

Blended Learning of General Elective Courses under Public Emergency¹

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Abstract. Under the COVID-19 pandemic, blended learning plays an active role in Chinese education system under public emergency. This paper divides the general elective courses into four parts: natural science with practice, social science with practice, natural science with theory, social science with theory in higher vocational colleges. According to the characteristics of three stages of public emergency, we think three-stage different blended learning are necessary. Early warning preparation stage is the preparation around the MOOC courses. The focus of online and offline blended learning is different in three cases in emergency handling stage. (1) Both teachers and students are not in school. The main goal is to complete all the tasks and teaching activities as much as possible based on the principle of learning online. (2) Students are in school and teachers are not in school. The key for teachers is to cultivate excellent assistants and group leaders. (3) Teachers are in school and a few students are not in school. Teachers should focus on the learning effect of the few students, arrange excellent assistants and group leaders to tutor them as partners. Instructors and educational administrators should improve the blended learning management system, integrate and optimize online and offline resources, improve teaching content and teaching methods, technical training and psychological counseling for teachers and students in the recovery and reconstruction stage.

Keywords: Public Emergency; General Elective Courses; Blended Learning; Emergency Handling.

1 Introduction

The COVID-19 pandemic has wreaked the greatest havoc in the history of the education system, affecting nearly 1.6 billion students in all countries. This kind of event has a great impact on education, especially in higher vocational colleges. During the epidemic period, students in the colleges and universities of China adopt online and offline learning mode to carry out courses, reduce the gathering, the infection. This ensures the health and safety, the normal operation of the teaching. However, this also reflects that the emergency educational system of college is relatively weak. Blended Learning, as a combination of online and offline teaching mode, can ensure the health and safety of teachers and students by flexibly

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adjusting teaching methods in the emergency. At the same time, it improves the quality and effect of teaching and promotes the rapid development of educational informatization. Blended teaching is becoming an effective way to deal with emergency. In the future, Chinese education system needs to build a set of blended learning mode to provide a systematic and standardized emergency guidance plan for college education.

2 Classification of general elective courses under public emergency

As the largest developing country in the world, Chinese emergencies occur frequently. The outbreak of SARS in 2003 has attracted the attention of the government. The " Emergency Response Law " issued in 2007 has also made a clear definition of emergencies. Emergencies refer to natural disasters, accident disasters, public health incidents and social security incidents that occur suddenly, cause or may cause serious social harm, and need to be dealt with by emergency response measures. Public emergencies have the characteristics of wide geographical coverage, great influence, sudden emergency, and impact on public interests. Generally, they can be divided into three stages. It includes incubation period, outbreak period and recovery period. Correspondingly, blended learning is divided into three stages for emergency: early warning preparation stage, emergency handling stage, recovery and reconstruction stage.

The general elective courses in higher vocational colleges cover social sciences, natural sciences, arts, etc. They are relatively flexible in curriculum setting and course content, practical operation, skill training. They are suitable as a ' test field ' for teaching reform. By investigating 177 students, they think which courses are suitable for online learning. The results show that nearly 50 % of the students think that " Outline of Modern Chinese History, " " Mental Health Education for College Students " and " Career and Development Planning " are suitable for online learning, while less than 32 % of the students think that the courses of " Physical Education, " " Advanced Mathematics, " " College English, " " JAVA Programming " and " Linear Algebra " are suitable for online learning. We classify general elective courses into two dimensions: the first dimension is divided into social science and natural science, and the second dimension is divided into theory and practice. Thus, the general elective courses can be divided into four regions under public emergency, which can be showed in **Figure 1**: the first region is a natural science that emphasizes practice[1], the second region is a social science that emphasizes practice[2], the third region is a natural science that emphasizes theory, and the fourth region is a social science that emphasizes theory[3]. The survey results show that students ' preference for online courses in the four regions is decreasing in turn. It is generally believed that social science with theory is more suitable for online learning, while natural science with practice is more suitable for offline learning.

