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The Relationship of Students' Blended Learning Ability and Students' Willingness to Learn a Blended Course: The Mediating Role of Teachers' Blended Teaching Competency

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Abstract

A decade before, none of the teachers and students in high educational domain have envisioned a revolutionary change in both the teaching and learning environment. And the adaption to the new environment especially in the transition from traditional learning to blended learning has confronted teachers and students alike with the challenges in the process of both learning and teaching. What capabilities students and teachers should develop to better tackle the challenges so as to improve students' learning willingness in a blended course? The results based on the questionnaire on students' satisfaction with the course—Integrated English show that: 1) Students tend to have a good understanding of their blended learning abilities and are basically satisfied with a blended course; 2) Students' blended learning ability, teachers' blended teaching competency and course ideological and political learning practice have a significant positive correlation with students' willingness to continue a blended course; 3) Teachers' blended teaching competency plays an important and complete mediating role between students' blended learning ability and their willingness to learn blended courses.

Keywords

Students' Blended Learning Ability, Teachers' Blended Teaching Competency, Students' Willingness to Learn Blended Courses, Mediating Effect

1. Introduction

With the exploratory deepening and continuous innovation of blended teaching practice in education, more and more colleges and universities have incorpo-

rated blended curriculum construction into their educational development framework. Although scholars have long studied the satisfaction with blended courses and the effect of blended learning, such teaching research and reform have really entered another popular phase in the post-epidemic period. Since 2019, the Ministry of Education in China has implemented the "Double-thousand Plan" for the construction of the first-class courses, aiming to build about 10,000 first-class courses at the national level and 10,000 first-class courses at the provincial level. In addition to online and offline courses, it also includes the high-order, innovative and challenging online and offline hybrid courses, namely blended courses. According to the Implementation Opinions on the Construction of First-class Undergraduate Courses issued by the Ministry of Education of China, the connotation of blended courses can be interpreted as an organic integration of online & offline teaching and learning practices based on MOOC, SPOC and other online courses, combined with the reality of each university and class. This blended teaching and learning mode catalyzes the development of students' blended learning ability and teachers' blended teaching competency so as to become the important contents of classroom teaching activities and teachers' professional development.

Blended teaching is not simply the superposition of the "online" and "offline" teaching activities, but the organic combination of teaching space, teaching segment, teaching methods and teaching evaluation in the context of information education (Zhang & Du 2020). Based on the analysis of more than 100 different empirical studies, it can be seen that blended teaching practice has a moderately positive effect on students' academic performance, and its effectiveness is most significant in the improvement of learning motivation and emotion (Li et al., 2022). Therefore, as the most "IN" and effective teaching mode, blended teaching is especially favored by educators and learners from all walks of life.

Blended learning ability refers to the capabilities of students to learn in the context of blended learning environment, which includes both blended learning awareness and autonomous learning activity. Learning awareness mainly can be explained with the theory of learning competencies of online learning and traditional offline learning, which can be discussed in the dimensions of learning resilience (Claxton, 2002) and learning drive (Zhao & Wu, 2021). Autonomous learning activity mainly refers to students' autonomous learning, which contains students' critical thinking, in-depth learning and reflection (Claxton, 2002).

In blended learning, students comparatively have more autonomy, and it is almost consensus that learners who can work and study independently are more likely to have the chance to succeed (Dornyei, 2005). Since Henri Holec (1981) introduced autonomous learning into foreign language teaching and explained the concept and practice in detail, teaching practices and research on autonomous learning have emerged one after another. Afterwards, among the factors affecting students' course learning experience, autonomous learning ability which plays the most important role in blended learning abilities spontaneously be-

comes the focus of scholars' research in both blended and online teaching. Saeheng (2017) studied the differences in learner autonomy after applying the three different teaching methods by investigating the satisfaction of the three groups of learners with online learning, blended learning and traditional teaching method. The study found that learners' overall satisfaction with the course was significantly "positive". And they were extremely "satisfied" with the autonomous learning ability cultivated and exercised by the online learning and blended learning.

