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Research Paper

Research on the Status Quo and Influencing Factors of Learning Engagement in the Process of Blended Learning in a Chinese University

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ABSTRACT: *Blended learning is conducive to the organic combination of "teacher-led courses" and "students' independent learning". Students use diverse learning resources to understand new knowledge independently before class, and teachers design learning activities in class to achieve in-depth learning of knowledge, and promote the levelization of the teaching process. So the teaching effect can be improved in both depth and height. However, in the actual blended learning, it was found that such a teaching method did not achieve a good learning effect, and the effect of blended learning fell short of expectations. Students have many misunderstandings about blended learning. They think that learning tasks are heavy, online learning is superficial, and learning engagement is greatly reduced. This study adopts a quantitative research method, based on the survey data of a sophomore undergraduate class that is teaching "Entrepreneurship" in the first semester of the 2022-2023 academic year, and analyzes the current situation and influencing factors of CFEC university students' blended learning engagement. The research shows that the basic situation of blended learning of CFEC university college students is good (M=4.10, 5-point Likert scale), but the learning engagement level of blended learning of college students is low (M=3.83, 5-point Likert scale), and it is also found that among the 5 influencing factors of "overall awareness of major and self-learning", "teaching design", "perceived learning support", "use of learning platforms and technology tools" and "learning process", there are only two influencing factors, including "overall understanding of major and self-learning" and "teaching design", had a significant positive impact on students' teaching engagement.Among which "overall understanding of major and self-learning" had the greatest impact .*

KEYWORDS: *Blended Learning, Learning Engagement, Influencing factors*

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I. INTRODUCTION

Blended learning is the result of the integration of "face-to-face teaching" and "online learning" (Parslow, 2005). In this way, the advantages of traditional learning methods and online learning can be combined: on the one hand, teachers exert their leading role in inspiring and guiding students to learn role; on the other hand, students demonstrate subjectivity, enthusiasm and creativity in their learning process (He, 2004).

Blended learning is conducive to the organic combination of "teacher-led courses" and "students' independent learning". Students use diverse learning resources to understand new knowledge independently before class, and teachers design learning activities in class to achieve in-depth learning of knowledge and promote the hierarchical teaching process. So the teaching effect can be improved in both depth and height (Wang et al., 2020). However, in the actual blended learning, it was found that such a teaching method did not achieve a good learning effect, and the effect of blended learning fell short of expectations. Students have many misunderstandings about blended learning. They think that learning tasks are heavy, online learning is superficial, and learning engagement is greatly reduced. Learning engagement is an important factor affecting the effect of blended learning and an important indicator to measure the quality of education. Therefore, how to better promote students' learning engagement in blended learning is particularly important.

II. LITERATURE REVIEW

With the rapid development of information technology and its tools, blended learning has become more and more popular among colleges and teachers, but it is not very popular among students, and there is a certain gap between the teaching effect and expectations. Some studies have shown that the students' Learning engagement is closely related. The following will mainly summarize three aspects: the connotation of blended learning engagement, the measurement of blended learning engagement, and the influencing factors of blended learning engagement.

2.1 The Connotation of Blended Learning Engagement

Learning engagement is the key to college students' academic success, and it is also a crucial factor in improving the quality of education. Different scholars hold different views on learning engagement, and no consensus has been reached so far. Kuh (2003) believes that learning engagement refers to "the time and energy that students spend in school education activities, and the efforts that schools make in governing effective educational practices". Kuh's understanding of learning engagement is mainly from two perspectives, one is student-led personal efforts and engagement, and the other is the establishment of a university-led overall school learning environment. This view has not been accepted by many scholars. More scholars' understanding of learning engagement tends to be discussed from the perspective of students.Newmarm (1992) defined learning engagement as "students' direct psychological engagement and effort in learning, understanding, mastering knowledge, and skills". Stephenson et al. (2020) argue that learning engagement is a complex phenomenon involving both physical and mental constructs. It is defined as the student's physical and mental commitment and energy. Xu (2020) integrated the perspectives of psychology and sociology, and defined learning engagement as the time and energy learners spend in learning activities, as well as a positive behavior and psychological state when interacting with other individuals and situations, including individual Behavioral engagement, cognitive engagement, emotional engagement at the social level and interactive engagement at the social level. Blended learning engagement is a concept corresponding to classroom learning engagement and online learning engagement. According to the characteristics of online and offline blended learning, this study intends to use Xu's (2020) understanding of learning engagement to explain the connotation of blended learning engagement. That is to say, blended learning engagement refers to the time and energy that students devote to participating in learning activities in a learning environment that combines online and offline, as well as a positive behavior and psychological state when interacting with other individuals and situations.

