



Analysis and Reflection on the Practice of Online-Offline Blended Learning Mode

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Abstract. Online and offline blended learning has become a new teaching mode that meets the requirements of the age. Taking the blended learning practice of Principles of Communication as an example, this paper analyzes how to rationally allocate online and offline teaching hours, how to organize online and offline teaching activities, teaching efficiency and effects, and problems found in the teaching process and the reasons. Then it further explores the relationship between online and offline learning, the roles of teachers and students, and the challenges of blended teaching.

Keywords: Blended learning, Online-offline, Autonomous learning.

1 Introduction

With the rapid development of information technology and its application to school education, the online-offline blended teaching mode has become a new teaching mode that meets the requirements of the age^[1]. Blended Learning is to combine the advantages of traditional learning and e-Learning, to give full play to the autonomy of teachers and students, and to fully embody the initiative, enthusiasm and creativity of students as the main body of the learning process, so as to achieve better teaching results^{[2][3]}.

Blended learning changes the teacher lecture-based teaching to student-centered teaching, allowing students to combine online learning and classroom learning^[4]. This paper takes the blended teaching practice of the Principles of Communication course as an example to explore and analyze the organization, teaching effect and challenges of blended teaching, so as to provide reference for teachers on how to carry out blended teaching.

2 Analysis of Learning Situation

In the fall semester, the course Principles of Communication is adopted the online and offline hybrid teaching mode in one of the classes of our college. The students in this

class all have graduated from undergraduate and came here for further study. They had high enthusiasms for learning, good mental state, strong organizational discipline as well as self-control abilities, and good foundations in science and engineering. But they had varieties of undergraduate majors. About 25% of the students graduated from the majors of communication engineering, electronic information engineering or information engineering, and these students have basically learned Principles of Communication or similar courses in their undergraduate studies. The remaining 75% of them did not take courses related to principles of communication. There was a big difference of communication knowledge basics between them. If the offline teaching method was adopted, the students who have learned the communication knowledge would have the phenomenon of “underfeeding”, while the students who have not learned communication knowledge would have “indigestion”. The online-offline blended teaching mode was an ideal choice for the course Principles of Communication in this class.

3 Organization of Blended Teaching

3.1 Online and Offline Classroom Hours Allocation

The Principles of Communication course was arranged for 40 class hours, of which 28 class hours were online learning and 12 class hours were offline classroom teaching. The survey on the allocation of class hours shows that 91% of the students considered the arrangement was reasonable. The students who considered it was unreasonable were in favor of a lower ratio of online class time than offline class time, such as the proposed ratio of 4:6 and 3:7. The survey shows that the majority of the students in this class preferred to independently learn rather than passively acceptance in the classroom.

3.2 Organization of Online Learning

Online learning can be done at a designated time, or by completing the learning tasks at one's own convenience. Considering the actual situation of the students in this class, who cannot always access the internet, the online learning was implemented by organizing them to study by themselves in a designated Internet classroom. For the choice between organized study and self-scheduled study, the survey result shows that 71% of the students preferred organized study, 19% of them considered that both were acceptable, and 10% of them preferred self-scheduled study.

Generally speaking, the purpose and characteristics of online learning are to allow students to freely arrange their time and study autonomously in their spare time. Therefore, this result is unexpected. Objectively speaking, concentrated time study can fully play the role of self-organization, self-management, and mutual supervision of students, which can lead to higher learning efficiency and better learning effect. Student leaders can persist in taking attendance, strengthen the management of study discipline. For example, individual students who browsed other websites or did other things during the online learning time were found and corrected in time.

3.3 Offline Course Content and Organization

The online course covers the main knowledge points of the course, with an emphasis on theoretical, conceptual, and physical explanations, but it involves less theoretical analysis and derivation. Additionally, the individual differences among students make it difficult for some students to fully understand online course. The offline class should make up for these two shortcomings.

The arrangement of the offline class can be achieved through three ways. The first way is that the teacher can design the teaching content based on the course features and teaching requirements. Considering the shortcomings of the online course, the teacher arranges the main offline teaching content to supplement and support the online course. The second way is that the offline content can be arranged based on the students' online learning feedback, such as the students' learning progress, test accuracy rate, and questions in the discussion area. The third way is that the students can be organized to discuss and exchange questions in groups, the teacher is just an organizer and gives proper guidance at the right time.

