

# A Study on the Innovation of Teaching Mode in Primary and Secondary Schools in the Network Environment

Linmei Hou<sup>1,a,\*</sup>, Zhumeng Liu<sup>1,b</sup>

<sup>1</sup>Faculty of International Studies, Henan Normal University, Xinxiang, China

<sup>a</sup>linmeihou6666@126.com, <sup>b</sup>895100640@qq.com

\*Corresponding author

**Abstract:** Under the influence of the coronavirus epidemic, the offline-courses was shifted to online platform for the need of epidemic prevention and control, which has had a great impact on the teaching mode. However, due to the hasty implementation, some schools have encountered many problems in implementing online teaching. In this paper, we analyse the problems exposed by online teaching application at this stage and propose innovative strategies for the teaching mode in the network environment.

**Keywords:** Online Teaching Mode; Analytical Research; Epidemic Prevention and Control; Innovation

## 1. Introduction

In the face of the needs of the coronavirus epidemic prevention and control, the Ministry of Education issued the "Notice on In-depth Implementation of " learning continues during class suspension" in Primary and Secondary Schools" in the spring of 2020. The Circular provides guidelines for the orderly, effective, and in-depth implementation of "learning continues during class suspension ". The Ministry of Education has opened a national online platform for primary and secondary schools and an on air classroom for China Education Television, which are free for use everywhere. For online teaching models, Zhu Zhiting and Peng Hongchao proposed three application models - direct teaching, independent learning, and flipped learning - to provide specific teaching models that can be operated for online teaching in emergencies.

However, this online teaching practice, as an emergency measure, is an extraordinary move to respond to public health emergencies, and the implementation is relatively hasty. Many schools lack experience in how to carry out online teaching, teachers are not well aware of online teaching, software operation is not proficient, and students lack preparation for online classes. Therefore, in the process of implementing online teaching, the teaching effect of each school varies, and the teaching mode of online teaching has revealed some problems.

This study analyzes and investigates the factors affecting teachers' teaching and students' learning in the internet environment, and proposes innovative strategies for teaching mode in the internet environment, hoping to provide a feasible way to improve teaching for further implementation of online teaching.

## 2. Factors Affect the Online Teaching Mode

### 2.1 Teachers

As the implementer of online teaching, teachers' teaching ability determines the upper limit of students' online learning effect. Teachers decide the way of online teaching, and their familiarity with the teaching platform determines their ability to take full advantage of the various features to facilitate student learning. At present, teachers can be roughly divided into three categories. The first category is the front-line backbone teachers. These teachers are highly motivated for professional development and have strong online learning ability. The second category is young teachers. These teachers are highly receptive and have the strongest demand for professional development. However, they often have difficulty participating in online teaching due to many real-life constraints. The last category of

teachers are those who are burned out and those who are not interested in online teaching. These teachers are reluctant to teach online because believe that online teaching is less effective compared with face-to-face teaching mode. Faced with the great change of teaching mode during the epidemic, teachers are the most important factor affecting the teaching mode in the network environment, and their instructional design ability, information technology ability and teaching ability base will affect the success or failure of online teaching. Therefore, different types of teachers must deal with the change of teaching mode in order to carry out their teaching tasks during the "school closure" period.

## **2.2 Students**

Students are the subjects of learning. Therefore their learning status influences the shape of the teaching model. During the epidemic, students' learning style changed from traditional offline learning to online learning. Online learning requires learners to actively interact with digital learning content to accomplish set learning goals, and it requires high self-directed learning ability. It means students' self-directed learning ability strongly influences the effectiveness of online learning. Self-directed learning ability include self-management, self-monitoring, and self-evaluation. Because students have vastly different personality traits, motivation, and study habits, so their self-directed learning ability varies greatly. As a result, the learning results are quite different from person to person. At the same time, online learning is also influenced by the home environment. Some parents are able to create a positive learning environment for their students and to monitor and motivate them. Students who have a good learning environment are usually able to perform well in the online learning process. However, some parents do not have the ability to effectively supervise their students, which leads to some students studying at home without the atmosphere of school learning and thus not being able to study effectively online.

## **2.3 Schools**

Schools are responsible for organizing teachers to teach online, organizing students to learn online, providing a standardized online teaching platform, and it is the organization and manager of online teaching. Schools need to make their own work plans and related systems according to their own current situation and based on their understanding of the teaching tasks and requirements of the education administration. Schools should prepare adequate plans and conduct rehearsals in advance. Schools need to encourage teachers to conduct internet-based teaching and research to improve their online teaching skills. The school is also responsible for evaluating students' learning and teachers' teaching in school. Besides, compared with offline teaching, online teaching accumulates a huge amount of data on student learning and teacher teaching. Making full use of this data can provide data support for teachers' online teaching mode improvement. Therefore, the school's understanding of online education determines whether online education can form a systematic operation specification and implementation system. During the epidemic period, schools must face the transformation of the education model in the Internet environment, and the necessity and urgency of transforming education evaluation and education management in schools becomes more and more obvious.