2.2 Measurement of Blended Learning Engagement

How to measure students' learning engagement and use it as the basis for teaching quality evaluation has always been the focus of research by scholars at home and abroad. NSSE (1998) mainly measured learning engagement from the five dimensions of academic challenge, active cooperative learning, rich educational experience, student-teacher interaction, and campus environment support. This questionnaire is widely used in many countries such as Europe and the United States, and the evaluation results are available for school reform actions or job improvement. Schaufeli (2002) researched learning engagement from the perspective of positive psychology based on work engagement. He believed that learning engagement refers to the abundant energy and good psychological toughness that individuals have when they study, and it is a positive and fulfilling activity related to learning. The mental state of learning, recognizing the meaning of learning, and full of enthusiasm for learning, including three dimensions of vigor, dedication and absorption. Fredricks et al. (2004) defined learning engagement from a psychological perspective, and believed that learning engagement is a meta-construct that includes three aspects of engagement: behavioral, emotional, and cognitive. Handelsman (2005) believed that NSSE's measurement of student learning engagement focuses on the overall learning experience of students, which is a "macro-level research" that focuses on students' educational experience and learning practice, and does not pay attention to course learning engagement at the micro level . Therefore, he designed and developed the Student Course Engagement Questionnaire (SCEQ), which consists of four dimensions: ability engagement, knowledge engagement, participation engagement, and emotional engagement of college students, and is used to measure freshmen's learning engagement in mathematics classes. With reference to the research results of foreign scholars and China's reality, Chinese scholars have also developed a series of questionnaires for measuring learning engagement. Liao (2011) mainly measured learning engagement from three dimensions: behavioral engagement, cognitive engagement, and emotional engagement. Among them, the dimension of behavioral engagement mainly investigated the situation of college students participating in learning activities inside and outside the classroom, and the dimension of cognitive engagement mainly investigated the use of learning strategies in learning activities , and the dimension of emotional engagement mainly reflects the emotional experience of college students in the learning process, with a total of 20 questions. Li (2010) measured learning engagement from three dimensions: motivation, energy and focus. Xu (2020) measured learning engagement from the five dimensions of learning engagement time, "learning behavior", "learning

methods and learning strategies", "emotional experience", and "interactive communication". Blended Learning Engagement is Measured.