Among these three ways, the first one is mainly based on the teacher's teaching experience and control of the course with less student participation. However, it is easy to organize and arrange, meet the overall needs of most students, and effectively utilize the limited offline classroom time. The second and third ways are student-oriented, more targeted, and would have better effects. Students are required strong participation, good communication and interaction with teachers. And teachers have good abilities of organization and control over the classroom. The questionnaire survey shows that 57% of students preferred the second way, 33% of them considered that the first way could be used, and only 10% of them agreed with the third way. The third way requires higher demands on both students and teachers. Both sides should spend more time and energy to prepare. Inadequate organization and preparation may not achieve the expected effects.

4 The Effect of Blended Learning

The final evaluation grade of the course was also given through the online platform. The total score was 100 points, which specifically included three parts: 20 points for watching videos, 20 points for test questions of every video, and 60 points for the final exam. The score distribution of each part is shown in Figure 1. It can be seen from the figure that the video score is almost full, the test score is almost full except for two students with about 15 points which indicates that the students are able to complete the video watching and learning task well. It also shows that the students have good self-discipline and sense of autonomous learning. The average score of the final exam was 46 points with 77% scoring rate. The composite average score was 85.6 points, and the deviation of individual scores from the average score was 5 points. It indicates that the blended learning in this class has obtained good results and effects, and the individual score differences are not very large.

A questionnaire survey was conducted to investigate the efficiency and effectiveness of blended learning for these students. In comparison to offline teaching, 72% of the

students perceived the blended learning mode as superior, while 19% of them considered that the both was about the same, and only 9% of them favored the offline teaching mode. Regarding knowledge acquisition in the course, 40% of the students found online learning effective, 20% of them found offline learning effective, and 40% of them perceived both as equally effective. These findings indicate that compared to traditional offline classroom teaching mode, students exhibit a greater inclination towards autonomous learning and knowledge exploration rather than passive knowledge absorption.

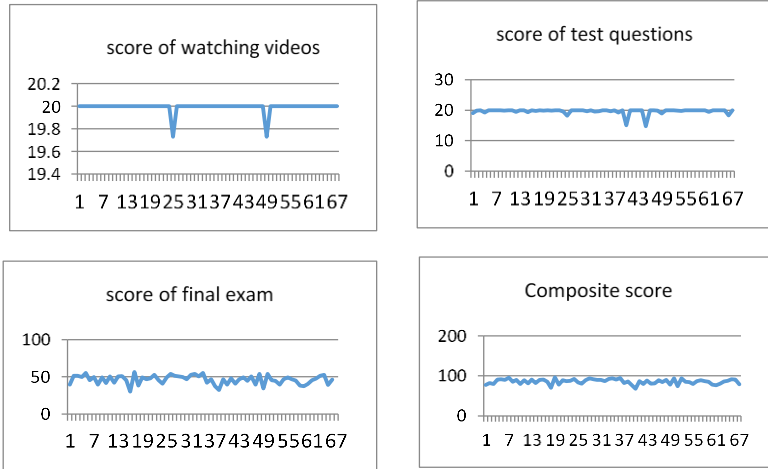


Fig. 1. Distribution of the course scores

In terms of learning efficiency, 85% of the students perceived the blended teaching mode to exhibit higher efficiency in learning, while 9% of them considered it to be on par with offline teaching. Only 6% of them expressed a preference for offline teaching mode. It should be noted that error control coding and spread spectrum communication are not covered in the traditional classroom instruction of Principles of Communication. However, by adopting the blended teaching mode, these topics were incorporated into the curriculum and assessment framework, yielding positive outcomes. This further substantiates the superior efficiency of blended teaching over conventional didactic instruction.

The nature of online learning encourages students to learn independently, with less strict supervision and restrictions compared to offline learning. This means that students need to have better self-control abilities. To finish watching videos more quickly, some methods like video-browsing were used by students in online learning. According to a questionnaire survey, 52% of students didn't use video browsing at all, while 43% of them occasionally used it and 5% of them heavily relied on it. It's important to note that approximately 48% of students engaged in some degree of video-browsing behavior, which is a problem worthy of attention and needs to be solved. Only a few students did have coping psychology and intentionally engaged in video-browsing to fulfill their learning tasks. On the other hand, due to the limited class hours of online sessions for this course, certain knowledge points may require repeated viewing and study. As a

result, some students took a passive approach towards video-browsing in order to complete their video-based learning within the given timeframe.