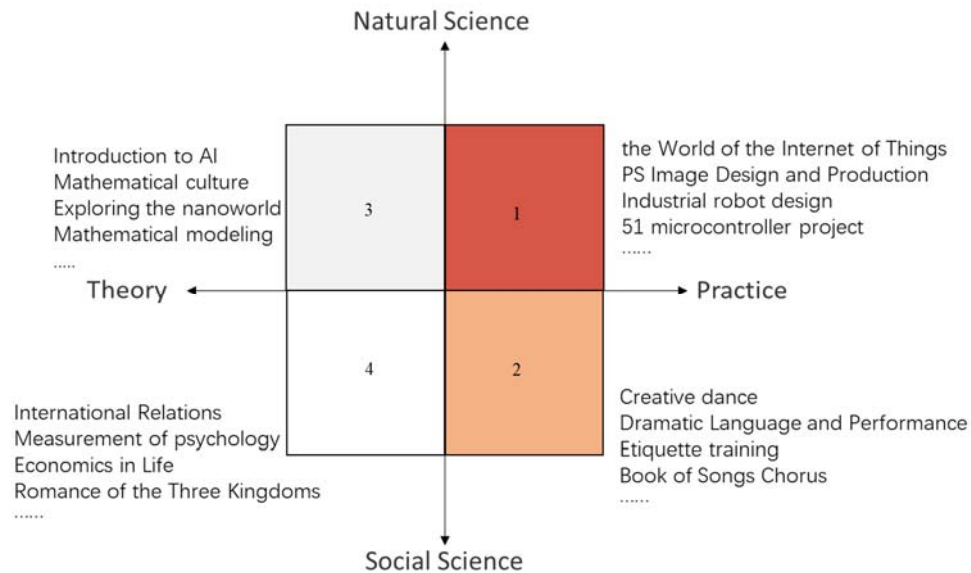


Figure 1. Classification of General Elective Courses under Public Emergency

3 Three-Stage Different Blended Learning under Public Emergency

According to the characteristics of the emergency in three stages, the general elective courses in higher vocational colleges should formulate a different blended learning in the early warning preparation stage, emergency handling stage and recovery and reconstruction stage.

3.1 Early warning preparation stage

The early warning preparation stage is the period of normalized prevention and control of sudden epidemics. Through the investigation of 177 students, nearly 70% of students think that MOOC courses are helpful to learning. Based on this, the general elective courses do a good job of preparation around the MOOC courses in the early warning preparation stage. The specific blended learning are as follows:

Construction of MOOC courses. The teachers' team optimizes curriculum resources, strives to create school-level, provincial and national excellent courses, constructs virtual simulation platform as far as possible. **Reform of teaching documents.** Compile emergency teaching documents which are divided into two modules of theory and practice according to the course content. The syllabus and teaching plan clarify the chapter content belonging to practice or theory modules and make online and offline teaching hours clear. **Familiar with teaching platform and equipment.** Familiar with the technical skills of construction and use, teaching equipment maintenance, equipped with offline teaching equipment, skilled use of handwritten boards, computers and others to carry out online teaching. **Innovative teaching management mode.** Establish class QQ group and WeChat group to issue notices, answer questions,

discussions, etc. The teacher selected assistants and several group leaders for teaching management.

3.2 Emergency Handling Stage

The emergency handling stage is the sudden epidemic situation. The blended learning in the emergency handling stage basically follows the steps: First, test the learning platform; secondly, select an excellent assistant and team leaders[4]. Third, teachers adjust the proportion of online and offline learning appropriately based on actual emergency situations. Finally, establish a multidimensional evaluation system and enrich assessment and evaluation methods.

Online learning activities. Teachers allow students to learn course resources on the platform. Teachers can record videos for some complex actions or skills, decompose the actions, play them slowly to watch clearly and understand deeply. Through online resources and virtual simulation platforms, students can preview experiments or surveys and feedback the results to teachers before the live. Teachers can use online chat rooms, discussion areas and other tools to encourage students to communicate. Teachers can use a variety of teaching methods to stimulate students' interest in live. At the same time, teachers can also test students' learning outcomes through online tests and homework. According to the teaching plan, when teachers implement to the practical content chapter, introduce the practical content briefly, guarantee the students to learn the follow-up theoretical teaching content smoothly.

Offline learning activities. After returning to school, the offline practice learning is necessary[5]. Teachers will rectify students' incorrect operation and skills. Teachers explain the theoretical principles behind the operation of the equipment, helping students establish connections from theory to practical operation. By cultivating excellent assistants and group leaders, teachers have strengthened the internal communication among students. Assistants and team leaders instruct students by repeating practical exercises to learn more effectively.

According to the geographical distribution of teachers and students when emergencies occur[6], there are five situations. The first situation: teachers and students are not in school. The second situation: students are in school and teachers are not in school. The third situation: teachers are in school and a few students are not in school. The fourth situation: teachers are in school and students are not in school. The fifth situation: teachers and students are in school. The fourth situation adopts the same emergency handling plan of the first situation. The fifth situation adopted conventional blended learning plan. Therefore, the emergency handling of public elective course mainly discusses the first three situations in this part.

The first situation: both teachers and students are not in school

The case is when the COVID-19 pandemic broke out in early 2020, both teachers and students were not in school in higher vocational colleges. The priority should ensure the normal learning order and health of teachers and students, both teachers and students are not in school. Ensure the normal learning order in priority and health of teachers and students. The main goal is to complete all the tasks and teaching activities based on the principle of learning online as much as possible. The four parts of general elective courses carry out the proportion between online and offline as following **Figure 2**.