2.3 Influencing factors of blended learning engagement

Scholars at home and abroad have carried out a lot of research on the factors affecting learning engagement, mainly in two aspects: one is the characteristics of the learners themselves, including individual demographic variables such as age, gender, race, family economic status, and cultural background, as well as learning factors. The psychological characteristics of learners, such as learning motivation, self-confidence, self-efficacy, and professional commitment, are studied. The second is the school environment, including educational policies, curriculum, teaching environment, teachers, peer relationships, types of learning tasks, teaching feedback, etc. Some studies have shown that learning engagement is positively correlated with age, the older the age, the higher the learning engagement, and the learning engagement is related to gender, and the level of learning engagement of girls is higher than that of boys. Family economic level is closely related to learning engagement. Students from low-income families seldom participate in school learning activities, and their learning engagement is relatively low. More studies have conducted research on school environment factors such as teacher-student relationship, academic characteristics, school discipline, and learning tasks, and found that they have an important impact on learning engagement. For example, a fair and flexible school discipline atmosphere will enhance the level of student engagement. A supportive teacher-student relationship is significantly positively correlated with learning engagement. Good task design is critical to promote students' learning engagement. When learning tasks are closely integrated with life situations, learners will have a positive attitude towards learning and show higher time and cognitive engagement. The tasks designed by teachers are not in the closest proximity of learners When developing the zone, the learner's cognitive engagement will be significantly reduced. Newmann (1989) believed that extrinsic rewards, intrinsic interest, sense of belonging, competency needs and social support are the main influencing factors of learning engagement. Sharon (2010) argued that teachers' teaching, learning tasks or content, teachers' assessment of students, teacher-student and other relationships, and technology are key factors affecting student engagement. Chinese scholars' research on this aspect is slightly different. Lu and Chen's (2010) research shows that learning self-efficacy is an important variable that affects and predicts students' learning engagement, and both learning ability efficacy and learning behavior efficacy have a significant predictive effect on learning engagement. Lin et al. (2020) found that there is a significant positive correlation between learning engagement and academic self-efficacy, and the academic self-efficacy of college students has a positive predictive effect on college students' learning engagement. Liu (2005)’s research shows that under the blended learning environment, including the learning values of college students positively predict academic efficacy, and academic efficacy, has a complete mediating effect between learning values and learning engagement, that is, learning values indirectly affect learning engagement. As a kind of implicit meta-cognitive knowledge, learning values will have an impact on learners' cognitive process, strategy selection, learning motivation, learning behavior, learning emotional experience, academic performance and many other learning elements. Learning values have a guiding function for individual actions. The more students realize the significance and importance of learning for their own survival and development, such as improving their overall quality, increasing employment opportunities, and winning respect and recognition, the stronger the direction and purpose of learning. Learning self-efficacy is an individual's subjective judgment of whether he is competent for learning tasks and an objective representation of his own learning effects, which directly determines the learner's cognitive judgment when facing learning tasks, as well as the degree of effort and persistence in learning. Therefore, the more students realize the importance of learning to their own survival and development, the more they can actively construct knowledge during the learning process and experience the joy of success. These successful experiences will bring students positive achievement expectations (Yu, 2005), and further enable them to experience their own value, believe in their own abilities, improve their academic self-efficacy, and become more confident in learning, and they will be more willing to invest in learning. Xu (2020) conducted a survey on blended learning engagement based on the research of domestic and foreign scholars, and found that "the overall understanding of majors and self-learning", "Teaching design", "feeling learning support", "learning platform and technology are the main influencing factors of blended learning engagement. This research intends to adopt the viewpoint of Xu (2020).

III. DATA SOURCES AND RESEARCH DESIGN

This study chooses CFEC university to conduct research, and the following mainly elaborates from the sources of data and research design.

3.1 Data source and sample distribution

The data of this research comes from the survey of CFEC university's 2020 online and offline hybrid first-class course in Chongqing - "Entrepreneurship". Select a sophomore undergraduate class who is studying

"Entrepreneurship" in the first semester of the 2022-2023 school year as the survey object, use the questionnaire star to distribute electronic questionnaires, and finally get 41 valid samples (a total of 50 students in this class student). The sample distribution of this survey is shown in Table 1. Among them, 26 are male, accounting for 63.4%. In terms of learning preferences, 61.8% of students prefer traditional classrooms, and only 26.8% of students prefer online classrooms. This also shows that more attention should be paid to teaching ratio of online and offline classrooms in blended learning. In terms of blended learning experience, 85.6% of students have at least one semester of blended learning experience, indicating that the use of CFEC university blended learning is more common.

Table 1: Overall distribution of college students' blended learning engagement samples (N=41)

Index	Type	N	Percentage(%)
Gender	Male	26	63.4
	Female	15	36.6
Learning Preference	Traditional Class	25	61.0
	Online Class	11	26.8
	Not Very Clear	5	12.2
	None	6	14.6
Blended Learning Experience	One Semester	22	53.7
	Two Semesters	7	17.1
	Three Semesters	4	9.8
	Four Semesters And More	2	4.9

3.2 Research Design and Methods

This study aims to investigate the status quo of college students' blended learning engagement and explore the influencing factors of learning engagement. The quantitative research method is used in the study.

