Study on the Factors Influencing the Learning Effect of Blended Learning Model of College Students

Chuanyu Peng [a], Xudan Li [b]

School of Public Affairs & Law, Southwest Jiaotong University, Chengdu 610000, China

[a]2003pcy@163.com, [b]1831787114@qq.com.

Abstract. The deep integration of Internet technology and education has become an inevitable trend of higher education curriculum reform. Various internet tools are used during the blended learning mode becoming the mainstream teaching mode. Based on the perspective of subjective input, the paper put forward an influence factors model of blended teaching mode. Then, questionnaires were carried out on the students who have taken the course of blended learning mode, and it was found that curriculum mixed richness has no significant effect on the improvement of learning effect of college students, and the subjective input of students and the teaching input of teachers have significant effect on the improvement of student's learning effect.

Keywords: blended learning mode, learning effect, influence factors.

1. Introduction

In April 2018, the Ministry of Education issued the education informatization 2 action plan. The plan clearly emphasized that education informationization should be used as an endogenous variable of educational system transformation, and promoted the development of "Internet & education". Blended learning mode has become an inevitable trend of higher education. Great changes have taken place in the way of knowledge generation, acquisition and dissemination, the blended learning mode has become an inevitable trend of higher education. In December 2003, Professor He proposed a hybrid learning mode, which was integrated traditional teaching and e-learning two teaching methods at the 7th Global Chinese computer education application conference[1]. As the widespread application of MOOC and Open Class[2], the blended learning mode has been greatly expanded in many aspects, such as learning resources, learning space, learning methods and learning environment. Students chose platforms for learning according to their own needs, and teachers used diversified learning methods, published teaching videos on multiple platforms to maximize student's learning efficiency[3]. Blended teaching m introduced many learning tools and methods, but it was worthy to pay attention to the effect of blended learning mode.

Based on the comprehensive analysis of relevant literature, it is found that there are two characteristics in the current research on the learning effect of blended learning mode. One is that most of the research focuses on the effect of a specific course or a specific platform, and the other is that the experimental research method of comparing students' learning achievement. Thus, the paper put forward a influence factors model of blended teaching mode, then chose many students who have taken he mixed learning mode course to fill in questionnaire ,the paper try to explore what curriculum mixed richness, student's subjective input, teacher's teaching input how to effect student's learning effect.

2. Research Design

2.1 Model Building

In the mixed learning mode, teachers chose multiple platforms to release teaching videos and tasks before class, and used manifold methods to guide students to absorb knowledge to promote students' learning efficiency. So if we have abundant teaching resources and methods, students' learning effect will be better? Based on the thinking, the paper put forward hypothesis 1: the higher of curriculum mixed richness, the better of learning effect.

According to the theory of input learning, psychological input drove students to study seriously. Psychological input included cognitive input and emotional input. Cognitive input and emotional input were based on behavior input. When students were actively involved in these three aspects, students could get a higher score. Therefore, based on the theory, the paper proposed hypothesis 2: the higher the subjective input of students, the better the learning effect of students.

As the guider of students, teacher determined student's learning effect. In blended learning mode, teachers have changed the traditional teaching method, which requires teachers to make clear teaching plans before class, select video materials, manage platform courses, create online class and discussion groups, answer student's questions and urge students to complete learning tasks on time. Blended learning mode put forward a new challenge to teacher's time and energy. So the paper put forward hypothesis 3: the higher teacher's input, the better of learning effect.

Thus, the paper constructed a model of blended learning effect, including curriculum mixed richness, student's subjective input and teacher's teaching input.
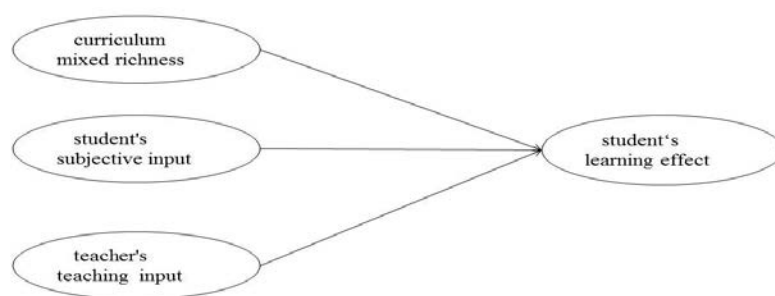

Fig.1 Diagrammatic Figure

2.2 Research Implementation

In this study, 232 undergraduate students were selected as the research object to fill in questionnaire. The diversity of research objects made the research data more universal and representative.

Table 1. Basic information of questionnaire respondents

	Option	Number of people	Percentage
Gender	man	137	59.1%
	woman	95	40.9%
Subject	science	185	79.7%
	humanity	47	20.3%
Grade	freshman	102	44.0%
	sophomore	59	25.4%
	junior	45	19.4%
	senior	26	11.2%

3. Data Statistics and Analysis

3.1 Scale Inspection

In this study, Cornbrash's alpha was used to test the reliability, and principal component analysis was used to test the structure and validity. In the curriculum mixed richness scale, exploratory factors found that KMO was 0.577 and Bartlett's spherical test was significant. In the scale of students' subjective input, exploratory factors found that KMO was 0.938, and Bartlett's spherical test was significant. In the scale of teachers' teaching input, exploratory factors found that KMO value was 0.874, Bartlett's spherical test was significant. In the scale of learning effect, exploratory factors found that KMO value was 0.945, Bartlett's spherical test was significant, and then tested the reliability of each factor. Research found that Cornbrash's alpha was 0.9 , which indicated that there was a strong internal consistency between the topics.

