

# *An Empirical Study on the Effectiveness of Blended Teaching in Vocational Colleges*

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**Abstract:** Against the backdrop of the increasing improvement of educational informatization in vocational colleges and the deepening of blended teaching reform in vocational colleges, how to verify its teaching effectiveness has become the focus of current scholars' research, which is also a key issue in promoting the sustainable development of blended teaching in vocational colleges. This study takes the "Graphic Design" course of our school as an example, using two teaching modes: traditional classroom teaching and blended teaching to conduct teaching experiments on two groups of students. Data statistical software SPSS and EXCEL are used to statistically analyze the relevant data obtained, and the differences between the two teaching modes are compared. The results show that the blended teaching model greatly improves students' learning outcomes, such as enhancing their autonomous learning ability, problem-solving ability, group collaboration ability, and language expression ability, as well as improving teachers' teaching readiness and students' academic performance.

In recent years, with the continuous advancement of educational informatization, education and teaching reforms in various regions and fields are progressing rapidly. In 2016, He Kekang pointed out that the "Ten Year Development Plan for Education Informatization (2011-2020)" abandoned the traditional concept of "integrating information technology with the classroom" and proposed a new concept of "deep integration" between information technology and education<sup>[1]</sup>. The 2021 Horizon Report pointed out that nearly two-thirds of the key technology and practical cases presented this year are related to the blended curriculum model. The "COVID-19" has prompted teachers to constantly adjust the existing curriculum model<sup>[2]</sup>. As a result, a large number of mixed curriculum designs in various forms have rapidly emerged in the field of higher education. It can be seen that blended learning will be the norm in future education.

Early blended learning was only applied in adult education, distance education, and various levels of training. With the continuous advancement of educational informatization, blended learning has been widely applied in education and teaching. There are many studies on the models and application effects of blended learning abroad, while domestic research on blended learning only stays at the level of theoretical research, learning resources, and learning environment construction. There is a slight lack of empirical research on the application effects of blended

learning. Therefore, this study takes the "Graphic Design" course in vocational colleges as an example to conduct empirical research on the effectiveness of blended teaching.

## **1. Research question**

Blended learning is a mixture of traditional classroom and network classroom, face-to-face and online learning, rote learning and meaningful learning, autonomous learning and collaborative learning. The combination of summative evaluation and process evaluation is a new teaching model that meets different learners, learning needs, and learning content. This study is based on literature analysis to organize and analyze literature on blended learning, and the research questions are determined as follows:

- (1). Is there a significant difference between traditional classroom teaching and blended teaching in learners' academic performance.
- (2). What is the effectiveness of blended online and offline teaching.

## **2. Research methods**

### **2.1. Experimental Design**

Two teaching modes, traditional classroom teaching and blended teaching, were used to conduct teaching experiments on two groups of students, and data statistical software SPSS and EXCEL were used to statistically analyze the relevant data obtained, comparing the differences between the two teaching modes.

#### **2.1.1. Experimental courses**

Graphic Design "is one of the essential basic courses for the digital media major in vocational colleges, and it is also a highly operational and practical course that requires students to master basic theoretical knowledge and skills, and apply them to design and produce graphic design works. This experiment selected the teaching content of the "Graphic Design" course, which was taught for a total of 12 weeks. The first six chapters were about software basic knowledge and skills, and the last ten weeks were about comprehensive application training. The author analyzes the above two research questions by examining the differences in academic performance and learning process performance detected by two groups of students using different teaching modes to learn the same teaching content.

#### **2.1.2. Experimental samples**

The subjects of this experiment were 2020 students majoring in digital media technology, with 25 students in the experimental class and 25 students in the control class. There was no significant difference in gender, age, preliminary knowledge, theoretical foundation, etc. between the two classes. In the first 6 weeks, both the experimental and control classes were taught using traditional classroom teaching methods, and pre tests were conducted on both classes. In the second 10 weeks, the control class continued to use traditional classroom teaching methods, while the experimental class used a hybrid teaching method that combines online and offline. At the end of the class, a post test was conducted on both classes.