3.2.1 Research object

This study takes 50 sophomores majoring in property management who are taking the "Entrepreneurship" course in the first semester of the CFEC2022-2023 academic year as the research objects.

3.2.2 Instrument

The questionnaire used in this study mainly includes four parts. Part A is about learning the basics. Part B measures the level of learning engagement. Part C measures the level of each learning engagement influencing factor. Part D is about demographics. Using Xu's (2020) scale, a 5-point Likert scale, ranging from 1 to 5 means from very disagree to very agree.

3.2.3 Statistical analysis methods

This study adopted a quantitative research method. Quantitative data collected from questionnaire surveys were analyzed. SPSS 22.0 was used for data analysis.

IV. FINDING

Before data analysis in this study, a normality test was first carried out. Secondly, the basic situation and learning engagement level of blended learning for college students are expounded. Finally, it analyzes the influencing factors of college students' blended learning engagement.

3.1 Normality

There are two main methods for testing normality: graphical methods and statistical methods. This study will use statistical methods to test normality, using two descriptive statistics, including skewness and kurtosis. Skewness is used to describe the symmetry of a distribution, while kurtosis is used to describe the degree of clustering towards the center of the distribution. According to Kline (2010) and Brown (2006), data with skewness values between -3 and +3 and kurtosis values between -10 and +10 are considered to be normally distributed, especially for relatively large sample. As shown in Table 1, the absolute values of the skewness value and kurtosis value are all less than 10. According to Brown (2006), the data are normally distributed. It can be seen that the data used in this study are normally distributed, and subsequent statistical inference can be carried out.

Table 2: The skewness and kurtosis values

	The basic situation of learning	Learning engagement	Influence factor
Kurtosis	-0.765	-0.896	-0.962
Skewness	0.168	0.087	-0.319

3.2 The level of basic information of learning and learning engagement of blended learning for college students

The level of basic situation and learning engagement of blended learning for college students are shown in Table 3. Among them, the average value of the basic information of learning is 4.10 (5-point Likert scale, increasing from 1 to 5), indicating that the students' self-perception of learning is good, especially the students are full of confidence in completing the course tasks (M=4.17) . However, it can also be seen from Table 3 that the level of student engagement in learning is low (M=3.83), and the time spent on this course is the lowest (M=2.83), and the level of emotional experience is the highest (M= 4.23). It shows that the students approve of this course from their hearts, but they fail to spend more time.

Table 3: The level of basic information of learning and learning engagement

		Min	Max	Mean	Std
Basic information of students' learning	Confidence in the course performance	3.00	5.00	4.10	0.664
	Confidence in the course content	3.00	5.00	4.02	0.689
	Confidence in the completion of the course tasks	3.00	5.00	4.17	0.704
	Total	3.00	5.00	4.10	0.60665
Learning engagement	Weekly time spent in the course	2.0	5.0	2.83	0.8632
	Learning behavior	2.60	5.00	4.21	0.57514
	Learning methods and learning strategies	2.00	5.00	3.94	0.72085
	Emotional experience	3.20	5.00	4.23	0.51943
	Interaction	2.67	5.00	3.94	0.71953
	Total	2.87	4.69	3.83	0.49833

