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Analysis of the Influencing Factors of Blended Learning on the Effectiveness of Courses in Universities: A Case Study of China

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The objectives of this study are: 1. To study the factors of Blended Learning Effectiveness of Chinese Universities; 2. To study Various Dimensions of Factors Affecting Blended Learning of Chinese Universities; 3. To find a relationship between Various Dimensions and the Effectiveness of Blended Learning factors of Chinese Universities; and 4. To analyze Various Dimensions factors influencing Effectiveness of Blended Learning of Chinese Universities. The sample used in this study was 860 administrators, teachers, students, and technicians in Chinese universities, and universities opened in downtown Nanchang city, Jiangxi Province. The instrument used to collect the data was the study questionnaire, and the statistics used in this study included percentage, mean, standard deviation, Pearson correlation analysis and structural equation model (SEM). The results show that: 1) The influence of the variable factors of student dimension on the curriculum effect in Chinese universities is generally at a high level. In particular, students' confidence, motivation and methods are at the highest level, followed by the evaluation dimension (Results, Feedback, Process), then the teacher dimension (strategy, implementation, design), and finally the management dimension (support, concept, mechanism) and technical dimension (platform, tools, environment); 2) analysis of the effectiveness of the hybrid learning application in China, especially the two important intermediate variables of experience and participation also play a significant positive role.

Keywords: Effectiveness Factors of Courses; Blended Learning; SEM; Chinese Universities.

1. Introduction

Blended learning is a teaching method that combines the advantages of traditional teaching methods with online learning, adopting a "blended" approach of both offline and online learning. By integrating these two forms of instruction effectively, it guides learners from surface-level learning to deeper levels of thinking. The combination of traditional and online

learning technologies was initially proposed by American scholars Smith-J. and Elbert Masie. Prominent issues are low course completion rates, incomplete learning experiences. Since 2014, the global MOOC trend has gradually cooled. In China, Professor He Kekang of Beijing Normal University was the first to propose blended learning, considering it as a learning method that integrates the advantages of both online and offline learning. It emphasizes the leading role of teachers in guiding, inspiring, and monitoring the teaching process while fully leveraging students' initiative, enthusiasm, and creativity as the main actors in the learning process. Many scholars have researched blended learning from different angles, levels, and disciplinary ranges, mainly involving paradigms, content, practices, and comparisons with other models. The effectiveness of blended learning depends on how various effective means are used during the process to improve teaching effectiveness. Blended learning is becoming a new teaching method in classroom teaching because it is a product of the teaching and learning experience, which, in turn, influences learners' attitudes and behaviors. We will discuss the research background from two aspects: the current status of traditional classroom teaching models and the shortcomings of single online learning models.

Research Objectives

1. To study the factors of Blended Learning Effectiveness of Chinese Universities

2. To study Various Dimensions of Factors Affecting Blended Learning of Chinese Universities

3. To find a relationship between Various Dimensions and the Effectiveness of Blended Learning factors of Chinese Universities

4. To analyze Various Dimensions factors influencing Effectiveness of Blended Learning of Chinese Universities

Research Hypothesis

1. Various factors are related to Blended Learning Effectiveness of Chinese Universities.

2. Various factors have an impact on Blended Learning Effectiveness of Chinese Universities.

Conceptual Framework

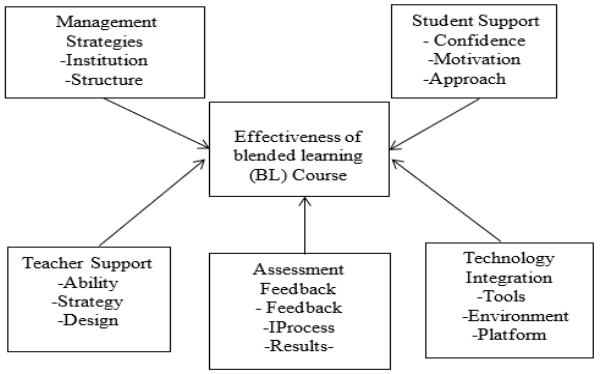

Figure 1: Research Conceptual Framework

2. Literature Review

Research Status of Blended Learning. The history and current status of blended learning are diverse, involving the evolution of the concept of blended learning, the research purposes of blended teaching, and the basic paradigms of blended learning research. Both domestic and international educators have conducted extensive research on these aspects of blended teaching, yielding influential results and providing theoretical foundations for understanding and exploring the academic development of this field.