Teachers' blended teaching competency is a new choice for teachers in the blended teaching environment, including 13 characteristics such as professional knowledge, teaching ability, information literacy and other dimensions: Achievement motivation, curriculum design, evaluation literacy, teamwork, interaction maintenance, service awareness, quality monitoring, teaching reflection, continuous improvement, learning analysis, blended teaching strategies, innovative spirit and flexible self-adaptation (Liao & Zhang, 2017). Teachers with excellent teaching competency can better prepare students for blended learning model, and at the same time, manage to fulfill their role transition, and accept new responsibilities (Saeheng, 2017). Although there are few studies on teachers' blended teaching competency and learning willingness of blended courses, there is no lack of research on the mediating effect of teachers. These mediating effects can also explain the relationship to a certain extent.

Mediating effect originated from the field of psychology, which is used to explain the intervention and influence of parents (teachers) as mediators on the growth of children after their birth. Based on the two-way interaction of the mediation process and the subjective initiative of students (Wlliam & Burden, 2000), scholars have gradually opened up whole new vistas of teaching and learning. Combined with blended teaching, the research on teacher mediating effect and the development of students' autonomous learning ability has also come to the fore. Futch (2016) and other scholars studied and analyzed the environment of blended learning courses, deciphering how teachers effectively improve students' academic performance through offline and online teaching strategies. The research results aim to help teachers improve the blended teaching design and improve students' satisfaction with blended courses to enjoy the modern teaching brought by new information and communication technologies (Afacan, 2018). Lin Lilan (2015) explored the role of teachers in learner autonomy and how teachers mediate the development of students' autonomy in college English learning environment based on action research. Cheng Xiongyong (2016) turned his attention to flipped classrooms, and empirically analyzed the opportunities and challenges brought by the intermediary role in flipped classrooms to Chinese College English teachers.

To sum up, it is not difficult to find that no matter in which teaching model, students' Learning ability can affect their satisfaction with the course, and teachers' blended teaching competency will also have a certain impact. Then, if the research environment is directed to blend teaching, do blended learning ability,

blended teaching competency and course satisfaction follow the same rule? That is, students' blended learning ability can not only directly affect students' satisfaction with the blended courses, but also affect students' satisfaction with blended courses through the mediating effect of teachers' blended teaching competency. Therefore, this study will put forward the hypothesis: In blended teaching, teachers' blended teaching competency plays an important mediating role between students' blended learning ability and students' learning willingness of the course. Students' blended learning ability can directly and indirectly affect course learning willingness, and teachers' blended teaching ability is the mediator in the relationship.

2. Research Design

2.1. Research Objects

In this study, an online questionnaire was released and collected through the Questionnaire Star platform (https://www.wjx.cn/), and 70 copies were finally collected. If the time answering the questions is less than 40 seconds, the questionnaire collected online will be eliminated. The final valid questionnaires are 70 copies, with an effective recovery rate of 100%. All the questionnaires were gathered from the students at total of 17 boys and 53 girls, majoring in Chinese Language and Literature, from the College of Chinese Language and Culture, Zhejiang Yuexiu University of Foreign Languages. Both two classes are involved in the blended teaching and learning for more than one year on the Chinese MOOC platform Treenity (https://www.zhihuishu.com/).

2.2. Research Tools

This research analysis is based on the questionnaire "The implementation and Teaching Effect of Integrated English". The questionnaire consists of four dimensions: students' blended learning ability (consciousness and behavior), teachers' blended teaching competency, curriculum ideological and political implementation, and learning willingness to blended courses. The blended learning ability of students includes 10 items; Teachers' blended teaching competency includes 6 items; The ideological and political implementation of the curriculum includes 8 and a item of students' learning willingness to blended courses (item 22). Students' blended learning ability covers two aspects: blended learning consciousness and autonomous learning behavior. In the questionnaire, students will consider the question, for instance, that blended teaching stimulates my learning initiative. Teachers' blended teaching competency refers to teachers' competence in guiding and designing online and offline blended teaching activities, including teachers' choice of blended teaching mode, construction of teaching resources (including courseware, tasks, tests, etc.), teaching evaluation, and development of multi-dimensional interactive teaching activities. In addition, the Cronbach α reliability coefficient was selected to investigate the reliability of the blended learning effect scale in this questionnaire, and the calculation

results show that the reliability test of each dimension of the scale was >0.8, indicating that the reliability of the questionnaire was quite good. In the process of data analysis, SPSS 26.0 software was used to input and manage the data collected in this study, and data analysis was carried out according to each dimension (including basic information).

