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Factors Impacting Behavioral Intention to Use Blended Learning for English Courses in Higher Vocational Colleges in China

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Abstract

Purpose: The study investigates the impact of five independent variables (self-efficacy, facilitating conditions, performance expectancy, effort expectancy, and attitude) on the dependent variable (behavioral intention). Besides, it aims to identify significant differences between variables. **Research design, data, and methodology:** The research employed the Index of Item-Objective Congruence for validity and Cronbach's Alpha in a pilot test (n=38) for reliability. With the non-probabilistic sampling technique, 495 valid responses from students at Anshun Technical College were analyzed by multiple linear regression to verify the significant relationship between variables. Following this, a 14-week Intervention Design Implementation (IDI)was conducted among 33 students. Afterward, the quantitative results from post-IDI and pre-IDI were analyzed in the paired-sample t-test for comparison. **Results:** Multiple linear regression revealed that performance expectancy, effort expectancy, and attitude had a significant impact on students' behavioral intention to use blended learning for English courses, while self-efficacy and facilitating conditions had no significant impact on students' behavioral intention. Finally, the results from the paired-sample t-test for comparison demonstrated significant differences in Performance Expectancy, Effort Expectancy, Attitudes, and Behavioral Intention between the post-IDI and pre-IDI stages. **Conclusions:** This research strives to explain the factors impacting students' behavioral intention to use blended learning to enhance their behavioral intentions and improve the effective implementation of blended learning in higher vocational colleges in China.

Keywords: Behavioral Intention, Blended Learning, Higher Vocational College, Intervention Design Implementation

JEL Classification Code: I23, J28, L2

1. Introduction

An increasing number of educational institutes in China are beginning to implement educational reform, and instructional reform is a top priority. Bringing suitable pedagogy and instructional models is the usual practice for educational institutes. Various instructional modes have emerged with technology development, among which blended learning has become the most prevailing approach. Based on Chinese educational reform policy background and the current development of information technology, blended learning will definitely become one of the important elements of higher educational reform in China (Ministry of Education, 2021). Blended learning can benefit both teachers and students. Compared to traditional face-to-face classroom instruction, blended learning is more student-centered and focuses more on autonomy and flexibility of learning and students' competency building. It is widely adopted and is a significant trend in higher education (Alexander et al., 2019; Wei et al., 2017).

Blended learning offers students opportunities to access information and communicate with their instructors online and offline. It is a critical driver for personalization at scale (Waite & White, 2019), a popular pedagogical concept, and a systematic instruction philosophy (Al Maskari, 2019). Blended learning allows students to make flexible choices about how they can learn best.

Most studies proved that blended learning is the combination of face-to-face learning with online experience (Anthony et al., 2020; Wang, 2019). Blended learning is seen

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as a complex system seamlessly combining face-to-face with technology-mediated learning (Fisher et al., 2021) or a means to enable personalized learning for students by integrating online and face-to-face educational experiences (Waite & White, 2019). Blended learning is related to customized learning, competence-based learning, and anytime, anywhere learning, and there are some elements students can control over the time, place, path, or pace of their learning (Waite & White, 2019). A study by Anthony (2019) made it clear that, as for the division of blended learning, face-to-face learning accounts for 30% of the time, while online learning is responsible for 70% of effective blended learning. Waite and White (2019) state that blended learning combines traditional classroom and online learning to improve the traditional meaning of a good classroom. For this study, blended learning is viewed as a pedagogical approach combining traditional face-to-face learning with digital learning experience. Surely, such blended learning is related to the teaching and learning experience in physical and virtual environments. Blended learning is advocated as a student-centered teaching and learning method that emphasizes learning outcomes throughout education (Venkatesh et al., 2012). Student engagement, learning autonomy, flexibility, and connection of learning to real-life environments will be enhanced by blended learning (Al Maskari, 2019). Blended learning transforms instruction in ways that traditional instruction never could. Blended learning can improve students' learning experience and academic achievement when appropriate delivery methods are adopted (Onofrei & Ferry, 2020).

In preview studies, researches concerning blended learning vary a lot, ranging from the exploration of the optimal modes of blended learning (Minhas et al., 2021; Wang et al., 2022) to students' perception of it (Fisher et al., 2021). The study of Yashwant et al. (2020) and some other previous studies have evidenced that the adoption of blended learning significantly affects student academic performance compared to the solo use of traditional learning or online learning mode. Ali et al. (2023) found a different effect between online and blended learning. Bervell et al. (2021) conducted a study to develop and validate a blended learning acceptance scale that combines both online and face-to-face learning. There are many studies on the effectiveness of using blended learning (Ayob et al., 2023; Singh et al., 2021), teachers' or students' perceptions of blended learning (Mielikäinen et al., 2023; Minhas et al., 2021), and comparison between traditional classroom learning and blended learning (Fleischmann, 2021). The study of Islam et al. (2022) formed a model that can attain a comprehensive goal of blended learning in which optimal course design strategies are examined to maximize students' online interactions. The study by Yashwant et al. (2020) validated the effectiveness of blended learning compared with the way of traditional learning in light of better student performance. Chen et al. (2022) conducted a study to explore factors affecting Pakistani readiness to diffuse blended learning in higher education. In China, based on an extended TAM3 model, Denget. Ql. (2022) conducted a study to explore the factors influencing blended learning for college students and found that there are four factors that influence students' blended learning acceptance.