1. Research on Blended Learning in China

In China, blended teaching has achieved significant effectiveness in higher education.The effectiveness of blended teaching is primarily manifested in improved learning outcomes and pass rates, increased student satisfaction, and enhanced teaching efficiency. Scholars such as He Kekang, Yu Shengquan, and Li Kedong have laid the foundation for the conceptual research and development of blended learning. Notably, researchers like Yu Shengquan and Zhang Qiliang have directly equated the concepts of blended learning and blended teaching when using the term "Blending Learning". Professor Feng Xiaoying from Beijing Normal University proposed the concept and analytical framework of blended learning, systematically examining and analyzing the relevant practices and research on blended learning both domestically and internationally over the past 20 years. A widely accepted definition of blended learning is "the integration of online learning and face-to-face learning" (Feng Xiaoying, et al., 2018). Feng Xiaoying, et al. (2018) presented a literature review on blended learning, based on an analytical framework. Numerous innovative theories and practices have emerged from research outcomes. For instance, in their paper "Blended Learning in the 'Internet Plus' Era: Teaching Theories and Methods", Feng Xiaoying, et al. (2019) studied learning theories and teaching methods in 2019, providing a theoretical and methodological framework for blended learning in the Internet Plus era. In another paper titled "Model of Teacher Blended Teaching Ability Training: Principles, Preparation, and Strategies" (Feng Xiaoying, et al., 2021), they proposed a model for training teachers' blended teaching abilities. Adopting a systematic literature review method, they analyzed relevant studies on the development of blended teaching abilities over the past decade, distilled strategies for enhancing blended teaching abilities, and established a development model through qualitative meta-analysis.Blended learning (BL) has evolved over more than 20 years, and "Internet+" education has been given new connotations. However, the understanding of hybrid learning both domestically and internationally remains confused and perplexing. There has always been a lack of a clear, systematic conceptual framework and analytical framework to guide the research and practice of hybrid learning (Feng Xiaoying et al., 2018).

2. Research on Blended Learning Abroad

Hybrid learning was initially proposed by foreign researchers and has generated many innovative outcomes through years of research and exploration (Burna Nayar, Surabhi Koul, 2020). Hybrid learning tools have shown improved learning efficiency compared to traditional tools, and the newer generation of students prefers using hybrid learning tools and enjoys the experience (Ige O A, Hlalele D J, 2017). For instance, Ige conducted hybrid teaching practices in junior high schools in the Ondo region of Nigeria, and the results indicated that hybrid teaching effectively transformed the traditional "teacher-centered" approach in basic

education, reestablishing the student's central role, and significantly impacting students' learning outcomes (López-Pérez M V, Pérez-López M C, Rodríguez-Ariza L, 2011). MVLópez-Pérez collected numerous cases of hybrid courses at the University of Granada, Spain, and found that hybrid teaching reduced dropout rates, improved exam pass rates, and enhanced student learning outcomes. Additionally, hybrid teaching boosted students' learning motivation, self-efficacy, and satisfaction. Akyol and Garrison researched the learning performance of American master's students in hybrid learning environments, with results showing that students achieved high levels of cognitive presence and ideal learning outcomes in online and hybrid learning environments. Surveys conducted on tens of thousands of university students across six Florida universities by American scholars also indicated that students performed significantly better in hybrid courses compared to purely face-to-face or online courses. Especially, in the field of education, hybrid learning is often regarded as one of the primary ways of skill training. Compared to traditional training, hybrid teaching has shown significant effects in enhancing students' self-efficacy, stimulating learning interest, and improving autonomous learning abilities in practice (Ilic D, Nordin R B, Glasziou P, et al., 2015).