## **2.2. Design of Task Driven Hybrid Teaching Mode**

The blended learning model refers to a blended learning approach that combines face-to-face

teaching and online learning. The experiment uses the Smart Vocational Education Cloud as the online teaching platform and adopts task driven development to develop hybrid teaching. The task driven hybrid teaching design mode. Pre class task release: Students self-study online resources and complete work task sheets; In class, task analysis, task preparation, task implementation, task evaluation, and task summary can be conducted. During this period, heterogeneous groups can be grouped for group collaboration, and online and offline teacher-student interactions can also be carried out according to the progress of the task, such as displaying works, online voting, online discussions, teaching games, etc; Extension of after-school tasks: Students learn and complete extended knowledge or practical training tasks.

### **3. Empirical analysis**

#### **3.1. Analysis of the Effect of Task Driven Hybrid Teaching**

After the course is over, 50 questionnaires on the effectiveness of blended learning will be distributed to students, excluding those with consistent answers and unfinished questionnaires. 50 valid questionnaires will be collected. According to the survey data, the effectiveness of blended learning will be analyzed from the aspects of learning time, pre class learning materials, online interaction in class, collaboration between small and medium-sized groups, post class mutual evaluation, and ability improvement. In terms of learning time, 66.7% of students spend an average of 5 hours per week on online learning, which is longer than the time spent in traditional classrooms. This indicates that students have begun to invest time in self-directed learning, which has played a positive role in cultivating students' awareness of self-directed learning. In terms of the effectiveness of pre class learning materials, 92.2% of students believe that pre class learning materials (including videos, images, documents, and other materials) can help them master more than 60% of the teaching content and easily identify key and difficult teaching points. 74.5% of students believe that pre class learning materials that help them determine learning goals can effectively connect with classroom teaching content, promoting them to grasp key and difficult points more quickly. 58.9% of students believe that the pre class learning materials are vivid and interesting, which greatly stimulates their learning motivation. A small number of students also suggest developing some interactive, more vivid, and practical micro lesson cases. From the perspective of the effectiveness of online interaction in class, 88.2% of students believe that online discussions, brainstorming, and questioning in the classroom have greatly stimulated their interest in learning. They believe that such teaching interactions are more vivid and interesting, greatly improving their learning participation. At the same time, they can also activate the classroom and have a clearer understanding of students' personalities, which is conducive to personalized teaching according to their aptitude in the next step. There are also a small number of students who discuss topics that are not related to the teaching content, which requires strengthening the construction of online teaching management mechanisms. In terms of the effectiveness of group collaboration in class, 76.5% of students believe that group collaborative learning can leverage their respective strengths to complete teaching tasks, which also improves their language expression and team collaboration abilities. Compared to traditional "teacher speaking, student listening" teaching, the learning efficiency of group collaboration has also been greatly improved. In terms of the effectiveness of post class mutual evaluation, 80.4% of students believe that diversified evaluation between teachers, students, and students can provide timely feedback on their task operation level and teaching performance, helping them adjust their learning attitude and behavior in a timely manner, and also urging them to perform more actively and proactively in future learning. In terms of ability improvement, over 60% of students believe that in blended online and offline teaching, they have greatly improved their group collaboration ability, self-learning ability, problem-solving

ability, and language expression ability. However, in terms of knowledge construction, they believe that acquiring knowledge is organized and organized by teachers, while they themselves acquire fragmented knowledge without forming their own knowledge system. This requires strengthening self-learning ability, enhancing the ability to construct independent knowledge, and building one's own knowledge system in the future.

### 3.2. Comparative analysis of academic performance between two teaching modes

From Table 1 and figure 1, it can be seen that using analysis of variance to study the differences between traditional teaching mode and blended teaching mode in three aspects: pre test scores, post test scores, and grade differences. From the table, it can be seen that different teaching modes do not show significant ( $p>0.05$ ) in one item of pre test scores, indicating that different classes using traditional teaching mode show consistency in all pre test scores. There is no difference. In addition, two different teaching modes showed significant differences in post test scores ( $p<0.05$ ), indicating that different teaching modes had differences in post test scores. Specific analysis shows that:

1) Different teaching modes showed a significant level of 0.05 ( $F=4.756$ ,  $p=0.034$ ) in the post test scores, and the specific comparative differences showed that the average value of 1.0 (82.28) would be significantly higher than the average value of 2.0 (78.00).

2) Different teaching modes showed a significant 0.01 level difference in academic performance ( $F=45.240$ ,  $p=0.000$ ), and specific comparative differences showed that the average value of 1.0 (5.72) would be significantly higher than the average value of 2.0 (0.80).