The need for this research is not only based on the expansion of the current literature but also on the practical needs in the investigated higher vocational college---Anshun Technical College (ATC). ATC has already implemented pedagogical reform by requiring blended learning in every course in the college. All first-year students in college require English courses. ATC faces grave challenges when implementing blended learning for English courses. The key issue is that implementing pedagogical reform of blended learning is simply out of the administrator's and top management's consideration. Student's willingness and behavioral intention have not been considered, which has greatly reduced the expected effect of blended learning.

Education is a two-way process in which teachers and students are inclined to achieve the perfect outcome. Hence, whether blended learning is beneficial to the quality of education or not should also focus on students' feelings. A review of the literature shows that there are few studies on students' behavioral intentions regarding blended learning. Even though a few studies were found to explore students' behavioral intention to adopt blended learning, the frameworks of these studies were usually based on a uniform theory or model. This study aims to explore a new model by integrating and extending the theories and models of behavioral intention, as well as considering the implementation of intervention for students. The current research findings can be generalized to colleges like ATC. Therefore, more evidence is required to clearly show what factors can contribute to students' behavioral intention to use blended learning.

Additionally, limited studies developed a model for examining students' behavioral intentions of blended learning for English courses in the higher vocational college context of China. Thus, there is a need to carry out a study to investigate the predictors that influence students' behavioral intention of using blended learning. Therefore, this study aims to investigate factors influencing students' behavioral intentions to use blended learning by developing a model based on the theories of (TPB, SCT, and UTAUT).

2. Literature Review

2.1 Self-efficacy

The definition of self-efficacy was raised by Albert Bandura in his "Social Cognitive Theory" and is seen as the core concept of SCT (Bandura, 1997). It refers to individuals' beliefs in their abilities and confidence to perform adequately in their work and study(Bandura, 1997). In this study, self-efficacy is defined as students' beliefs about their ability and confidence to perform well in their study with blended learning. A variety of studies in the educational field have found that self-efficacy is an important determinant of individuals' intention and actual usage of (a) online learning (Cui, 2021), (b) e-learning system (Al-Fraihat et al., 2020) and (c) online learning system (Pham & Dau, 2022). Self-efficacy is found to have a positive and significant influence on effort expectancy towards adopting technology (Balkaya & Akkucuk, 2021). Self-efficacy should be viewed as the indicator of students' intention to accept and use blended learning. It affects students' decisions towards actual acceptance and usage intention of blended learning. The more students believe they can study well with blended learning pedagogy, the more they will accept and use blended learning. Self-efficacy has been proven to increase users' confidence levels when playing blended learning to accomplish the tasks teachers assign. Self-efficacy is students' self-belief in mastering and using blended learning. With self-efficacy, students ensure they have no difficulty using blended learning for their English course. Thus, the following hypothesis is presented:

H1: Self-efficacy has a significant impact on students' behavioral intention to use blended learning of English course.

2.2 Facilitating Conditions

Facilitating conditions, also one of the constructs of the UTAUT model, was regarded "as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003). Facilitating conditions capture two concepts from previous models, namely, perceived behavioral control from the Theory of Planned Behavior (TPB) and the Theory of Reasoned Action (TRA) and compatibility from the "Diffusion of Innovations" Theory (Rogers, 1995). Facilitating conditions can be organizational infrastructure or some policies to support using a system (Venkatesh et al., 2003; Wut & Lee, 2022), and it has been regarded as a reliable and valid predictor to manifest individuals' behavioral acceptance intentions and drivers of adoption behavior (Gupta et al., 2022). Facilitating conditions and behavioral intention are considered factors affecting use behavior (Wut & Lee, 2022). In this study, the knowledge, resources, and skills necessary to support students' use of blended learning are realized as facilitating conditions in the case of blended learning (Venkatesh et al., 2003). It was established in the study of Twum et al. (2022) that facilitating conditions were a significant predictor of students' behavioral intention to use e-learning based on a modified UTAUT model with university students in Africa. Consistent with the finding above, it was established that facilitating conditions significantly and positively influenced students' behavioral intention to use: (a) digital learning environments (Reyes-Mercado et al., 2023), (b) mobile learning (Sitar-Taut & Mican, 2021), (c) e-learning (Samsudeen & Mohamed, 2019) and (d) virtual communication technology (Gupta et al., 2022). However, some studies showed that facilitating conditions negatively correlated with the behavioral intention to use a computer-assisted language learning platform (Bessadok & Hersi, 2023) and a discussion forum (Wut & Lee, 2022). Hence, the following hypothesis is Proposed:

H2: Facilitating conditions has a significant impact on students' behavioral intention to use blended learning of English course.

2.3 Performance Expectancy

Performance expectancy is " the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003). Performance expectancy is one of the key constructs in the United Theory of Acceptance and Use of Technology (UTAUT) models. In the context of blended learning, students believe that adopting blended learning can help them complete instructional activities better and enhance teaching and learning results, which will lead to students' behavioral intention to use blended learning in their study. The construct of performance expectancy has always been used to predict students' behavioral intention to use educational learning technologies (Bessadok & Hersi, 2023; Gunasinghe et al., 2020; Reyes-Mercado et al., 2023; Wut & Lee, 2022). Also, many studies have found that performance expectancy had a significant influence on students' adoption of online learning or e-learning (Gunasinghe et al., 2020; Tewari et al., 2023; Twum et al., 2022) and mobile learning (Sitar-Taut & Mican, 2021). Performance expectancy was also used to investigate teachers' adoption of blended learning. The study of Zhang et al. (2021) focused on exploring the factors influencing Chinese music teachers' perceptions of using technologies. The study showed that the more favorable perspectives teachers had of blended learning, the greater their intention to utilize this pedagogy. Performance expectancy has also been proven to have a

predictive power in determining behavioral intention in the case of blended learning. Dakduk et al. (2018) found that performance expectancy is an important predictor of students' intention to use blended learning. Therefore, the following hypothesis is formulated:

H3: Performance expectancy has a significant impact on students' behavioral intention to use blended learning of English course.