## **2.4. Hardware and Software Preparation**

In terms of software, online teaching requires an appropriate platform. This is the most basic tool for online teaching. The features of online teaching platform can affect the teaching and learning process. For example, if a teaching platform lacks a classroom self-assessment function, the whole teaching process will lack process evaluation. Schools need to choose platform tools according to different teaching modes. In addition to live streaming, MOOC, SPOC, and instant messaging software, some schools also use supporting tools such as correction websites, online testing systems, and group editing software. During the epidemic, major web giants opened many free online platforms for schools to use.

In terms of hardware, the teacher's live streaming equipment directly determines the students' learning experience. The clarity of the camera and the effectiveness of the radio will determine how well the students communicate with the teacher. Good network conditions during online classes ensure that students are fully engaged in the teaching process.

### **3. Problems of Teaching Mode in Network Environment**

#### ***3.1 Teachers Use the Traditional Teaching Mode and do not Optimize the Teaching in the Network Environment***

Many teachers have adopted offline teaching for a long time, they are used to traditional teaching mode. Many of them lack experience in online teaching, and they just copy the offline teaching mode to online platform. However, teaching in the network environment is very different from offline teaching. Firstly, online teaching realizes teacher-student interaction through video, which requires teachers to be skilled in using online platforms, actively realize interaction and guide students to participate in teaching. Second, when teachers is in the network environment, it is not easy to observe students' reactions and classroom atmosphere, which requires teachers to put more effort into observing students' reactions. Offline teaching, on the other hand, allows teachers to adjust their teaching strategies directly through classroom observation in a timely manner. Therefore, directly transferring offline teaching mode to online platform will affect teaching effectiveness. In particular, teachers in burnout are old-fashioned and resistant to new teaching concepts and models. This leads to a lack of effective interaction when online teaching is carried out, which ultimately leads to inefficient online classroom teaching and poor learning results for students.

#### ***3.2 Students are not Motivated to Participate and Teaching is not Effective***

Learning in the network environment lacks direct interactive means, and the learning process requires higher willingness of students to learn independently and strong learning motivation. Once the learning content does not arouse students' interest, students with low learning motivation will be distracted by other things and will not participate in teaching activities.

Due to the limitation of the platform, teachers can only observe students through videos, and the quality of students' videos varies, so teachers cannot easily observe students' learning status and cannot easily grasp the overall learning atmosphere. This determines that online teaching classroom observation is more difficult than offline teaching. On the other hand, because it is home learning, students are subjected to field-dependent students who lack the learning atmosphere of school and find it difficult to devote themselves to it. Some parents do not know how to guide and monitor their students' learning. The lack of parents' guiding ability in many families leads to the lack of effective supervision at home.

#### ***3.3 Unscientific Feedback System for School Learning Evaluation***

Due to the impact of the coronavirus epidemic, online teaching was implemented in a hurry, and many schools have not yet established an appropriate learning evaluation system for online teaching. A scientific evaluation system needs to include formative evaluation, process evaluation and summative evaluation. The evaluation method of online teaching is mostly summative evaluation, lacking process evaluation which focuses on the teaching process. As a result, teachers lack control over students' mastery in the teaching process and students lack timely feedback from teachers to guide their own learning process.

#### ***3.4 Lack of the Software and Hardware of Online Teaching, and the Online Teaching Experience is not Good.***

The nationwide implementation of online teaching during the epidemic was a big test for the various online teaching platforms. In the early days of online classes, the sudden increase in the number of teachers and students logging on to various online education platforms led to the platforms crashed and became unavailable. It shows that the server carrying capacity is insufficient. In the meanwhile, many schools lack the corresponding hardware and software facilities for online teaching, resulting in poor live streaming experience. Some economically underdeveloped areas and remote and poor areas have poor network environment and insufficient teaching platform resources for effective online teaching. Teachers are also unable to implement necessary teaching activities due to the lack of appropriate live streaming equipment. In particular, teachers who lack experience in online teaching need a lot of time to familiarize themselves with the online teaching platform and debug the equipment.

#### **4. Innovative Strategies for Teaching Mode in Primary and Secondary Schools in the Network Environment**

The large-scale online teaching spawned by the coronavirus epidemic is a rehearsal of E-learning. It made preparation for the normalization of online teaching in the future. At the same time, the current round of online teaching has also exposed the necessity and urgency of teaching mode reform. The author believes that the innovation of teaching mode can be explored in the following directions.

##### ***4.1 Change Traditional Teaching Ideas and Improve Teachers' Information Based-Teaching Ability***

Teaching in the network environment puts forward higher requirements for teachers' informatization teaching ability. When teachers teach online, it is necessary to consider the characteristics of online teaching, change the traditional classroom teaching habits, and skillfully use the functions of various teaching platforms. This requires teachers to keep up with the times and keep learning. Especially for senior teachers, they need to spend a lot of time on adapting to online teaching and need more time to use the teaching platform skillfully. Such teachers need to actively and continuously learn in order to adapt to the change of teaching mode.

