Study on the Mixed Teaching Mode of the Program Language Courses in the New Situation

Ma Lei¹, Zhang Zhongqiu² and Zhang Nana³
Northwestern Polytechnical University Mingde College 710000
Corresponding author’s e-mail: 357023814@qq.com

Abstract: With the spread of new coronavirus, new forms of online teaching are widely used in colleges and universities in China. Teachers are the main parts relying on the existing online teaching platform, which can make up for the defect of single online platform, simulate off-line teaching better, complement the advantage of off-line teaching, and improve the quality of online teaching effectively by using the new hybrid teaching mode of program language courses with other network tools software.

1. Introduction
At the beginning of 2020, a new type of coronavirus burst in Wuhan in Hubei Province. It has quickly affected the life of the whole country for a time and has affected the new term opening work of colleges and universities in different degrees with its rapid spreading speed and wide range of transmission. Colleges and universities have begun to promote online teaching, non-stop activities in all China. In such a situation, how to effectively carry out the teaching of program language courses has become a problem that must be discussed and paid attention to.

2. Program Design Courses
Nowadays, the program language courses commonly offered in colleges and universities can be divided into computer and related specialties and non-professional classes. Computer and related professional courses, including computer, communications and other information technology related science and technology professional courses, such as C language programming, JAVA programming, C++ and other object-oriented language programming courses. Non-professional program language courses include Visual Basic, Visual FoxPro and other non-computer-oriented program language popularization of public courses.

In the previous teaching activities, the program language courses generally used the offline teaching mode of large class teaching. Under the traditional off-line teaching mode, teachers speak, students listen, there are some disadvantages such as passive acceptance of students, total indoctrination of teachers and so on. However, offline teaching also has innate advantages. For example, in class, students can communicate directly with their teachers. Teachers can get students' questions and learning status and provide feedback immediately. In particular, non-professional students often have a lack of mathematical basis, poor logical thinking ability to keep up with the rhythm of teachers. It is convenient for teachers to grasp the students' state immediately and adjust the content and rhythm of the course in time by offline classroom.

The program language courses also have their own characteristics. In particular, most colleges and universities, aimed at the first-year students, carry out some basic program language classes, such as C
language, Visual Basic, Visual FoxPro and other program languages. Before that, students had no access to relevant knowledge and no idea of establishing the language of procedure. Constructing the framework of the program language and accepting the program courses require the comprehensive help and guidance of teachers for these students. At the same time, the study of program language courses also requires students to do a lot of computer experiment exercises. The process of getting on the computer is the process of compiling and correcting errors repeatedly. This process needs guidance and help of teachers.\(^1\)

3. Mixed Teaching Model

The traditional mixed teaching modes refers to the combination of online and offline, offline classroom and online teaching, such as SPOC, flipping classroom and other new teaching methods, which all emphasize the combination of online and offline. Teachers publish instructional videos and assignments based on course content. Students complete the viewings, assignments and online discussions of the instructional videos. Offline, teachers carry on the classroom teaching normally, and handle the questions of students online in time to answer the questions. This kind of teaching mode combines the advantages of traditional classroom and the advantages of online teaching, and makes up for the shortcomings of traditional teaching methods.

However, in the current epidemic situation, in the overall delay in the opening of the school situation, students cannot immediately return to the classroom, and cannot use traditional classroom teaching, we must choose a new and reasonable new teaching model to adapt to the current comprehensive online teaching. At present, there are a large number of online open courses platforms and learning resources on the Internet, such as the university platform, super star learning platform, rain class and so on. These online teaching platforms make use of various forms, such as computer website or software and mobile phone app, to cooperate widely with schools, society and government, to create online learning platform, to build high-quality curriculum resources together, to provide students with a wider and better learning choice and experience, and to assist the education and teaching reform of major colleges and universities. Taking the super-star online teaching platform selected by our school as an example, the online platform generally has the following advantages:

3.1. Abundant online teaching resources: Each platform includes a wide range of professional education and teaching resources, such as the powerful digital library resources on the super star learning platform, which also includes a number of mature national boutique online courses and provide students with the choice of knowledge, access to famous teachers. It is more convenient for teachers to make curriculum plan, make and enrich their own learning resources.\(^2\)

3.2. Strong curriculum development and teaching organization: Complete standardized classes construction system, and support the introduction of online teaching demonstration package, as well as the construction of teachers' online courses and the recording of video courses and other various teaching activities. At the same time support online questions, questionnaires, assignments, discussions and other online teacher-student interaction. And according to the record, issue the course report to test the improvement effect of students' learning.

3.3. Learning effect assessment: Use homework test, test paper release, unit test and other learning effect evaluation methods to analyse the students' learning records and learning behavior and generate the activities reports which students complete, use notification and other forms to urge students to complete the learning task at the same time.