3.Comparative Research on Blended Learning at Home and Abroad

Research results in China mainly cover several aspects: improvement of teacher capabilities, blended teaching models, blended teaching design, curriculum development strategies, standardization of MOOC construction in universities, and research on blended teaching practices. Its main idea is to combine face-to-face teaching with online teaching to form a cost-effective new teaching model. Feng Xiaoying et al. (2019) proposed in their paper "Blended Learning in the Era of Internet Plus" that in the era of Internet Plus, blended learning endows learning with new connotations, transforming learning from the acquisition of common standard knowledge to individual knowledge construction and innovative knowledge generation. This study explores blended learning and its underlying learning theories and teaching methods from the perspectives of learning and teaching. Investigating community models and dynamic scaffolding blended teaching models are both the teaching foundations of blended learning, providing theoretical and methodological frameworks for teachers to effectively design and promote blended learning. Moreover, Huang Ronghuai and others have also conducted related research.

Foreign research results mainly cover several aspects:the management dimension (support, concept, mechanism), Picciano, A. G. (2009). A multi-model hybrid learning model is introduced, emphasizing the key role of the management system in designing a hybrid curriculum to improve the course effect. Alqurashi,E. (2016). Focus on the management strategies in a hybrid learning environment. Shea, P., & Bidjerano, T. (2009) This study explored the impact of management structure on community building in online hybrid learning and how it relates to learning effects. Jaggars, S. S., & Xu, D. (2016) study investigated the impact of management support elements in online course design, including faculty support and student support, on student performance. Smith and Ferguson (2019) studied how managers balance the budget and teaching quality in hybrid learning, emphasizing the importance of effective resource management for the successful implementation of hybrid learning. Ljubojevic, M., & Krcmar, M. (2019) discovered the role of organizational culture in the implementation of hybrid learning in higher education institutions, pointing out how to

promote the application and development of hybrid learning at the management level. This is consistent with the results of this study, where Garrison, D. R., & Vaughan, N. D. (2019) found that technical support is the key to the success of hybrid learning. According to Picciano (2009), technology provides a variety of learning resources and interactive tools. The study showed that the average score of the technical dimension is the lowest, indicating that the information technology hardware and software of Chinese universities have reached a good level, which can well meet the needs of the technical environment of learning management or mixed learning courses and online learning in the learning management system.

Viet Anh Nguyen (2017) proposed a peer assessment method for project-based blended learning courses in higher education in Vietnam.

In summary, these research findings can effectively assist educators in adopting blended online learning environment design patterns and provide guidance for further development and improvement of digital technology usage and blended online learning.

3. Research Methodology

Scope of Populations and Samples

The population and sample groups used in this study were both persons working or studying in Chinese universities and selected 8 provincial undergraduate universities. Most of this mainly include teaching staff, students and technical support staff. Using the principles of random stratified sampling calculate population numbers and determine sample size. The population for the study comprises 10,122 respondents from China, with a sample size of 880.

Scope of Content

Independent Variables: Independent variables are variables manipulated or controlled in the study. To establish a research framework model, the following five dimensions of independent variables were established: Managerial Dimension (Ideas, Mechanisms, Support), Teacher Dimension (Strategies, Design, Implementation), Student Dimension (Confidence, Motivation, Methods), Technological Dimension (Tools, Environment, Platform), and Assessment Dimension (Feedback, Process, Results). Additionally, two intermediate variables, Participation and Experiential Sense, were included.

Dependent Variable: The dependent variable is the measured or observed outcome or response in the study. To establish a research framework model, the effectiveness of blended learning courses was set as the dependent variable. This dependent variable is closely linked to the research questions.