The students were asked whether they could refrain from engaging in non-study related activities during the online learning period. The results indicated that 35% of respondents claimed to be able to completely avoid such distractions, while 62% of them stated they could do so to a certain extent. However, 3% of them admitted to frequently indulging in other things. These findings show that it is generally difficult for students to maintain focus on their studies without adequate supervision and management during online learning, as they are often easily attracted by various internet resources.

5 Reflections on Blended Teaching

5.1 The Relationship Between Online and Offline

Blended teaching mode adopts both online and offline methods as an external manifestation to carry out teaching. Online teaching is the basis of classroom teaching, which cannot be regarded as an auxiliary means of offline teaching. Offline teaching could not be a copy of traditional classroom teaching activities, but a more in-depth teaching activity based on online learning results and feedback. It is an extension and expansion of online learning. With the communications and interactions among students and teacher, the offline classroom is mainly used to solve the difficult and common problems which cannot be solved by students in online learning. Combining the advantages of both online and offline teaching, blended teaching can solve the problems of low learning initiative, insufficient participation, and insufficient sense of achievement which easily caused by the traditional classroom teaching.

5.2 Roles of Teachers and Students

In traditional classroom teaching, teachers are the main body of the teaching activities. Teaching is generally single-way knowledge transmission, and students mainly play the role of passive recipients. Though systematic knowledge is easy to be conducted in traditional classroom teaching, it is unfavorable to arousing students' subjective initiative and interests.

In blended teaching, both teachers and students become the main body of teaching. Teachers are more likely to play the role of course designer, class organizer and discussion guider. In the course design stage, teachers carefully analyze the core points of each knowledge module of the course and refine them. In the online learning stage, teachers provide various learning resources for students, communicate with students through the platform, summarize the problems, and focus on the students' confusion during online learning period. In the offline classroom stage, teachers solve the problems of online learning, guide students to discuss, evaluate and summarize the effectiveness of the above discussion. Throughout blended teaching period, students have always been the main active roles and have a great deal of control over learning. The blended teaching mode cultivates students' subjective initiative, responsibilities.

5.3 Current Challenges

Compared with traditional teaching, blended teaching has many advantages, such as increasing students' learning participation, strengthening teacher-student interaction, enhancing students' learning motivation and time management abilities, providing a more flexible teaching environment and better experiential learning opportunities and so on [5]. At present, blended teaching still faces some challenges in its implementation. In traditional classroom, teachers provide relatively fixed static knowledge, which cannot meet students' requirements in blended teaching. Teachers are required constantly update, improve and optimize teaching resources. As for teachers, the speed of dynamic resources construction and the time invested should be further improved. In addition, the role of teachers in blended teaching mode has changed a lot [6][7]. Teachers need to find out how to strengthen online and offline teaching management, how to obtain students' doubts in learning, how to improve the evaluation of students' online and offline learning, and how to promote students' active learning [8]. As for students, due to the limitations of the objective environment, students are unable to make use of fragmented time to study online anytime and anywhere. There are problems such as video-browsing and doing unrelated things during online learning, etc. It is also a great challenge for students to improve their self-discipline and strengthen their time management abilities in the process of blended teaching [9][10].

6 Conclusion

Taking the blended teaching practice of Principles of Communication as an example, this paper discussed online and offline class assignment, teaching organization, teaching effect, and the problems and reasons found in the teaching process. The survey shows that the ratio of 7:3 between online and offline class time is recognized by most students. Online learning can be organized centrally, or you can arrange your time to study freely. There are three ways to arrange the content of offline classes, and the questionnaire survey shows that most students preferred the second way mentioned in the paper. The evaluation results of the practice show that the blended teaching has obtained good grade and effects, and the difference of individual scores was small. Finally, the paper discussed the relationship between online and offline learning, the roles of teachers and students, and the challenges of blended teaching.

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