2.4 Effort Expectancy

Effort expectancy is defined as the "degree of ease associated with using the system" (Venkatesh et al., 2003). Effort expectancy is the second construct of the UTAUT model (Venkatesh et al., 2003). The essence of effort expectancy was extended out of three other constructs proposed from other models or theories, namely: (a) perceived ease of use from TAM, (b) complexity, and (c) ease of use (Asare et al., 2016; Dakduk et al., 2018; Pardamean & Susanto, 2012; Venkatesh et al., 2003). This study defines effort expectancy as the degree of ease associated with blended learning. Viewed from the previous studies, some researchers found the predictive power of effort expectancy is lower than other constructs of the UTAUT models (Reyes-Mercado et al., 2023; Sitar-Taut & Mican, 2021; Twum et al., 2022; Wut & Lee, 2022). However, there were still several researchers persisting that effort expectancy had a significant influence on users' behavioral intention to use different educational technologies. For instance, effort expectancy was found to be a predictor of intention to use e-learning (Gunasinghe et al., 2020) and online learning (Pham & Dau, 2022). Batucan et al. (2022) found that effort expectancy and the seven other variables significantly and positively influenced students' intention to use online learning systems. Tewari et al. (2023) reckon effort expectancy as a predictive factor influencing students' intention to adopt online learning. Effort expectancy was also one of the predictive factors affecting executives' behavioral intention to accept the use of blended learning in executive education (Dakduk et al., 2018). In addition, the study of Bessadok and Hersi (2023) showed that effort expectancy positively impacted students' intention to continue using technology-based language teaching and learning platforms. Consequently, the following hypothesis is presented:

H4: Effort Expectancy has significant impact on students' behavioral intention to use blended learning of English course.

2.5 Attitude

The attitude toward the behavior is "the degree to which a person has a favorable or unfavorable evaluation of the behavior in question" (Ajzen, 1991). It is considered a critical factor affecting an individual's behavioral intention. According to TRA and TPB, attitude is a major predictor of behavioral adoption intention and is viewed as the direct factor in showing behavioral intention and behavior itself (Ajzen, 1991; Ajzen & Fishbein, 1975). Attitude highlights the degree to which an individual likes or dislikes a certain behavior (Ilyas & Zaman, 2020). In this study, attitude refers to measuring students' favorable or unfavorable appraisal or evaluation of behavioral intention to use blended learning. Many empirical studies have found that attitude toward behavior is positively associated with individuals' behavioral intention, and it can be seen as an important precursor (Bornschlegl et al., 2021; Ilyas & Zaman, 2020). In the educational field, it is not hard to find that attitude is significantly related to the acceptance and use of (a) weblog learning systems (Chao & Yu, 2019), (b) information and communication technology (Sharma & Srivastava, 2020), (c) digital libraries (Hamid et al., 2023), (d) online learning (Ilyas & Zaman, 2020) and (e) mobile learning (Wang et al., 2022). Students' attitude toward blended learning impacts their intention to accept it, influencing their actual use (Dakduk et al., 2018). Consistent with previous studies above, Dakduk et al. (2018) found that attitude was an important and strong predictor of students' intention to accept blended learning. That is to say, if students have a positive attitude towards blended learning, they will have a stronger intention to accept and use blended learning (Dakduk et al., 2018).

H5: Attitude has a significant impact on students' behavioral intention to use blended learning of English course.

2.6 Behavioral Intention

Behavioral intention derives from the Theory of Reasoned Action (TRA). Behavioral intention was used to measure the extent and degree of the intention with which one performs a certain behavior and the willingness to use the system (Ajzen & Fishbein, 1975). Behavioral intention was defined as the degree to which students formulate a mindful plan to perform specific future behavior. Behavioral intention is defined as the probability of a person performing a particular activity (Azizi et al., 2020). This is a simpler and more precise definition of behavioral intention. In this study, behavioral intention refers to the probability students will cultivate behavioral intentions to accept or utilize blended learning in their studies. There are many studies concerning behavioral intention, and most of the structures are based on a certain model, and some of the structures have adopted combined or extended models. Scholars have researched the factors influencing students' behavior and intention to use blended learning. The following are the most utilized and studied models in the current research. Based on the theory of planned behavior (TPB), Anthony (2019) conducted a