Instrument Used for Data Collection

The instrument used for data collection in this research is a research questionnaire. To create a questionnaire, the researchers studied various concepts and theories from documents and relevant researches and articles. These were then used to develop theresearch questionnaire, which consists of three parts structured as follows:

The first part comprises multiple-choice questions on personal information about the respondents, including gender, age, specialty, number of mixed learning courses attended,

education level, and identity. Part 2 includes five Likert scale questions about organizational factors, including management dimension, teachers dimension, students dimension, technology dimension, evaluation dimension, BL participation, BL experience, and the effectiveness of BL courses. The third part consists of five Likert scale questions about the factors of the effectiveness of BL course, including management dimension (thought, mechanism, support), teachers, strategy, design, implementation), student dimension (confidence, motivation, method), technical dimension (tools, environment, platform) and evaluation dimension (feedback, process, results), BL, participation and experience, etc., a total of 80 items.

Content Validity and Reliability Test

The study questionnaire was checked by 6 experienced scholars from universities, and the content validity of the project objective consistency index (IOC) was 0.93, realizing the premise of the research.2. The researchers conducted a test to check the reliability value by distributing 30 study questionnaires, with a reliability value of 0.90. 3. Researchers have modified the study questionnaire in accordance with the comments, and researchers have given suggestions before the sample distribution.

Data Collection

1.The researchers distributed 880 study questionnaires to the target sample from 1 June 2023 to 1 December 2023, and the returned 860 questionnaires can be calculated as 97.7%.: This study, random sampling was used to determine the sample.

2. The researchers checked the correctness and completion of the study questionnaire, and then conducted a statistical analysis.

Statistical Methods Used for Data Analysis

The statistical methods used by descriptive and rational statistics to analyze the data and test hypotheses are summarized as follows: 1. Use frequency and percentage to analyze respondents in the personal information questionnaire.2. Mean value and standard deviation were used to analyze the influencing factors of each dimension of BL.3. Pearson product moment correlation was used to classify the relationship between variables.4. Multiple regression analysis (MRA) was used to analyze the factors affecting the effectiveness of BL courses.

4. Results

1. Demographic Profile of Respondents.

Using descriptive statistical analysis in SPSS software, background information of 860 valid participants in this study was analyzed. The results indicate that, in terms of gender, there were 674 males, accounting for 78.4%; and 186 females, accounting for 21.6%. Regarding age, there were 600 participants below 20 years old, constituting 69.8%; 182 participants aged 21-35, constituting 21.2%; 56 participants aged 36-50, constituting 6.5%; 17 participants aged 51-65, constituting 2%; and 5 participants aged 66 and above, constituting 0.6%. In terms of majors, there were 112 participants in Management, constituting 13%; and 748 participants in

Computer Science and Technology, constituting 87%. Regarding the number of blended learning courses attended, 269 participants attended 1 course, constituting 31.3%; 148 attended 2 courses, constituting 17.2%; 134 attended 3 courses, constituting 15.6%; 37 attended 4 courses, constituting 4.3%; and 272 attended 5 courses or more, constituting 31.60%. Concerning education level, there were 2 participants with junior high school and below, constituting 0.2%; 15 with senior high school (technical school), constituting 1.7%; 5 with college, constituting 0.6%; 763 with bachelor's degrees, constituting 88.7%; and 75 with master's degrees and above, constituting 8.7%. In terms of roles, there were 21 administrators, constituting 2.4%; 72 teachers, constituting 8.4%; 756 students, constituting 87.9%; 10 technical personnel, constituting 1.2%; and 1 participant with other roles, constituting 0.1%（Table 1).

Table 1. Demographic Profile of Respondents (n = 860)

Variable	Option	Frequency	Percent
Your Gender	Male	674	78.40
	Female	186	21.60
Your Age	Below 20 years old	600	69.80
	21-35 years old	182	21.20
	36-50 years old	56	6.50
	51-65 years old	17	2.00
	66 years old and above	5	0.60
Your Major	Management	112	13.00
	Computer Science and Technology	748	87.00
Number of Blended Learning Courses You Attend	1 course	269	31.30
	2 course	148	17.20
	3 course	134	15.60
	4 course	37	4.30
	5 courses or more	272	31.60
Your Level of Education	Junior high school and below	2	0.20
	Senior high school	15	1.70
	College	5	0.60
	Bachelor's degree	763	88.70
	Master's degree and above	75	8.70
Your Role	Administrator	21	2.40
	Teacher	72	8.40
	Student	756	87.90
	Technical Personnel	10	1.20
	Other	1	0.10