2.3. Research Results

2.3.1. Competency and Course Learning Willingness

Through the survey data of the questionnaire, the current situation of blended learning ability (blended learning awareness & autonomous learning ability) and learning willingness of blended courses of the sample students can be obtained, as shown in Table 1.

It can be clearly seen from Table 1 that in blended learning, the average score of students' blended learning consciousness is 3.95, indicating that students have a significant understanding of their own blended learning activity and are basically satisfied with it, but there is still a large room for improvement. Secondly, the average scores of autonomous learning ability and teachers' blended teaching ability were 4.29 and 4.21 respectively, both between 4.0 and 5.0, indicating that on both autonomous learning ability and teachers' blended teaching competency, students showed strong recognition and high evaluation. Finally, in the course learning willingness scale, the average evaluation score is 4.26, showing that students have a high acceptance of blended teaching, and the evaluation of the blended course is significantly positive.

The study also further analyzed the relationship between students' blended learning consciousness, autonomous learning ability, and teachers' blended teaching competency, curriculum ideological and political implementation, and blended course learning willingness. The results are shown in Table 2.

From the calculation results (Table 2) above, it can be clearly observed that students' blended learning awareness, autonomous learning ability, teachers' blended teaching competency and curriculum ideological and political implementation have significant positive correlations with students' willingness to the learning of blended courses ($P < 0.01$).

Based on the results of correlation analysis, the study further investigated the influence of students' blended learning awareness, autonomous learning ability, teachers' blended teaching competency and curriculum ideological and political implementation of the course on students' willingness to continuing blended learning. Firstly the study compares the differences of blended learning status and curriculum ideological and political implementation among students of different genders. Since gender is a dichotomous variable, independent sample T-test was used to compare the differences in blended learning between male and female students. The statistical results are as follows (Table 3).

As can be clearly seen from the table above, the P values of independent sample T-test are all > 0.05, which proves that there is no significant difference between different genders in all dimensions of blended learning and curriculum

Table 1. Status analysis.

		N	Min.	Max.	Mean	SD
Students' Blended Learning Ability	Blended Learning Awareness	70	2.86	5	3.95	0.59
	Autonomous Learning Ability	70	3	5	4.21	0.67
Teachers' Blended Teaching Competency		70	3	5	4.29	0.64
Course Learning Willingness		70	3	5	4.26	0.70

Table 2. Correlation between students' blended learning ability, teachers' blended teaching competency and course learning willingness.

	BLA	ALA	BTC	CIPI	CLW
Blended Learning Awareness (BLA)	1				
Autonomous Learning Ability (ALA)	0.893**	1			
Blended Teaching Competency (BTC)	0.899**	0.947**	1		
Curriculum Ideological & Political implementation (CIPI)	0.852**	0.917**	0.942**	1	
Course Learning Willingness (CLW)	0.822**	0.892**	0.887**	0.879**	1

Note: ** significant correlation at 0.01 level (two-tailed).

Table 3. Gender difference analysis.

		Male	Female	T	P
Blended Learning Ability	Blended Learning Awareness (BLA)	3.72 ± 0.77	4.02 ± 0.50	−1.509	0.146
	Autonomous Learning Ability (ALA)	4.00 ± 0.87	4.28 ± 0.58	−1.222	0.235
Blended Teaching Competency (BTC)		4.04 ± 0.80	4.37 ± 0.57	−1.87	0.066
Curriculum Ideological & Political implementation (CIPI)		4.02 ± 0.87	4.34 ± 0.58	−1.418	0.171
Course Learning Willingness (CLW)		3.94 ± 0.90	4.36 ± 0.59	−1.793	0.088

ideological and political implementation. In other words, gender does not affect the evaluation of students' awareness of blended learning, teachers' blended teaching competency, students' autonomous learning ability, and curriculum ideological and political implementation. After comparing all the other possible influential elements, it was found that in the difference analysis based on gender, learning duration and learning frequency, only online learning duration had significant difference in blended learning willingness ($P = 0.49 < 0.05$). In another word, the time students spend studying online is likely to influence students' course learning willingness. Therefore in the subsequent analysis, the study needs to exclude the interference of the variable to accurately draw con-

clusion. Since all variables in this research are continuous numerical variables (Likert Scale), linear regression analysis is chosen for this study.