study using a survey of 1,169 students from Malaysian universities, colleges, and polytechnics. They found that attitude, subjective norm, perceived behavioral control, and self-efficacy are the main predictors that impact students' intention to accept and deploy blended learning in higher education. Batucan et al. (2022) used an extended UTAUT model to investigate factors affecting students' intention to use online learning systems (LMS). This extended UTAUT2 model includes interactivity, flexibility, enjoyment, and quality of online learning systems besides the original constructs of the UTAUT model, namely, performance expectancy, effort expectancy, and facilitating conditions. The study found that system enjoyment, the perceived interactivity and system quality, and facilitating conditions significantly influenced the expected effort, the expected performance, and the intentions to use the online learning system and their beliefs to perform better. Ye et al. (2022) conducted a study to build a model in which information/internet and communication technology (ICT) self-efficiency, organizational support, and attitudes were three core constructs predicting the teachers' behavior of using blended learning in the basic education of China. Bervell et al. (2021) constructed a Blended Learning Acceptance Scale (BLAS) to explore the acceptance of blended learning in distance higher education from teachers' perspectives. The latent variables of the framework structure were the combination of other constructs from other theories or models, such as SCT, TAM, TPB, UTAUT, etc. The researchers used partial least squares structural equation modeling (PLS-SEM) to test the development and validation of BLAS. The study results show that the instrument of BlAS with eleven constructs or factors scale was validated to be applicable to measure behavioral intention and acceptance of blended learning.

3. Research Methods and Materials

3.1 Research Framework

The proposed conceptual framework for this research has been developed using the constructs of three models and theories from SCT, TPB, and UTAUT, as shown in Figure 1.

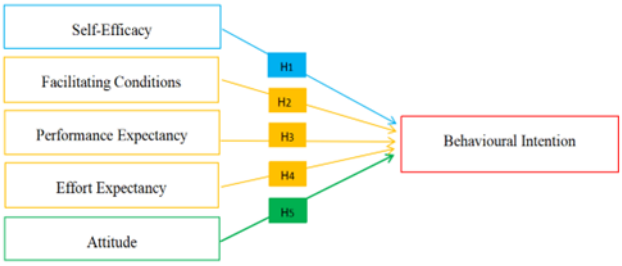

Figure 1: Conceptual Framework

H1: Self-efficacy has a significant impact on students' behavioral intention to use blended learning of English course.

H2: Facilitating conditions has a significant impact on students' behavioral intention to use blended learning of English course.

H3: Performance expectancy has a significant impact on students' behavioral intention to use blended learning of English course.

H4: Effort expectancy has a significant impact on students' behavioral intention to use blended learning of English course.

H5: Attitude has a significant impact on students' behavioral intention to use blended learning of English course.

3.2 Research Methodology

The whole research was designed in three phases: pre-IDI, IDI, and post-IDI. Quantitative methods were mainly adopted for this research. In the pre-IDI stage, at the preliminary diagnosis stage, after the validity with IOC and reliability test (N=38) with pilot testing, a survey was conducted using a well-designed questionnaire distributed to 495 respondents. The quantitative data was collected for multiple linear regression to test the proposed hypotheses and formulate the finalized IDI research framework. Accordingly, the Significance alpha value threshold was set as < 0.05, which indicates that the variables with a p-value less than 0.05 were not included in the second phase to form the IDI framework. Data collection and analysis from the pre-IDI phase supported the intervention design process. In the IDI stage, the intervention group underwent intervention for 12 weeks. As for the phase of post-IDI, the same questionnaire used at the phase of pre-IDI was delivered to the intervention sample group (N=33). A statistical program paired samples T-Test was applied to compare the data collected from pre- and post-IDI stages and evaluate the outcome of the intervention.

3.3 Research Population, Sample Size, and Sampling Procedures

3.3.1 Research Population

For this research, the population was all first-year students with public English courses in the investigated higher vocational college. There are nearly 13,000 students in the investigated college, and more than 4300 students are freshmen in 8 departments. For various reasons, the number of first-year students enrolled in the eight departments may vary from time to time, but the approximate number of students comes to 4300 each year. All 8 departments set public English courses, but only three departments set this course for the whole year (two semesters), and the rest only

set it for half a year (one semester). The Nursing, Information Engineering, and Applied Medicine Departments are these three departments. The statistics from the teaching management in the investigated college show there were 771 enrolled students from 14 classes in the Nursing Department, 598 students from 12 classes in the Information Engineering Department, and 868 students from 15 classes in the Applied Medicine Department. Two thousand two hundred thirty-seven students from the three departments can be regarded as the research population of this research.

3.3.2 Sample size

As Creswell (2012) stated, in an experiment, the sample size is approximately 15 participants in each group, 30 participants for a correlational study relating variables, and about 350 participants for a survey study. However, several factors will be considered concerning the varying size. The estimated sample size for this research is based on the desired effect size and probability error, etc., so as to make the sample a good estimate of the characteristics of the population, as there are three stages for this research. The researcher set different sample sizes for different research stages and purposes. In the pre-IDI phase, the sample size for the reliability test is 38, and for MLR testing is 495. Thirty-three students are chosen as the intervention sample group for intervention implementation.

3.3.3 Sampling Procedures

There were two stages for the sampling procedure in this study. In the first stage, purposive sampling, a non-probabilistic sampling technique was applied. Students were purposefully chosen in the above-mentioned three departments by the researcher in view of the fact that the students in these three departments had more access to the English course with blended learning, and they are more suitable to meet the research objectives and made available online for convenient distribution and collection. The basic data were collected using purposive sampling (Palys, 2008). The chosen respondents were selected with the following criteria: 1. respondents must be freshmen having access to blended learning for English courses. 2. respondents must be chosen from the departments that set English courses for one year.