3.3 Influencing factors of college students' blended learning engagement

The Durbin-Watson statistic is an additional optional test that can be used to detect autocorrelation in residuals in regression analysis (Wu, 2019). Autocorrelation, also known as serial correlation, refers to the degree of correlation between variable values in different data sets. In statistics, a residual is the difference between the observed value and the mean value predicted by a particular model. Residual values are very useful in regression analysis because they indicate how well the model explains variation in the given data. Table 4 shows the result of Durbin-Watson test, and Table 5 shows the result of multiple linear regression. The Durbin-Watson (D-W) statistic usually ranges from 0 to 4, and a value of 2 indicates zero autocorrelation, the data are independent, and satisfy the condition of regression independence (Wu, 2019). It can be seen from Table 4 that the D-W value of this study is 2.220. The R value reflects the degree of linear correlation between the independent variable and the dependent variable, and the larger the value, the stronger the linear correlation. The R value of this study is 0.776, indicating a high correlation between the two. Wu (2019) believes that the R-squared value is 0.602, indicating that "the overall understanding of majors and self-learning", "teaching design", "perceived learning support", "the use of learning platforms and technology tools" and "learning process", these 5 influencing factors can explain 60.2 % of the learning engagement variance, the model interpretation is acceptable.

Table 4: Durbin-Watson

Model	R	R square	Adjusted R-squared values	Durbin-Watson(U)
1	0.776a	0.602	0.546	2.220

Table 5 shows the partial regression coefficient (B) and its standard error (Std.Error), the standardized partial regression coefficient (Beta), the t-statistics for the regression coefficient test, and their P-values. It can be seen from table 5 that among "the overall understanding of professional and self learning", "teaching design", "perceived learning support", "the use of learning platforms and technology tools" and "learning process" ,"the overall understanding of professional and self learning" and "teaching design" had a significant impact on learning engagement. Wu (2019) believes that the larger the B value, the greater the influence of the independent variable on the dependent variable. In this study, the B value for "overall knowledge of professionalism and self-learning" was 0.397 and the B value for the "teaching design" was 0.290. It shows that "the overall understanding of professionalism and self-learning" has the greatest impact on the learning engagement. It means that for students to invest more in students, they need to improve their awareness of professional and self-learning.

Table 5: Results of the multiple linear regression

		Non-standardized coefficients		Standard coefficient		
Model		B	Std.Error	Beta	t	Sig.
1	(constant)	0.668	0.539		1.239	0.024
	Overall understanding of professional and self-learning	0.397	0.146	0.443	2.712	0.010
	Teaching design	0.290	0.150	0.310	1.935	0.041
	Perceived learning support	-0.085	0.226	-0.083	-0.377	0.709
	The use of learning platforms and technical tools	0.134	0.158	0.183	0.848	0.402
	Learning process	0.017	0.165	0.022	0.105	0.917

V. CONCLUSION AND DISCUSSION

Based on the survey data of a sophomore undergraduate class that is teaching "Entrepreneurship" in the first semester of the 2022-2023 school year, this study examines the basic situation of undergraduates' learning and the student's learning engagement, and also analyzes the the impact of five influencing factors on learning engagement, namely "overall awareness of professional and self-learning", "teaching design", "perceived learning support", "the use of learning platforms and technology tools" and "learning process". Based on the above analysis results, the following conclusions are drawn:

First of all, the level of basic information of learning of blended learning for college students is relatively good (M=4.10, 5-point Likert scale), which shows that students have a good self-perception of learning, and they have high confidence in course performance, course content and completion of course tasks .

Secondly, the level of learning engagement blended learning for college students is low (M=3.83, 5-point Likert scale). The time spent in this course is the lowest, while learning methods and learning strategies, also interaction are also relatively low. The average value is below 4, and the level of emotional experience is the highest. It shows that students approve of this course from the bottom of their hearts, but they fail to have more interaction with teachers (due to the epidemic situation, the proportion of online teaching in this course is relatively high), and at the same time, they do not pay enough attention to learning methods and learning strategies, and have not been able to put in more time. This is also the reason for the poor learning effect.

Finally, among the 5 influencing factors of "overall awareness of major and self-learning", "teaching design", "perceived learning support", "the use of learning platforms and technology tools" and "learning

process", Only the two influencing factors that are "overall understanding of major and self-learning"" and "teaching design" have a significant positive impact on students' learning engagement, among which "overall understanding of major and self-learning" has a bigger impact. That is to say, if you want to increase students' learning engagement, the first thing is to improve students' understanding of majors and their overall understanding of self-learning.

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