.

Research Instrument

The survey questionnaire was adapted from the original survey questionnaire used in the research studies in UTAUT2 by Venkatesh et al. (2012) and CUCEI by Fraser (1986). The reliability of the questionnaire is 0.979. The Kaiser Meyer Olkin (KMO) value of the questionnaire is 0.943. When there are many items to be considered in the model, researchers applied scores or dimension points obtained by packaging multiple items for model analysis. This method is similar to the item packaging method in structural equation models. The item packaging method is a method to sum or average two or more items of the same dimension in the scale to obtain new observation indicators (Yang et al., 2010).

Data Collection and Analysis Procedures

Data were collected for the whole month of January 2021. The questionnaire in the English version was translated to Chinese to avoid misinterpretation of the questions. Questionnaires answered anonymously were collected online and provided by Wenjuanxing. The quantitative data were analyzed by IBM SPSS version 23 and Amos version 23. According to the research questions, the proposed hypotheses were tested by structural equation modeling (SEM). The SEM is a suitable and ideal research instrument because it can identify the relationship among multiple potential variables. The interview data were analyzed using content analysis.

Results

Quantitative Data

Three indicators assessed convergent validity: factor loadings, composite reliability (CR) coefficients, and the average variance extracted (AVE). Results indicated that all factor loadings were above .60. As shown in Table 1, CR coefficients and AVE values showed a range of .74 to .94 and .50 to .81, respectively. These results were all greater than the recommended thresholds of .60 (CR coefficient) and .50 (AVE), which validate the convergent validity of the constructs (Fornell & Larcker, 1981). The square root of each AVE was more significant than the respective correlation coefficient, which validates

the discriminant validity of the constructs (Fornell & Larcker, 1981). Accordingly, the constructs under study have high validity.

Table 1. *Factor Loading and Hypothesis Testing Results*

Hypothesis	Item	Dimension	Factor Loading	CR	AVE	P<0.05	Result
	PE2		0.85				
H1	PE3	PE	0.93	0.93	0.81	0.186	Not supported
	PE4		0.91				
	EE2		0.80				
H2	EE3	EE	0.95	0.90	0.74	0.069	Not supported
	EE4		0.83				
	SI1		0.86				
H3	SI2	SI	0.92	0.93	0.80	0.028**	Supported
	SI3		0.91				
	FC1		0.84				
H4	FC2	FC	0.94	0.91	0.77	0.740	Not supported
	FC3		0.85				
	HM1		0.91				
	HM2	HM	0.98	0.96	0.89	0.462	Not supported
H5	HM3		0.94				
	PV1		0.84				
H6	PV2	PV	0.96	0.93	0.82	0.859	Not supported
	PV3		0.91				
	SF		0.91				
	SC		0.79				
	PS		0.93				
H7	IV	CUCEI	0.93	0.96	0.76	***	Supported
	TO		0.85				
	IN		0.88				
	ID		0.82				
	BI1		0.77				
	BI2	BI	0.86	0.87	0.69		
	BI3		0.86				

***p<.001; **p<.005.

The researcher chose ten standard indices for overall assessment model fitting. They are chi-square X2 value ratio, degree of freedom df, chi-square freedom CMIN/df, residual mean square and square root RMR, gradual residual mean square and square root RMSEA, adaptation index GFI, adjusted adaptation degree index AGFI, gauge adapter NFI, comparative adaptation index CFI and value-added adaptation index IFI.

χ2/DF ratio is 2.891, meeting the standard of <3 (Kline, 2005). RMSEA value is .072, which means that the model has a good fit since RMSEA ≤ 0.1. IFI value is 0.945, and CFI value is .944, indicating that the model is a good fit since CFI ≥ 0.8 and IFI ≥ 0.8 (Browne & Cudeck, 1993; Garson, 2006; Techapreechawong & Teeraprasert, 2012). Most of the fit indices meet the requirements for SEM analysis. Even though the values for GFI and AGFI do not exceed 0.9 (the threshold value), they still meet the requirement suggested by Baumgartner & Homburg (1996) and Doll et al. (1994): GFI is 0.846 and AGFI is 0.807， which is acceptable if above 0.8. Other researchers suggested that AGFI, GFI, and CFI values should be ≥ 0.80 (Byrne & Campbell, 1999). The value of SRMR is 0.019, which is less than 0.08, which is deemed acceptable (Hu & Bentler, 1999).