In the second stage, stratified random sampling, a probabilistic sampling technique was applied. The researcher selected samples from the population stratified on one layer: the department of samples. Students who met the above criteria were selected for participation in the study. With the above sampling techniques, 495 samples were selected for the study in Pre-IDI to conduct MLR to build the finalized Intervention Design and implementation framework.

Purposive sampling was used to select the students for the whole intervention stage process. Thirty-three students from the same class majoring in Software Engineering or Information Engineering were chosen as the intervention group. This decision was made with efficiency in mind, as it was the most feasible and easy way to conduct the intervention, thereby optimizing resources.

3.4 Research Instruments

3.4.1 Design of Questionnaire

The design of the questionnaire was as follows.

First, identify the items for each variable. Sourced from 5 openly published articles (Alleyne & Lavine, 2013; Rudhumbu, 2022; Sharma & Srivastava, 2020; Wut & Lee, 2022), the items for the research were initially formed.

Second, the items should be adjusted according to the research scope. The context of Chinese higher vocational colleges adjusted and adapted all the items.

Third, Validate the instrument. IOC for validity and pilot testing for reliability were conducted.

3.4.2 Components of Questionnaire

The questionnaire consisted of four parts:

Part 1: demographic information,

Part 2: screening questions, and Part 3: students' behavioral intention to use blended learning. There were 23 questions related to 6 variables, with indirect variables self-efficacy 4 items, facilitating conditions 5 items, performance expectancy 4 items, effort expectancy 4 items, attitudes 3 items, and direct variable behavioral intention 3 items.

The questionnaire was designed as five Likert scale ranging from lowest to highest: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, (5) strongly agree.

3.4.3 IOC Results

To test the content validity, the index of item-objective congruence (IOC) was applied in this research. Typically, IOC, referring to the relationship between the item and objective which the research is designed to test (Fulcher, 2013). It is used to collect judgement from a panel of experts to identify whether the questions of the instrument are valid or not (Creswell, 2012). Three experts, an English teacher as well as an expert majoring in information technology and a professor specializing in education management in the investigated college were invited to offer judgmental point of views about the proposed questionnaire constructed for this study. Each item of the questionnaire was respectively rated with the scale ranging from -1 to +1, with Congruence = + 1, Questionable = 0 and Incongruity = -1. The scores of all the measurement items were higher than 0.7, which indicated that all the 23 items of the questionnaire were valid to be used in the research.

3.4.4 Pilot survey and Pilot test results

A pilot survey was implemented to test the instrument's reliability, and 38 students were randomly chosen from the first-year students. Cronbach's Alpha (CA) is applied to test the instrument's reliability in this research. The Cronbach Alpha's Coefficient (α) was 0.974 (23 questions). The Cronbach Alpha's Coefficient (α) of all items ranged from 0.967-0.974. All the coefficients of the items in this research instrument were higher than 0.9, which meant the instrument passed the reliability test and indicated that high internal consistency was met for all research variables. The reliability test result has proved that the questionnaire was acceptable and reliable. The result of the pilot test is shown in the following Table.

Table 1: Pilot Test Result

Variables	Items	Cronbach's Alpha	Strength of Association
Self-Efficacy	4	0.974	Excellent
Facilitating Condition	5	0.970	Excellent
Performance Expectancy	4	0.967	Excellent
Effort Expectancy	4	0.968	Excellent
Attitude	3	0.967	Excellent
Behavioral Intention	3	0.970	Excellent

4. Results and Discussion

4.1 Results

4.1.1 Demographic Profile

Table 2 shows the demographic profile of the resea rch, including the MLR samples (n=495) and the inter vention sample group (n=33).

Table 2: Demographic Profile

Entire Research Population (n=495)		Frequency	Percent
Gender	Male	336	67.88%
	Female	159	32.12%
Total		**495**	**100%**
Strategic Plan Participants (n=33)		**Frequency**	**Percent**
Gender	Male	21	63.64%
	Female	12	36.36%
Total		**33**	**100%**

4.1.2 Results of multiple linear regression

The primary objective of the MLR was to assess the influence of the five independent variables on the dependent variable. This was done to validate the proposed hypotheses, which were indeed supported by the results, reinforcing the significant impact of the independent variables on the dependent variable.

From the MLR results, the R-squared value (R^2) was 0.878, which illustrated that independent variables account for 87.8% of the dependent variable. In addition, for this model fit measure, the result of significant value (P <0.001) shows that the model in which Self-Efficacy, Facilitating Conditions, Performance Expectancy, Effort Expectancy, and Attitude served as independent variables have an impact on the behavioral intention, the dependent variable.

As for each independent variable, the P values for Self-efficacy and Facilitating Condition are 0.349 and 0.407, respectively, indicating that SE and FC had no significant impact on Behavioral Intention. The P value for Performance Expectancy, Effort Expectancy, and Attitude was <.001, .006, and <.001, respectively, indicating that PE, EE, and ATT significantly impacted BI.