Table 2. Scale Inspection

Variety	Cornbrash's Alpha	Validity
Curriculum mixed richness	0.505	0.577
Student's subjective input	0.941	0.938
Teacher's teaching input	0.904	0.874
Student's learning effect	0.958	0.945

3.2 Correlation Analysis

This survey uses correlation analysis to explore whether there is a correlation between curriculum mixed richness, students' subjective input, teachers' teaching input and learning effect. The data shows that gender has a significant positive correlation with subject category, student's subjective input has a significant positive correlation with curriculum mixed richness, and teachers' teaching input has a significant positive correlation with students' subjective input.

Table 3. Correlation Analysis

	Gender	Grade	Subject	Curriculum mixed richness	Student's subjective input	Teacher's reaching input	Student's learning effect
Gender	1.000						
Grade	0.043	1.000					
Subject	0.387**	-0.082	1.000				
Curriculum mixed richness	0.061	0.095	0.049	1.000			
Student's subjective input	0.001	0.108	0.062	0.300**	1.000		
Teacher's teaching input	0.040	0.039	0.022	0.129	0.544**	1.000	
Student's learning effect	0.057	0.097	0.074	0.225**	0.709**	0.587**	1.000

Note: **, $p < 0.01$

3.3 Multiple Linear Regression Analysis

In the paper, student's learning effect of the blended learning mode as the dependent variable, the gender, and grade and subject category of college students as the control variable, the mixed richness of courses, the subjective input of students and the input of teachers as the independent, used hierarchical regression method to analyze.

Table 4. Multiple Linear Regression Analysis

Variety	Model 1	Model 2	Model 3	Model 4
Gender	0.038	0.024	0.077	0.053
Grade	0.073	0.058	0.014	0.018
Subject	0.137	0.120	0.023	0.042
Curriculum mixed richness		0.108	0.004	0.010
Student's subjective input			0.667	0.514***
Teacher's teaching input				0.295***
R^2	0.017	0.062	0.502	0.564
Adjusted R^2	0.004	0.045	0.495	0.552
F	1.289	3.722	46.333	48.463

Note: ***, $p < 0.001$

To sum up, Learning effect = 0.514 * students' subjective input + 0.295 * teachers' teaching input + 0.439. Hypothesis H2 was confirmed, the higher the subjective input of students, the better the learning effect of students. Hypothesis H3 was confirmed, the higher the input of teachers, the better the learning effect of students. Hybrid learning mode promoted the learning effect of college students.

4. Conclusion and Suggestion

This study explored the relationship between the curriculum mix richness, students' subjective input, teachers' teaching input and students' learning performance. The statistical analysis results have new findings.

1. Students' subjective involvement has a significant impact on the learning effect of mixed curriculum. In the blended learning mode, if students have a strong sense of self-awareness, responsibility and task awareness, they are willing to spend enough time and energy to study and complete online and offline tasks on time, then they will get good learning results.

Teachers use a variety of ways to improve student's initiative and create a learning environment with pleasure. Using VR technology and computer technology to create three-dimensional virtual scene, broaden students' vision, improve students' interest and enthusiasm in learning.

2. The degree of teachers' input in teaching has a significant impact on the learning effect of College Students' .In the process of teaching, teachers made clear and complete teaching plan, carefully recorded teaching videos, supplemented by documentary, pictures and other materials, coupled with documents, online discussion, homework testing, peer evaluation activities, to build a teaching community, which help to improve student's learning effect.

Teachers should pay more attention to improve their own comprehensive quality, learn to use new media technology, and deal with difficulty during teaching time. Teachers and teachers can cooperate to share teaching resources and improve teaching ability.

3. The degree of mixed courses richness has no significant effect on the learning effect of college students. In this study, the mixed richness of curriculum refers to the diversity of links and platform designed in blended teaching mode. The result showed that there were too many links and platforms can't improve student's learning effect. College students have limited extra-curricular time and energy, the more learning platforms and learning methods they use, the more distracted their attention, thus affecting their learning effect. And the attributes and characteristics of this course determine that blended learning mode is not suitable with every course. Therefore, the blended learning mode should adhere to the principle of moderation, the capacity of teaching video, teaching content, and the design and selection of teaching links should be appropriate, and it aims to stimulate students' interest and enthusiasm in learning, design teaching content scientifically and reasonably ,improve student's learning effect.

Acknowledgements

References

[1]. He Kekang. The new development of educational technology theory from the perspective of blending learning (I) [J]. China audio visual education, 2004 (206): 5-10.

[2]. Chen Yunyu. Research on mixed learning mode of "four learning style" in primary school language under the background of "Internet plus" [J]. Chinese audio-visual education, 2018, (7): 115-116.

[3]. Xiao Shaoer. The study of blended learning mode of College Physical Education under the background of "Internet plus" [J]. Chinese audio-visual education, 2017 (10): 123-129.