2.Normal Distribution

Descriptive statistical analysis provides an understanding of the basic characteristics of the variables by describing the mean and standard deviation of the observed variables. In this section, descriptive statistical analysis is conducted separately for the independent variables, intermediate variables, moderating variables, and dependent variables in this study. SPSS software will be used to calculate the mean, standard deviation, skewness, and kurtosis of each measurement item to analyze the central tendency, dispersion, and distribution shape, as shown in the table.

3.Mean and Standard Deviation.

The variables in this study include Managerial Dimension, Teacher Dimension, Student

Dimension, Technological Dimension, Assessment and Feedback, Engagement Level, Experiential Satisfaction, and Curriculum Effectiveness. The specific results of the research variables are listed（Table 2).

Table 2. Mean and Standard Deviation

Index	Mean	Standard Deviation	Order
Managerial Dimension			4
Institution	3.38	1.163	2
Structure	3.23	0.905	3
Support	3.57	0.951	1
Teacher Component			3
Ability	3.57	1.130	1
Strategy	3.54	1.036	3
Design	3.55	1.032	2
Student Scores			1
Confidence	3.72	0.995	1
Motivation	3.51	1.091	2
Approach	3.27	1.089	3
Technological Component			5
Tools	3.28	1.144	3
Environment	3.63	1.034	1
Platform	3.52	0.999	2
Assessment Component			2
Feedback	3.67	1.060	2
Process	3.43	1.079	3
Results	3.70	1.074	1
BL Engagement	3.42	1.186	Mediator Variable
BL Experience	3.54	1.116	Mediator Variable
Effectiveness of BL Course	3.64	1.051	Dependent Variable

Source: Data and information from this study

According to Table 3.1, the top-ranking dimension in the Managerial Dimension is Managerial Support (Mean 3.57, Standard Deviation 0.951), followed by Management Structure (Mean 3.38, Standard Deviation 1.163). Similarly, Managerial System ranks third in terms of the effectiveness of blended learning courses (Mean 3.23, Standard Deviation 0.905). It can be observed that in the teacher dimension, the top-ranking aspect is the ability to engage in blended learning courses (mean 3.57, standard deviation 1.130), followed by the design of blended learning courses (mean 3.55, standard deviation 1.032). Similarly, teachers' strategies for participating in blended learning courses rank third (mean 3.54, standard deviation 1.036). It can be seen that the first priority in the student dimension is student confidence (mean 3.72, standard deviation 0.995), followed by motivation to engage in blended learning courses (mean 3.51, standard deviation 1.091). Similarly, students' learning approaches rank third in participation in blended courses (mean 3.27, standard deviation 1.089).It can be observed that the first priority in the technological dimension is the technological environment (mean 3.63, standard deviation 1.034), followed by the platform for constructing blended learning courses (mean 3.52, standard deviation 0.999). Similarly, the contribution of tools in the technological dimension to blended learning courses ranks third (mean 3.28, standard deviation 1.144).It can be seen that the first priority in the assessment dimension is summative evaluation (mean 3.70, standard deviation 1.074), followed by feedback on blended learning courses (mean 3.67,

standard deviation 1.060). Similarly, process evaluation ranks third in the assessment dimension (mean 3.43, standard deviation 1.079).

From Table 3, it can be seen that the index value of the mediating variable BL participation is (mean 3.42, standard deviation 1.186).It can be observed that the index value of the mediating variable BL experience is (mean 3.54, standard deviation 1.116).It can be observed that the index value of the dependent variable, the effectiveness of the BL course, is (mean 3.64, standard deviation 1.051).