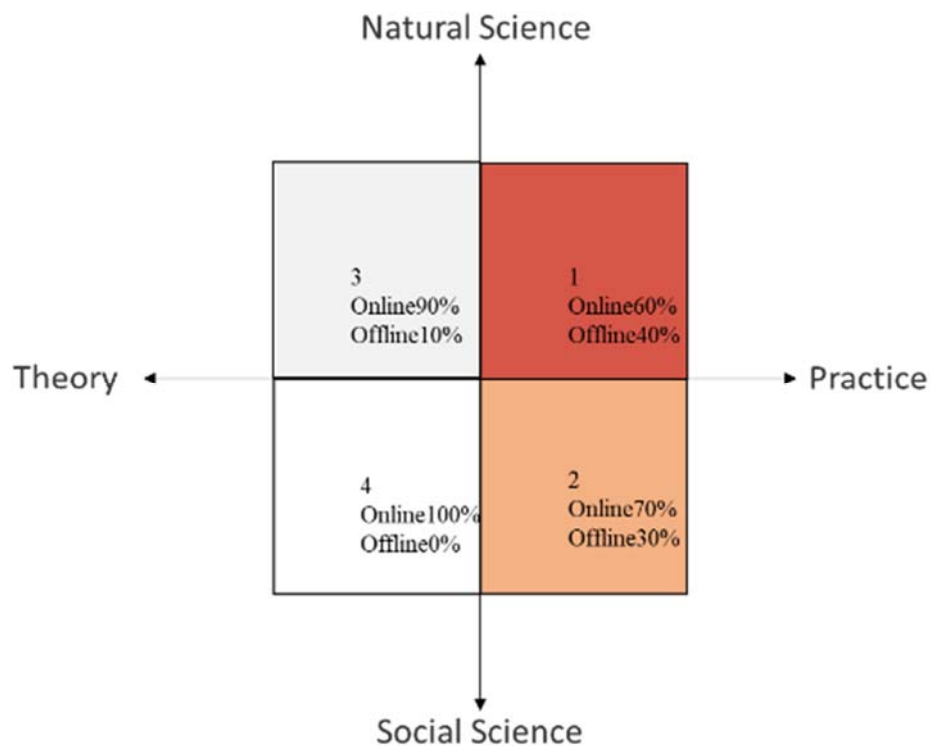


Figure 2. the proportion between online and offline when both teachers and students are not in school

The second situation: students in school, teachers are not in school.

The case is the COVID-19 epidemic breaks out irregularly. Students are concentrated in school in higher vocational colleges, while teachers are scattered outside the school. In this situation, the key for teachers is to cultivate excellent assistants and group leaders. It is necessary to prepare sufficient course resources. According to the objectives and contents, teaching methods and strategies online are formulated. That include online self-learning, interactive discussion, homework submission and other links. Students are guided by assistants and group leaders to complete the practical learning. For universal problems and difficulties reflected by assistants in practical operation, the students were guided face to face to complete the practical operation in a standardized and systematic way when teachers are uninfected, returning to school. The four parts of general elective courses carry out the proportion between online and offline as following **Figure 3**.

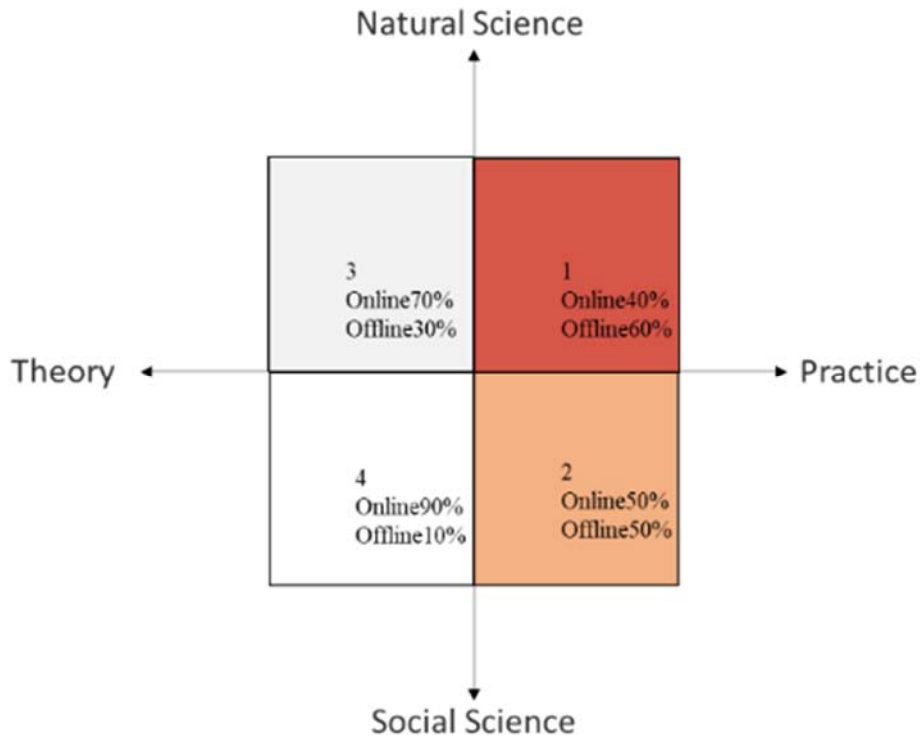


Figure 3. the proportion between online and offline when students in school, teachers are not in school.