Interview Results

Positive comments include the influence of friends and teachers on the use of blended learning, more opportunities to have discussions with friends, flexibility, and benefits in some ways; however, students interviewed gave also some negative comments such as more work was required, limited time was given to accomplish learning tasks, poor quality of online materials and purchasing more expensive technology.

Discussion and Conclusion

Discussion with the Quantitative Results

The level of performance expectancy did not affect the blended learning acceptance. This finding is similar to Asare et al., 2016; Olatubosun et al., 2015's researches that found their studies that performance expectancy was also not the best predictor of intention.

The level of social influence is 46.8% positively related to blended learning acceptance. This is attributed to the fact that people are influenced by group psychology (Carter et al., 2015). Students who were interviewed stated that if other people, especially their teachers and classmates, tell them that blended learning is beneficial, they would be willing to try it. If they find that blended learning is useful, they will continue using it.

The level of facilitating condition did not affect the degree of blended learning acceptance. Students complained that even though they have all the technology to search for information online, they cannot search for good, quality articles and documents since these articles are copyrighted and need costly subscription fees. Thus, most of the articles they could download are low-quality. Yang et al. (2019)'s research confirmed this hypothesis.

The level of hedonic motivation did not affect the degree of blended learning

acceptance. The interview data showed that students think blended learning is not so enjoyable as to attract them to accept it. Part of the reason is that they spend more time on the online part than for traditional classes, and some online learning activities require them to read long papers rather than watch interesting short videos.

The level of price value did not affect the degree of blended learning acceptance. Students opined that some learning materials, including online books, applications, and courses, entail extra expenditure compared with traditional learning. The student said that purchasing a video recording application with an editing function is not cheap. She said it is much better to do the activity in a traditional class and not spend much money on technology.

The level of the blended classroom environment is 39.3% positively related to the degree of blended learning acceptance. According to data regarding classroom environment, individualization has the most significant influence on the classroom environment, indirectly affecting students' acceptance of the blended learning method. Unlike traditional classes, one characteristic of blended learning is flexibility (Jonker et al., 2020). Students admitted that one area they liked in blended learning was the opportunity their teacher gave them to arrange their learning in the blended class.

Discussion with the Qualitative Results

Data from the interview reveal that most students believe that blended learning is helpful for their learning to some extent. However, students consider online study or previewing work required by blended learning as an additional burden (Berrett, 2012; Wilson, 2013). They complained that time was not enough for them to finish all the learning tasks required in the blended learning class on time. With these conflicting teaching approaches, students became more burdened with time management and finishing the learning tasks assigned by the teachers.

Interview results indicate that the variable which did not affect the acceptance of blended learning was the level of effort expectancy. Students thought blended learning was not easy for them due to the limited time they had to complete multiple learning tasks. They have to spend more time on the online part than on traditional classes, and some online learning tasks are so long. They suggest that watching interesting short videos is more productive.

Some students revealed that they were not confident whether the knowledge they retrieved online was reliable or not. Balancing learning time and accessing quality information online are some problems hindering the success

of blended learning in early childhood education programs. It is, therefore, the responsibility of teachers using blended learning to make instructions clear to students and give concrete guidelines regarding learning tasks to be completed face-to-face and online, as well as what knowledge students have to focus on when searching for information online.

During the interview, students expressed their opinion regarding having more chances to have personal instruction with their teachers in blended learning because traditional class time was limited. Students indicated that they were satisfied with the feedback given by teachers online before they came to class, as this allowed them to know the mistakes they made in their assignments and make amendments. This also allowed them to pay more attention to the knowledge they missed in the assignments. The tasks were also flexible when compared to tasks given in traditional class. Teachers modified activities according to students' reflections of activities posted online and previewed before class.

In summary, utilizing blended learning is the driving force of future educational development and reform, which are constantly changing and evolving. Therefore, educators and researchers should consider the significant effect of the classroom environment on students' acceptance of blended learning when administrating, evaluating, and improving their blended learning. Other concepts besides UTAUT2 and CUCEI used in the study could be explored to determine factors influencing the use and acceptance of blended learning.

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