4. Correlation Analysis

Pearson correlation analysis is employed in this study to examine the relationships between various variables involved. This analysis is conducted to determine whether significant correlations exist among the variables, providing statistical evidence for subsequent regression analysis (Table 3).

Table 3. Correlation Analysis

	MD	TD	SD	TD	AD	ED	ES	Effectiveness of the Curriculum
Managerial Dimension (MD)	1							
Teacher Dimension (TD)	.577**	1						
Student Dimension (SD)	.504**	.575**	1					
Technological Dimension (TD)	.444**	.526**	.541**	1				
Assessment Dimension (AD)	.483**	.624**	.576**	.595**	1			
Engagement Dimension (ED)	.392**	.427**	.411**	.439**	.451**	1		
Experiential Satisfaction (ES)	.422**	.461**	.438**	.416**	.526**	.622**	1	
Effectiveness of the Curriculum	.442**	.482**	.461**	.500**	.529**	.586**	.655**	1

*P＜0.05，**P＜0.01

The correlation analysis results in the table above demonstrate that the Pearson correlation coefficient values between the eight latent variables used in this study are all above 0.1, and

the corresponding significance p-values are all less than the significance statistical standard of 0.05. This indicates that the correlation coefficients have significant statistical meaning, thus fully explaining that the eight latent variables used in this study have significant correlations with each other.

5. Path Analysis

Structural Equation Modeling (SEM), also known as Structural Equation Analysis, is a statistical method that analyzes the relationships between variables based on the covariance matrix of the variables. Therefore, it is also known as Covariance Structure Analysis. SEM combines multiple regression and factor analysis methods to automatically evaluate a series of interrelated causal relationships, making it a powerful multivariate statistical analysis technique. While SEM serves a similar purpose to multiple regression, it offers more robust functionality and is suitable for modeling under complex conditions such as latent variables, correlated independent variables, variable errors, and multiple dependent variables. Structural Equation Modeling is a statistical analysis tool that evaluates whether the proposed theoretical model is acceptable based on sample data.

Table 4. Model fitting index

Reference index	Standard values	Statistic
X^2/df	＜5	4.919
GFI	＞0.8	0.813
NFI	＞0.8	0.851
IFI	＞0.9	0.877
CFI	＞0.9	0.877
TLI	＞0.9	0.863
RMSEA	＜0.08	0.068

Based on the fit indices results of the revised model in the above table (Table 4), the X^2/df value is 4.919, with GFI=0.813, NFI=0.851, IFI=0.877, CFI=0.877, TLI=0.863, and an RMSEA value of 0.068, which is below the standard level of 0.08. Although IFI, CFI, and TLI did not reach the ideal standard values, they are still above acceptable levels, indicating a good match between the structural equation model and the questionnaire data.

6.Structural Equation Modeling (SEM)

Table 5. Path analysis results

Hypothetical path			Estimate	S.E.	t	P
Engagement	<---	Managerial Dimension	0.150	0.089	3.189	0.001**
Engagement	<---	Teacher Dimension	0.158	0.098	3.702	***
Engagement	<---	Student Dimension	0.153	0.063	3.715	***
Engagement	<---	Evaluation Dimension	0.232	0.052	5.696	***
Engagement	<---	Technological Dimension	0.293	0.076	5.939	***
Experience	<---	Managerial Dimension	0.192	0.079	4.304	***
Experience	<---	Teacher Dimension	0.148	0.086	3.750	***

Experience	<---	Student Dimension	0.138	0.055	3.646	***
Experience	<---	Evaluation Dimension	0.399	0.049	9.801	***
Experience	<---	Technological Dimension	0.124	0.061	2.947	0.003**
Effectiveness of the Course	<---	Managerial Dimension	0.101	0.060	2.658	0.008**
Effectiveness of the Course	<---	Teacher Dimension	0.094	0.065	2.776	0.005**
Effectiveness of the Course	<---	Student Dimension	0.077	0.042	2.332	0.020*
Effectiveness of the Course	<---	Technological Dimension	0.210	0.053	5.081	***
Effectiveness of the Course	<---	Evaluation Dimension	0.084	0.038	2.371	0.018*
Effectiveness of the Course	<---	Engagement	0.196	0.039	4.183	***
Effectiveness of the Course	<---	Experience	0.378	0.042	7.944	***