Table 3: The multiple linear regression of five independent variables on Behavioral Intention

Variables	Standardized Coefficients Beta	t	P-value	R	R^2
Self-efficacy	0.0328	0.937	0.349	0.937	0.878
Facilitating Conditions	-0.0380	-0.830	0.407		
Performance Expectancy	0.2607	5.609	< .001**		
Effort Expectancy	0.1396	2.740	0.006**		
Attitude	0.5721	13.721	< .001**		

Note: p-value <0.001**

In conclusion, the results of Multiple Linear Regression supported three out of the five hypotheses. H1 and H2 were rejected, while H3, H4, and H5 were supported after MLR analysis, which represented Self-efficacy (SE) and Facilitating Conditions (FC) had no significant impact on students' behavioral intention to use blended learning of English course (BI). At the same time, Performance Expectancy (PE), Effort Expectancy (EE), and Attitude (ATT) had a significant impact on students' behavioral intention to use blended learning of English courses (BI). Based on the results of MLR analyses, the research purposes could be answered with these hypotheses, and the research framework was finalized. According to the results of MLR, PE, EE, ATT, and BI were applied to conduct IDI. Sequentially, the hypotheses for the IDI stage were developed as follows:

H6 There is a significant mean difference in Performance Expectancy (PE) between Pre-IDI and Post IDI stages.

H7 There is a significant mean difference in Effort Expectancy (EE) between Pre-IDI and Post IDI stages.

H8 There is a significant mean difference in Attitude (ATT) between the pre-IDI and post-IDI stages.

H9 There is a significant mean difference in the Behavioral Intention to use blended learning (BI) for an English course between the pre-and post-IDI stages.

4.2 IDI Intervention Stage

In the stage of IDI, the intervention was conducted, which lasted for 12 weeks. After implementing the intervention strategies and activities, quantitative and qualitative data were collected. A comparison was administered to test whether these interventions were effective and whether the hypotheses for IDI could be supported. IDI framework is illustrated in Figure 2.

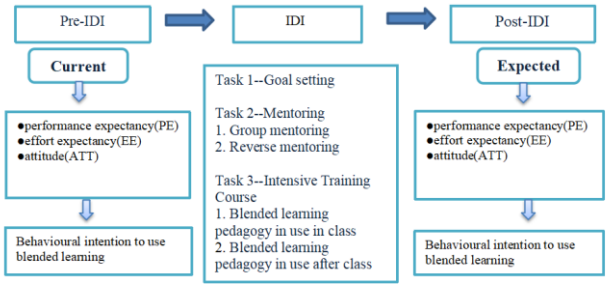

Figure 2: IDI Activities

4.3 Results Comparison between Current Situation and Expected Situation

After the IDI stage, the data were collected among the intervention samples (N=33). A statistical analysis paired samples t-test was administered to the PE and EE variables. ATT and BI to identify whether there were any differences in these variables between the pre-IDI and post-IDI phases. The results of paired samples t-test analyses were presented as follows:

Table 4: Paired-Sample T-Test Results

Variables	Mean	SD	SE	p-value
Performance Expectancy				
Pre-IDI	3.26	0.351	0.0610	< .001
Post-IDI	4.19	0.596	0.1038	
Effort Expectancy				
Pre-IDI	3.27	0.444	0.0772	< .001
Post-IDI	3.96	0.679	0.1182	
ATT				
Pre-IDI	3.34	0.475	0.0827	< .001
Post-IDI	4.00	0.736	0.1281	
Behavioral Intention				
Pre-IDI	3.42	0.694	0.1207	< .001
Post-IDI	3.97	0.679	0.1182	

As Table 4 presented, there was a significant increase in performance expectancy between the pre-IDI (M=3.26, SD=0.351, SE=0.0610) stage and post-IDI stage (M=4.19, SD=0.596, SE=0.1038), while P<0.001 and mean value difference between post-IDI stage and Pre-IDI stage was 0.932. Therefore, H6 supported the idea that a significant difference in performance expectancy exists between pre- and post-IDI.

There was a significant increase in effort expectancy between pre-IDI (M=3.27, SD=0.444, SE=0.0772) stage and post-IDI stage (M=3.96, SD=0.679, SE=0.1182), while P<0.001 and mean value difference between post-IDI stage and Pre-IDI stage was 0.689. Therefore, H7 supported the idea that there is a significant difference in effort expectancy between pre- and post-IDI.

There was a significant increase in attitude between pre-IDI (M=3.34, SD=0.475, SE=0.0827) stage and post-IDI stage (M=4.00, SD=0.736, SE=0.1281), while P<0.001 and mean value difference between post-IDI stage and Pre-IDI stage was 0.657. Therefore, H8 supported the idea that there is a significant difference in attitude between pre- and post-IDI.

There was a significant increase in behavioral intention between pre-IDI (M=3.42, SD=0.694, SE=0.1207) stage and post-IDI stage (M=3.97, SD=0.679, SE=0.1182), while P<0.001 and mean value difference between post-IDI stage and Pre-IDI stage was 0.545. Therefore, H8 supported the idea that there is a significant difference in attitude between pre- and post-IDI.

According to the results of the paired samples t-test presented above, the following conclusions can be reached. First, the variables (PE, EE, ATT) had significant differences between the pre-IDI stage and the post-IDI stage. Second, the researcher found a significant increase in students' behavioral intention to use blended learning for English courses (BI) between the pre- and post-IDI phases.

5. Conclusions, Recommendations and Limitations

5.1 Conclusions & Discussions

This research proposes a conceptual model to evaluate the key factors influencing students' behavioral intention to use blended learning in higher vocational colleges in China. Based on the following theories, UTAUT, TPB, and SCT. The research is designed as a mixed method research, with both quantitative and qualitative methods employed. However, the main part of the research, or in other words, the research, is more inclined to be quantitative than qualitative. Therefore, in the following section, the

discussion will be conducted based on the quantitative data collected, analyzed, and interpreted in this research.