In summary, there is no significant difference in the pre test scores between the control class and the experimental class after adopting the traditional teaching mode. However, the control class continues to adopt the traditional teaching mode, but the experimental class adopts the mixed teaching mode. The experimental class has a significant improvement in grades, while the control class has no significant improvement in grades.

Table 1: Analysis of variance results

Analysis of variance results						
Analysis item	Item	Sample size	Average value	Standard deviation	F	P
Pre test results	1	25	76.56	8.05	0.086	0.77
	2	25	77.2	7.33		
	Total	50	76.88	7.62		
posttest results	1	25	82.28	6.98	4.756	0.034*
	2	25	78	6.9		
	Total	50	80.14	7.2		
Poor grades	1	25	5.72	1.9	45.24	0.000**
	2	25	0.8	3.12		
	Total	50	3.26	3.57		

\* $p<0.05$ \*\* $p<0.01$

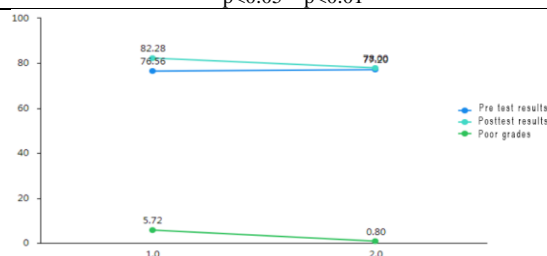


Figure 1: Analysis and Comparison Chart

## 4. Conclusion and suggestion

Based on the comparison of the teaching effect between traditional teaching and mixed teaching,

I have gained several insights:

(1) Through data display, it can be concluded that blended teaching helps to cultivate students' self-directed learning ability, promote their understanding and mastery of knowledge and skills. However, according to data, some students did not complete the pre class preview on time (such as watching micro classes and courseware materials), resulting in teachers being unable to keep up with the progress when explaining key and difficult points during class; There are also cases where problems are not raised in a timely manner, resulting in too many problems accumulating in the later stage and losing the desire to solve them, especially in practical training courses, where such problems are the most common. Enhancing students' awareness of self-directed learning is not an overnight task, but requires long-term cultivation and consolidation. This requires teachers to establish a mutual assistance mechanism, such as in addition to teacher notes, establishing mechanisms for teaching assistants, team leaders, and peer assistance, and providing certain incentive mechanisms to form a stable "mutual assistance group", promoting mutual assistance between students and improving teaching quality.

(2) For teachers, improving their readiness for blended learning and implementing efficient teaching plays a crucial role in the blended learning process. Prior to class, they are the designer and publisher of teaching activities; In class, he is the organizer and guide of teaching activities; After class, he is also the evaluator and feedback of teaching activities. Therefore, teachers must enhance their readiness for blended teaching: attitude preparation and ability preparation. Attitude preparation refers to the fact that teachers must have a correct view of blended learning and be willing to accept and adopt blended learning to efficiently carry out teaching; Ability preparation refers to the need for teachers to have diverse teaching abilities to adapt and proficiently adopt blended teaching. For example, in classroom discussions, teachers must have the ability to guide students to conduct meaningful face-to-face discussions in an orderly manner, in order to help students build a complete knowledge system; Teachers must have the ability to pay attention to each student and express recognition through gestures and eyes, in order to enhance students' abilities.

(3) Hybrid teaching is becoming the "new normal" of future teaching. The enthusiasm for adopting blended teaching in vocational colleges has never been higher. Teachers have spent a lot of time and energy researching the teaching design, teaching methods, classroom organization forms, and teaching interactions of blended teaching, and have achieved some results. However, due to personal time limitations, limited abilities, and fewer typical cases, blended teaching has many problems. Firstly, vocational colleges should organize information-based teaching training centered on the integration of information technology and curriculum to improve the level of blended teaching for teachers; Secondly, vocational colleges should establish a blended learning community, develop collective wisdom, research blended learning methods, explore organizational forms of blended learning, and develop more teaching resources; Thirdly, vocational colleges should explore diversified teaching evaluation, using a combination of quantitative and qualitative analysis, and a tripartite approach of "school enterprise student" to carry out diversified evaluation, and carry out learner centered intelligent teaching.

## References

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