*P＜0.05，**P＜0.01，***P＜0.001

The results of the path analysis of the structural equation model in the above table(Table 5) show that: the standardized path coefficient of the administrator dimension on participation is 0.150 (t-value = 3.189, P < 0.01), which indicates that the administrator dimension has a significant positive effect on participation, so it indicates that the hypothesis proposed in this study is valid; the standardized path coefficient of the teacher dimension on participation is 0.158 (t-value = 3.702, p < 0.001), indicating that the teacher dimension has a significant positive effect on participation, so it means that the hypothesis testing proposed in this study is valid; the standardized path coefficient of the student dimension on participation is 0.153 (t-value = 3.715, p < 0.001), indicating that the student dimension has a significant positive effect on participation, so it means that the hypothesis testing proposed in this study is valid; The standardized path coefficient of assessment dimension on participation is 0.232 (t-value = 5.696, P < 0.001), which indicates that assessment dimension has a significant positive influence on participation, so it means that the hypothesis testing proposed in this study is valid; the standardized path coefficient of technology dimension on participation is 0.293 (t-value = 5.939, P < 0.001), which indicates that technology dimension has a significant positive influence effect, so it indicates that the hypothesis testing proposed in this study is valid.

The standardized path coefficient of administrators' dimension on the sense of experience is 0.192 (t-value = 4.304, P < 0.001), indicating that administrators' dimension has a significant positive influence on the sense of experience, which means that the hypotheses proposed in this study are valid; the standardized path coefficient of teachers' dimension on the sense of experience is 0.148 (t-value = 3.750, P < 0.001), which means that teachers' dimension has a significant positive influence on the sense of experience. The standardized path coefficient of the student dimension on perceptions of experience is 0.138 (t-value = 3.646, P < 0.001), indicating that the student dimension has a significant positive influence on perceptions of experience, which means that the hypothesis proposed in this study is valid; the standardized path coefficient of the assessment dimension on perceptions of experience is 0.399 (t-value =

9.801, P < 0.001), indicating that the assessment dimension is valid; and the standardized path coefficient of the assessment dimension on perceptions of experience is 0.399 (t-value = 9.801, P < 0.001). value = 9.801, P < 0.001), indicating that the assessment dimension has a significant positive influence on the perception of experience, so it means that the hypotheses proposed in this study are valid; the standardized path coefficient of the technology dimension on the perception of experience is 0.124 (t-value = 2.947, P < 0.01), indicating that the technology dimension has a significant positive influence on the perception of experience, so it means that the hypotheses proposed in this study are valid.

The standardized path coefficient of the administrator dimension on the effectiveness of the course is 0.101 (t-value = 2.658, P < 0.01), which indicates that the administrator dimension plays a significant role in positively influencing the effectiveness of the course, so it indicates that the hypotheses proposed in this study are valid for verification; the standardized path coefficient of the teacher dimension on the effectiveness of the course is 0.094 (t-value = 2.776, P < 0.01), which indicates that the teacher dimension has a significant positive influence on the effectiveness of the course, so it means that the hypothesis testing proposed in this study is valid; the standardized path coefficient of the student dimension on the effectiveness of the course is 0.077 (t-value = 2.332, P < 0.05), which means that the student dimension has a significant positive influence on the effectiveness of the course, so it means that the hypothesis testing proposed in this study is valid; the standardized path coefficient of the technological dimension on the effectiveness has a standardized path coefficient of 0.210 (t-value = 5.081, P < 0.001), which indicates that the technology dimension has a significant positive influence on the effectiveness of the course, so it means that the hypothesis testing proposed in this study is valid; the standardized path coefficient of the assessment dimension on the effectiveness of the course has a standardized path coefficient of 0.084 (t-value = 0.371, P < 0.05), which indicates that the assessment dimension has a significant positive influence on the course's effectiveness has a significant positive effect, so it means that the hypothesis proposed in this study is validated.