3.4. Integrated management: The whole courses record the process and behavior of teachers and students, such as building classes, learning, homework, discussion and so on, and the platform has detailed tracking and data statistics. Teachers can grasp the students' check-in and learning status at any time. Teaching managers can also conveniently supervise and manage the teaching work of teachers.
and students.
During the epidemic, most colleges and universities have chosen the above online learning platform to carry out online teaching courses based on the advantages of online platform. However, in the special situation, online learning exposes some drawbacks of the concentration of home learning and comprehensive online learning.\(^3\)

First of all, offline courses lack communication process between teachers and students. In traditional classes, teachers and students as well as students face-to-face emotional communication is seriously missing. Second, the online courses learning efficiency is low, on the one hand students will fell visual fatigue caused by the electronic screen for a long time, on the other hand, some students are prone to fatigue, slack mood, seriously affect the teaching effect because of lacking supervision from teachers and students on the spot. Third, learning is limited by the network environment. Large-scale centralized learning makes the platform congestion in a short period of time. Some normal functions cannot be carried out, which seriously affects the learning efficiency and progress. In addition, the platform still has some shortcomings in the construction of question bank resources, the construction of comprehensive case and video resources and the diversity of question types. For example, for program language courses, it is difficult to promote through the platform due to the big storage of installation program of compiler environment and the complexity of installation and use.

In such a situation, the use of some other network tools, such as cloud disk, instant messaging tools, QQ, WeChat, nail and other free communication and coordination of multi-terminal platform, cannot only enhance the communication between teachers and students, but also assist the major online learning platforms, and get rid of the network restrictions and network congestions as far as possible.\(^4\)

### 4. Construction of Mixed Teaching Model
The mixed teaching mode of the program language courses based on the online teaching platform combines other free network tools to carry out the course together. From the beginning of the teaching preparation before the beginning of the course to the final teaching statistics and evaluation process, as shown in figure 1.

![Figure 1: Mixed Teaching Design of Program Language Courses](image-url)
4.1. Pre-Class Preparation
Taking the superstar learning platform as an example, teachers set up teaching teams to create learning resources. Teaching videos can be imported through the platform demonstration teaching package, or existing MOOC courses, or teachers can record their own microcourses. However, the time required for video courses must be certainly controlled, short and focused. Take the program language courses as an example, in addition to preparing the necessary course materials, teachers should also prepare a complete set of program contact, and use the cloud service tools to upload the installer of the corresponding language compilation environment, and create and provide the program homework library to facilitate students to download the installation and self-programming exercises and use instant messaging tools to create class chat groups to facilitate follow-up check-in cards and discussions. [5]

4.2. Teaching in Class
Teachers mainly use online teaching platform to carry out teaching, students learn the content of the courses through video viewing, online live broadcast and other ways, and they complete exercises and discussion through the online platform. In the process of the courses, teachers can check in by group through the early establishment of chat group, and teachers can analyse and discuss the problems of the videos in the form of text or voice video live at any time with students.

4.3. Summary of After-School Teaching
Teachers use the platform to complete the test work after class, and use the statistical data of the platform to complete the teaching evaluation. At the same time, they use other software tools to complete the knowledge of students programming homework and the discussion and reply of students' questions. [6]

According to the teaching model design, teachers use online teaching to publish video learning materials of related online courses, and prepare related homework and test questions. Students follow the instructional plans to watch the instructional video to complete the online homework and teacher questions. At the same time, students can download the required programs through the cloud disk software, and use the instant messaging group to communicate directly online with teachers and students on related issues. Teachers can also use online platform to complete the statistics of teaching results after class, and use group chat tools to master students' programming practice status.

In the off-line class, teachers focus on the students' online completion of the homework, the questions raised, the results of the online test to analyse the points, and leave time for the students to think and discuss. Teachers guide the students to express their views, discuss and solve the problems freely. After class, students can still use the teaching videos to review the course content and organize the study notes. Teachers sort out the students' problems to analyse and evaluate the overall teaching results.

5. Conclusion
In the design of mixed teaching mode, teachers not only use the advantages of online learning platform to organize the complete online teaching process, but also use other free aids to make up for some defects of online teaching, and restore the offline classroom teaching environment as far as possible, so as to complete the mixed teaching under the new form.

References
[1] MaLei. Research on Hybrid Teaching Mode of Software Engineering Based on SPOC[J]. ICSP.2019(3):052009.
[2] Liu Yanmei. Chinese Higher Education Reform Under the Wave of MOOC[J]. Higher Education of Social Science,2015 9(3):23-27.
[3] Wang Zhili. The Reform of Mixed Teaching Mode in <<Integrated English >> Based on Superstar Learning [J]. Journal of Liaodong University: Social Sciences Edition,2018(3):121.
[4] Li Fengqing. The Theoretical Basis and Teaching Design of Hybrid Teaching [J]. Modern Educational Technology, 2016,(9):18-24.

[5] Liu Yongliang, Lu Yonggang, Yin Xuefeng. aStudy of Mixed Learning Patterns Based on Mobile Internet [J]. China IT Education, 2017(11):85-87.

[6] Zheng Guangcheng. Research on mixed teaching process of higher vocational program design course online and offline based on SPOC [J]. Technology square, 2017(07):150-152.