Since students' blended learning ability includes blended learning awareness and autonomous learning ability, the study conducted linear regression analysis with blended learning as the independent variable, course learning willingness as the dependent variable and learning duration as the control variable. After calculation, it was concluded that blended learning ability could significantly affect the learning willingness of the course. The regression equation was significant (F = 45.444, $P < 0.01$) and the model goodness of fit was quite good (Adjusted R^2 = 0.763). The linear regression analysis results were shown in Table 4: Autonomous learning ability has a significant positive impact on the willingness to learn a blended course, and the influence coefficient is 0.486 (T = 2.739, $P = 0.008 < 0.05$), that is, the higher the autonomous learning ability, the higher satisfaction of blended courses. It also means that blended learning ability can significantly affect the learning willingness of blended courses and autonomous learning ability plays a significantly important role.

2.3.2. Mediating Effect of Teachers' Blended Teaching Competency between Students' Blended Learning Ability and Course Learning Willingness

Based on mediation theory and the practice of language teaching, we learn that a teacher in EFL plays an important role in the mediation, which can effectively promote learners learning task (Sun Jianlei, 2008). This study puts forward the hypothesis, that is, teachers' blended teaching competency is the mediator between students' blended learning ability and courses learning willingness.

The PROCESS plug-in in SPSS software is selected to test teachers' mediating functions. The theoretical mediation model involves two regression equations: M = constant1 + aX; Y = constant2 + bX + cX. X is students' blended learning ability (the independent variable), M is teachers' blended teaching competency, and Y is course learning willingness (the dependent variable). Data analysis results are shown in Table 5 and Table 6.

According to the analysis, the influence coefficient of students' blended learning ability "X" on teachers' blended teaching competency "M" is 1.0067 ($P < 0.05$). The influence coefficient of teachers' blended teaching competency "M" on course learning willingness "Y" was 0.6578 ($P < 0.05$). The influence coefficient of students' blended learning ability "X" on course learning willingness "Y" was 0.3075 ($P > 0.05$). In other words, with the mediating variables, the effect of the independent variable "Y" on the dependent variable "Y" is not positive, which means that the independent variable X affects the dependent variable "Y" mainly through the mediating variable "M". Therefore, the teacher's blended teaching competency plays an important mediating effect (complete mediating effect) on students' blended learning ability and course learning willingness (Figure 1). The influence value was 0.9697, $P < 0.01$, and the confidence interval was 0.8284 - 1.1109.

**Table 4.** Analysis of the influencing factors of course learning willingness.

		Unstandardized Coefficients B	Standardized Coefficients Beta	t	P
	Constant	0.182		0.712	0.479
	BLA	−0.008	−0.006	−0.053	0.958
Independent Variable	ALA	0.486	0.467	2.739	0.008
	BTC	0.148	0.136	0.679	0.500
	CIPI	0.337	0.303	1.953	0.055
	0.5 - 1	0.022	0.016	0.264	0.792
	1 - 3	−0.062	−0.031	−0.542	0.590
control variable	3 - 5	−0.037	−0.009	−0.175	0.862
	>5	−0.725	−0.175	−3.363	0.001
Adjusted R^2				0.834	
F				44.411	
P				<0.01	

Table 5. Mediation model testing.

		Coeff.	Se	T	LLCI	ULCI	R^2	F
M	Constant1	0.2249	0.22	1.17	0.16	0.61	0.88	96.02
	X	1.0067	0.05	21.08	0.91	1.10		
Y	Constant2	0.1858	0.26	0.71	0.34	0.701		
	M	0.6578	0.17	3.94	0.32	0.99	0.82	49.03
	X	0.3075	0.18	1.71	−0.05	0.67		

Table 6. Mediation model testing of M.

	Effect	Se	T	P	LLCI	ULCI
Total effect of X on Y	0.9697	0.07	13.7	P< 0.01	0.83	1.11
Direct effect of X on Y	0.3075	0.18	1.71	0.092	−0.05	0.67
Indirect effect of X on Y:	0.6622	0.24		P< 0.05	0.21	1.13
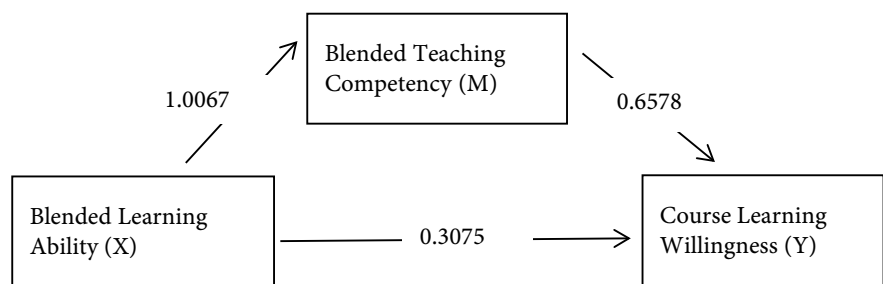
Figure 1. Mediating effect of teachers' blended teaching competency.