The standardized path coefficient of participation on the effectiveness of the course is 0.196 (t-value = 4.183, P < 0.001), which indicates that participation has a significant positive influence on the effectiveness of the course, and therefore indicates that the hypotheses put forward in this study are valid; the standardized path coefficient of the experience on the effectiveness of the course is 0.378 (t-value = 7.944, P < 0.001), which indicates that the experience has a significant positive influence on the effectiveness of the course, and therefore indicates that the experience has a significant positive influence on the effectiveness of the course. sense has a significant positive influence on the effectiveness of the course, so it means that the hypothesis test proposed in this study is valid.

5. Discussion

The factors that affect the effect of hybrid learning application in Chinese universities can be ranked from high to bottom according to their effects: The influence of the variable factors of student dimension on the curriculum effect in Chinese universities is generally at a high level. In particular, students' confidence, motivation and methods are at the highest level, followed by the evaluation dimension (Results, Feedback, Process), then the teacher dimension

(strategy, implementation, design), and finally the management dimension (support, concept, mechanism) and technical dimension(platform, tools, environment);It can be explained that the internal factors of students have the most significant influence on the effect of mixed learning course. This is in agreement with previous studies. Muirhead,W. D.,Juwah,C.,& McPherson,M. (2004). Found how students' learning confidence affects their academic performance and course effectiveness in a mixed learning environment. Artino,A. R.,& Stephens,J. M. (2009). Analyanalyze how student learning confidence is related to academic motivation and self-regulation in online learning and their impact on course effectiveness. Keller,J. M. (2010). The ARCS model focusing on the students' learning motivation is introduced. Chen,K. C.,& Jang,S. J. (2010). Based on the self-determination theory, we explore the relationship between students' learning motivation and academic performance and course effectiveness in online learning. Picciano, A. G. (2009) proposed the multi-modal hybrid learning model, which emphasized the importance of students using multiple learning methods in hybrid learning to improve the course effect. Dziuban, C.,Moskal,P.,& Thompson,J. (2015). Discussed how to use learning analysis to understand students' learning methods to improve blended learning courses and improve academic performance. This paper introduces the role of teachers in the mixed learning environment and how to develop their professional competence in mixed learning. This is consistent with the study findings.

6. Conclusion

The assessment dimension of the effectiveness of hybrid learning applications in Chinese universities is at a high level. In particular, the assessment dimension, Feedback, Results, Process), according to Graham (2006), the evaluation should focus on student engagement, satisfaction and learning outcomes, combined with the data provided by the online learning platform. Picciano, A. G. (2019) explored the theory and framework of online education to help evaluate the effectiveness of online learning, thus providing a reference for the evaluation of mixed learning, which is consistent with the results. The third is the teacher dimension (strategy, implementation, design), (Smith, A. B., & Johnson, C. D., 2018) and Gomez, K., & Murillo, L. (2020). Emphasizing the positive impact of interaction on mixed learning, the study found that active teacher support and online interaction helped to improve student learning input, and thus improve the curriculum effect of mixed learning. Garrison and Kanuka (2004) found that teachers are no longer only the disseminators of knowledge, but also the designers of the learning environment and the instructors of students. They explored how faculty members can guide collaborative learning in a hybrid environment. Graham,C. R. (2019). Finally, the analysis of the effectiveness factors of hybrid learning applications in China, especially the two important intermediary variables, experience and participation, also play a significant positive role. Consistent with the previous studies. For example, Vaughan, N. D. (2007) had consistent research results, and found that optimizing the management structure in hybrid learning can improve the learning experience and course effect. Chen,L.,& Jones,M. (2019). Found that the level of participation was closely associated with their satisfaction with the mixed learning experience, thus affecting the learning effect. Thompson, J. R., & Lyman, E. W. (2017) found the impact of faculty-student interactions on student engagement and academic performance.

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