As has been mentioned in summaries of 5.1, the quantitative data of this research were collected by using a survey questionnaire online and statistical procedure MLR and was applied for data analysis to test the impact of independent variables (SE, FC, PE, EE, ATT) on the dependent variable (BI). Another statistical procedure, a Paired sample T-Test, was employed to test the difference in all the variables between pre- and post-IDI. The results of MLR from the data show that SE had no significant impact on students' behavioral intention to use blended learning. This result is like the findings from prior studies (Bervell et al., 2021; Dubey & Sahu, 2022), in which the researchers explicitly presented that self-efficacy had no actual impact on respondents' behavioral intention to use blended learning or had no significant effect on their adoption intention. Sharma and Srivastava (2020) also state that no significant relationship exists between self-efficacy and behavioral intention to use technology in higher education. At the same time, the research results were opposite to the findings of prior studies (Ye et al., 2022), where self-efficacy was found to be a stronger predictor of behavior toward the use of blended learning.

In this research, FC was also tested to have no significant impact on students' behavioral intention to use blended learning. The findings align with the study of Al-Mamary et al. (2023). The study results show that FC has no considerable effect on the intention. FC has not shown an effect on behavior intention but has a significant and direct influence on the actual use of the Moodle platform (Taamneh et al., 2023). In the study of acceptance of blended learning, Dakduk et al. (2018) state that facilitating conditions could not be evaluated since the variable did not pass the reliability and validity test, let alone test its impact on behavioral intention. At the same time, the results contradict earlier findings (Batucan et al., 2022; Gunasinghe et al., 2020; Raza et al., 2022; Tewari et al., 2023), facilitating conditions, together with other constructs, have positive or significant influences on students' intention to use blended learning or other educational technology. It seems that facilitating conditions do have some influence on behavioral intention when dealing with educational technology.

From the results of MLR, the following variables (PE, EE, TT) have been tested to significantly impact pact on students' behavioral intention to use blended learning. PE has been tested to significantly impact students' behavioral intention to use blended learning for English courses. The result is identified with prior studies. From the results of other studies, performance expectancy is the best predictor of behavioral intention to use technology. Performance expectancy positively affects the behavioral intention to use blended learning among students in executive education (Dakduk et al., 2018). PE positively or significantly influences respondents' behavioral intention to use blended learning and other educational technologies (Batucan et al., 2022; Gunasinghe et al., 2020; Tewari et al., 2023). Dakduk et al. (2018) posit performance expectancy is one of the predictive factors affecting behavioral intention to accept the use of blended learning in executive education. Other studies in the relevant literature present contradicting results (Al-Mamary et al., 2023). In their study, PE has no significant positive effect on students' behavioral intentions to use LMS. One of the few pieces of literature validates that the performance expectations of certain technologies have a small impact on the intention to use the technology.

From the results of other studies, effort expectancy is the second predictor of behavioral intention to use technology, with its predicting function only inferior to performance expectancy. From the results of MLR in this study, EE has been tested to significantly impact students' behavioral intention to use blended learning for English courses. The result accords with the results of prior studies (Batucan et al., 2022; Gunasinghe et al., 2020; Tewari et al., 2023). Raza et al. (2022) posits that effort expectancy was found to have the main influence on the intention and use of the blackboard learning system. Some results from prior studies still present different findings from this research. Effort expectancy shows no significant effect on students' intentions and use behavior of digital learning environments (Reyes-Mercado et al., 2023; Taamneh et al., 2023). Reyes-Mercado et al. (2023) found many positive factors affecting students' intentions and use behavior of digital learning environments, but effort expectancy was found to have no significant effect.

Attitude is the distinct sign of the degree to which an individual shows favorable or unfavorable feelings about using blended learning. The extent of attitude is closely correlated with behavioral intention. Anthony (2019) found that the more favorable the attitude toward the behavior, the stronger the participants' intention to adopt blended learning. The result of the study on attitude is closely in keeping with the findings of other studies. Anthony et al. (2020) proposed that attitudes with the other three constructs were proven to influence students' intention to accept blended learning, and the intention affects the actual acceptance and deployment of blended learning in higher education. According to the findings of Bagdi and Bulsara (2023), attitudes are the most influential predictors of students' behavioral intention of online learning. Students' attitudes positively correlate with their behavioral intention to adopt blended learning tools (Ohanu et al., 2022). The more positive the attitude students hold, the stronger their behavioral intention to use blended learning will be. A substantial connection exists between attitude toward behavior and students' intentions to use LMSs (Al-Mamary et al., 2023). The study by Ilyas and Zaman (2020) shows that personal attitude affects students'

persistent intentions to use online learning technologies.

Qualitative methods have been employed throughout this research. The findings from the observations and interviews in the pre- and post-IDI stages add to the quantitative research results. It is evident that performance expectancy, effort expectancy, and attitude significantly impact students' behavioral intention to use blended learning.