The mediation analysis results further prove teachers' blended teaching competency interacts with mediating function and it plays an important positive mediating role in the influence of students' blended learning ability and course learning willingness. Students' blended learning ability (blended learning awareness and autonomous learning ability) will have a direct and indirect positive impact on future blended learning willingness. With the mediating behaviors of the teachers with blended learning competency including the teaching mode, construction of online learning platform and resources, supporting courseware, tasks, and testing, course and task evaluation, as well as the diversified forms of interaction, student's blended learning ability will also positively influence course learning willingness, namely the higher teachers' blended teaching competency, the better students' blended learning ability.

3. Discussion

Based on empirical research and questionnaire, this study conducted a two-dimension survey on course satisfaction, including the course learning willingness and curriculum ideology and politics (value, professionalism, relevance, creativity and fun). The analysis results show that in terms of the scores of the two different dimensions, the average score of the willingness to learn a blended course and satisfaction with the curriculum ideological and political implementation are 4.26 and 4.29 respectively, which means that students are quite satisfied with the blended course.

Besides the results of correlation analysis also further demonstrate that blended learning awareness, autonomous learning ability, teachers' blended teaching competency, course learning willingness and curriculum ideological and political implementation were all significantly positively correlated. The total score of students' blended learning ability is also positively correlated with their course learning willingness, whereupon there may be a closer relationship between students' blended learning ability, teachers' blended teaching competency and course learning willingness. Nowadays, there are many studies on autonomous learning ability and deep learning ability (Marton & Sajlo, 1976). And we could find arrays of theoretical and empirical researches and explorations on the role of teachers in various learning modes (Gong, 2006). However, there are few comprehensive researches on students' blended learning ability and teachers' blended teaching competency. Learning ability refers to the learners' individual comprehensive quality shown in the process of learning (Yang, 2009), hence the importance of its research value and development has long been self-evident. If teachers can provide students in the specific teaching environment with significant support and positive intervention, learners are more likely to have high evaluation and learning willingness to a course. And ultimately promote the co-frequency resonance of teachers' blended teaching competency and students' blended learning ability (Jiang et al., 2018).

4. Conclusion

The results of this study show that: 1) students show a high acceptance and positive evaluation of blended teaching, and have a good understanding of their autonomous learning ability; 2) Students' blended learning awareness, autonomous learning ability, teachers' blended teaching ability and curriculum ideological and political implementation have a significant positive correlation with students' willingness to a blended course; 3) Teachers' blended teaching competency plays a critical and complete mediating role between students' blended learning ability and blended course learning willingness, that is, students' blended teaching ability can not only directly affect their course learning willingness, but also indirectly influence their choice whether to continue a blended course through teachers' blended teaching competency. This conclusion further demonstrates the mediating effect theory of teachers in blended teaching which also verifies the research hypothesis.

However, in the special period of "Post-Epidemic Era", as well as confronted with the always-changing education environment, teachers constantly cope with the challenges from the updating transitions of teaching competence, among which the most popular one is the transition from "online teaching competence" to "blended teaching competence". All these challenges impel teachers as mediators to fail in timely combining advanced theoretical knowledge and teaching practice. Meanwhile, due to the gap between teachers' teaching and students' expectation, a decline in course satisfaction and a weakening tendency of students' course learning willingness inevitably become the problem teachers are supposed to tackle.

Due to the small sample size of the analysis, the conclusions need to be further verified in future studies. We need to collect more samples to verify the mediating effect of teachers and further pay attention to the various dimensions of blended learning ability and blended teaching competency, explore the relationship between each dimension, and construct the ability or competency model, so as to further help to associate students blended learning ability, improve their blended learning satisfaction and course learning willingness.

Supported

grated Course of College English.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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