The third situation: teachers in school, a few students are not in school.

This case is the late stage of the COVID-19 epidemic breaking out. The epidemic situation in the region where the school is located is stable. Most students and teachers return to school, just a few students are isolated in controlled area. In this case, teachers focus on the learning effect of the few non-school students. When teachers conduct face-to-face teaching in classrooms, they should simultaneously start online live streaming which supports lookback. So that the few students can participate online live broadcast. It is difficult to observe the details and steps of operation in practice, teachers should arrange excellent assistants and group leaders to tutor them. The four parts of general elective courses carry out the proportion between online and offline as following **Figure 4**.

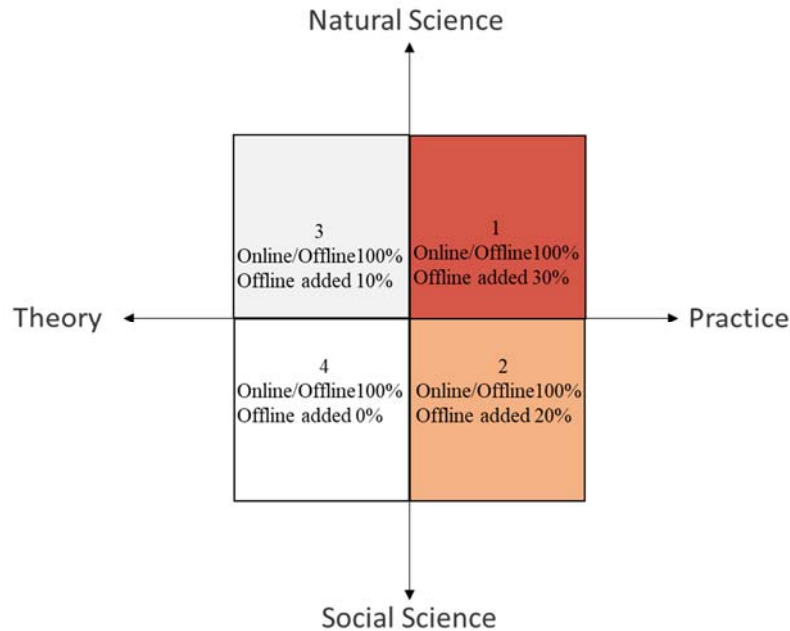


Figure 4. the proportion between online and offline when teachers in school, a few students are not in school.

3.3 Recovery and reconstruction phase

The recovery and reconstruction stage is enriching and summarizing the blended learning of general elective courses. We should summarize the teaching experience in time, improve the blended learning management system, optimize the resources of general elective courses[7]. The specific measures can include the following four aspects: **Improve the blended learning management system.** Such as: Develop emergency plans, establish coordination mechanism, Strengthen learning management[8]. **Integrate and optimize online and offline resources.** Such as: Enrich and improve learning resources, Update offline learning facilities. **Improve teaching content and teaching methods.** Such as: Modularization of course content, innovative teaching methods. **Technical training and psychological counseling for teachers and students.** Such as: provide online and offline technical support for teachers and students[9], strengthen psychological support and counseling for teachers and students.

4 Conclusion

In the three stages of public emergency, the following three conclusions are drawn from the four types of general elective courses.

The early warning preparation stage is the preparation around the MOOC courses. Teachers can construct MOOC courses, compile emergency teaching documents which are divided into

two modules of theory and practice according to the course content, be familiar with teaching platform and equipment, innovative teaching management mode.

The focus of online and offline blended learning is different in three cases in emergency handling stage. (1) Both teachers and students are not in school. Ensure the normal learning order in priority and the health of teachers and students. The main goal is to complete all the tasks and teaching activities as much as possible based on the principle of learning online. (2) Students are in school and teachers are not in school. The key for teachers is to cultivate excellent assistants and group leaders, so that they can guide other students to complete practical operations replacing teachers when teachers are not in school. (3) Teachers are in school and a few students are not in school. Teachers should focus on the learning effect of the few students, arrange excellent assistants and group leaders to tutor them as partners.

The recovery and reconstruction stage is enriching and summarizing the blended learning of general elective courses. Instructors and educational administrators should improve the blended learning management system, integrate and optimize online and offline resources, improve teaching content and teaching methods, technical training and psychological counseling for teachers and students.

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