5.2 Recommendations

5.2.1 Enhance performance expectancy of blended learning

In this study, performance expectancy is the degree to which students believe blended learning will help them attain gains in their English course (Venkatesh et al., 2003). In other words, to enhance the performance expectancy of blended learning, it is important to lead students to understand to what degree blended learning can be helpful for them to learn English courses well. The more useful students feel about blended learning, the better they will learn in English courses. The administrators and top management in higher vocational colleges should consider this when they make decisions on the pedagogical reform of implementing blended learning for all the courses, including English courses. They should first conduct some training, a trial course, or lectures on blended learning among students to help students believe that adopting blended learning can help them complete instructional activities better and enhance teaching and learning results. As for teachers, who are the practitioners in the course instruction, it is also necessary and crucial for them to teach students the usefulness of blended learning throughout the whole teaching and learning process. As the intervention activities have been adopted in this study, all the in-class and after-class activities design and implementation are interrelated with the actual use of blended learning. Students should be immersed in the convenient and useful environment that blended learning brings them, and students can have more access to the use of blended learning to know how useful it is to help them achieve in their English course when they consciously or unconsciously indulge in it. Only in this way can they raise students' behavioral intention to use blended learning in the course.

5.2.2 Enhance effort expectancy of blended learning

Effort expectancy is referred to as the degree of ease associated with the use of blended learning (Venkatesh et al., 2003). This is considered one of the important predictors influencing behavioral intention to use blended learning. In this study, blended learning has not been regarded as a technology or a certain system as in other studies but as a unique pedagogy. It is nominated as unique because it combines the attributes of educational technology with the instructional mode. Such a pedagogy is designed for students to use. Hence, whether it is easy to use will influence its true effects. The administrators and top management should consider the ease of use when they determine to implement the pedagogy of blended learning. If blended learning is not as easy as other pedagogy, raising students' behavioral intention to use it is hard. They also need to conduct a comprehensive study of the issue before deciding. Students should also know the ease of use of blended learning instruction before teachers conduct it in class. There are many stuff students need to learn every day. It is better to make them understand that using blended learning to take English courses is easy. The more effortless blended learning is, the more inclined students will be to use it for their course study. Only when students feel it is easy to adopt blended learning in teaching and learning activities can they enhance their behavioral intention to use it to learn English.

5.2.3 Enhance attitude toward blended learning

This study defines attitude as measuring students' favorable or unfavorable appraisal or evaluation of behavioral intention to use blended learning (Ajzen, 1991). As students' attitude toward blended learning directly affects their behavioral intention to use or adapt it for their English study, enchaining students' attitudes toward it should be the top priority among the administrators and top management when implementing blended learning pedagogical reform. If students have unfavorable attitudes towards blended learning, they will resist using it in their course studies. In a way, attitude is the plain and obvious predictor of behavioral intention. The more favorable students' attitudes are towards blended learning, the stronger their behavioral intention to use blended learning for English courses will be. Attitude is regarded as the most important indicator of behavioral intention. Before implementing blended learning pedagogical reform, administrators and top management had better conduct a study of blended learning in which students' attitudes towards blended learning are included. Fundamentally, any educational reform aims to improve the quality of education. Suppose it is imperative to conduct blended learning pedagogical reform in higher vocational colleges. In that case, it is better to implement propaganda about blended learning among students to give them early access and a better understanding before teachers implement it in their course instruction.

5.2.4 Enhance behavioral intention of using blended learning

Behavioral intention refers to the extent and degree of the intention with which students perform a certain behavior and the willingness to use blended learning (Ajzen & Fishbein, 1975). This study aims to explain the factors that impact students' behavioral intention to use blended learning for

English courses. Behavioral intention refers to students' probability of accepting or utilizing blended learning in their studies. The core goal of finding these factors is to enhance students' behavioral intention, which is regarded as the ultimate goal. Strangely but indisputably, higher vocational colleges in China often implement certain educational reforms without conducting an opinion survey among students beforehand. It is often due to the administrative authority and educational development needs but not students' willingness. Students play a crucial role in any educational reform. If there is nthere'stigation, there is nthere's to say whether any reform is good. The more willing students are, the more likely they will actively participate in the reform. Students should not be the objects of the pedagogical reform but the main body or subjects because it is when students actively apply blended learning to their course study that the due effect of pedagogical reform of blended learning can present. Therefore, students' skills should be considered when implementing blended learning pedagogical reform.

5.3 Limitations for Future Research

Although the fact that the findings of this study can increase the contribution to the understanding of behavioral intention to use blended learning from students' perspective and simultaneously provide a brand new thought into blended learning usage behavior on the control and influence of intervention implemented, the study's limitations cannot be avoided. On the one hand, only a single vocational college is taken as the target objective, which, in a way, will impact the generalization of the findings of the research outcome. Therefore, the primary limitation of this study is that the findings cannot be generalized to other educational settings since the interviews and investigations were limited to a higher vocational college in the west of China. Therefore, to better generalize the findings and contributions of the study, similar research needs to be conducted in other educational settings to enlarge the generalization of the research findings. On the other hand, like many studies, the constructs or variables the study focuses on are those easy to or facilitate to intervention as it is an action research design study; other important factors that significantly influence students' blended learning behavioral intention haven't been involved. Moreover, this study uses some theories and models of behavioral intention for reference, establishing a solid theoretical foundation for the study. However, the moderating role of some constructs has not been included and discussed due to limited sample size and research design, so further studies should explore the influence of these moderating factors by constructing a more comprehensive and holistic model. Like all previous studies, this study pays more attention to the scope of students' level as the basis of analysis. Therefore, more focus on the full understanding of blended learning from both student's and teachers' perspectives should be required for future research as a unit of analysis of blended learning usage behavior in higher education.

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