Teaching in the network environment requires innovative theories to guide the teaching process. Teaching in the network environment not only needs to take into account the characteristics of students learning at home, but also use the interactive features of online teaching to change the previous teaching model, make full use of online resources, and redefine teaching objectives, teaching contents and teaching processes so as to ensure the effectiveness of online teaching. Therefore, schools should conduct timely IT competency training so that teachers can be proficient in the various functions of the online education platform used by schools. This will enable teachers to improve their online teaching mode by combining the platform's teaching functions. They can use online tools to interact with students and observe their classroom performance. In addition, schools can hold online teaching competitions for teachers to improve their online teaching skills through practice. Besides, teachers themselves should also build a positive learning attitude, be open to new things, change their teaching habits, and promote innovation in teaching mode.

##### ***4.2 Use Live Skills to Enhance Online Teaching Interactivity***

Various live broadcasting industries need to output information to the audience and interact with them, and have accumulated a lot of practical experience and skills. Teaching activities also require a lot of information output and effective interaction, and their main features are not very different from those of various kinds of webcasts. Therefore, teachers conducting teaching activities in the network environment can summarize the experience and techniques of webcasts to promote interaction with students in teaching, so that each student has the opportunity to express and share his or her own views.

When teaching online, teachers should first be well prepared, adjust their equipment, and put together a good personal image. Pay attention to their language, gestures and facial expressions during the teaching process. This is important for focusing students' attention. In terms of interaction, teachers need to be creative in designing interactive topics in teaching and setting up various activities for students to actively participate in teaching activities. For example, brainstorming, interactive games, these activities can enhance students' sense of participation and make them fully engaged in teaching activities. Teachers should provide timely feedback to students' opinions and encourage them to speak up. The activity of expressing opinions can be effectively reinforced by receiving positive feedback. This is important for creating a classroom learning environment. Teachers should also make full use of video interaction to mobilize students' emotions and increase the fun of learning.

##### ***4.3 Build a Whole Process Evaluation System***

In online teaching activities, the functions on the online teaching platform can be fully utilized for timely assessment and evaluation, thus realizing a multiple evaluation assessment method that combines process evaluation and summative evaluation. Through the online platform, class assignments, unit tests, and discussion forums can be counted so as to monitor students' participation in teaching. The online teaching platform enables teachers to count students' attendance and participation in classroom activities. This allows teachers to combine formative evaluation (online teaching participation, class assignments, class seminar participation), phase evaluation (unit tests) and summative evaluation (course test scores) to comprehensively record and examine students'

performance throughout the learning process. Compared with the summative evaluation mode, it is more motivating for students to participate in learning.

#### ***4.4 Improve Online Teaching Hardware and Software to Enhance Online Learning Experience***

First of all, in terms of hardware, online teaching needs a good network to ensure that participants focus on the teaching activity and are not distracted by other factors. Teachers' camera recording equipment needs to have high picture quality and wide view to ensure that teaching activities are not tied up by video equipment. To achieve the best live streaming effect, teachers can also set up a good sound card to provide better sound effects. Adjustments can also be made to the teaching environment by adding background lighting, contour lighting, etc. The teaching machine position should also be carefully considered to ensure that the teaching content can be shown in full. In terms of software, a well-functioning online teaching platform is needed. In addition to the basic live video streaming function, the platform should also have rich classroom management and evaluation functions. It should be able to record students' attendance and class participation. Online platform should have enough server capacity to support massive online learning.

### **5. Conclusion**

Based on the problems in the current round of online teaching practice, this paper proposes an innovative model improvement strategy for teaching in the network environment in terms of teachers, students, schools and equipment preparation, which is systematic, standardized and operable and can directly guide the planning and practice of online teaching.

The epidemic has stimulated the vitality of online education and driven changes in the way of management, teaching, learning and evaluation. Online education impacts traditional education and will innovate the form of education and teaching and the form of school organization. We hope that this study can effectively address the urgent need for online learning guidance and practical innovation during the "school closure" period in primary and secondary schools, and also provide useful reference for the sustainable and healthy development of online education and teaching in China in the new era.

### **References**

- [1] Ministry of Education. *Advice for parents of primary and secondary school students nationwide to guide their children's home study and life during epidemic prevention and control*. [EB/OL]. [2020-02-16]. [http://www.moe.gov.cn/jyb\\_xwfb/gzdt\\_gzdt/s5987/202002/t20200216\\_421470.html](http://www.moe.gov.cn/jyb_xwfb/gzdt_gzdt/s5987/202002/t20200216_421470.html)
- [2] Ministry of Industry and Information Technology. *Initiative to Fully Utilize Artificial Intelligence to Empower and Collaborate in the Fight against the Pneumonia Outbreak of Novel Coronavirus Infection* [EB/OL]. [2020-02-104]. <http://www.miit.gov.cn/n973401/n7647394/n7647404/c7664192/content.html>.
- [3] Jiao Jianli, Zhou Xiaoqing, Chen Zexuan. (2020) *A case study of online teaching and learning in the context of epidemic prevention and control* [J]. *China e-learning*, 3:106-113.
- [4] Xie Youru, Qiu Yi, Huang Yuling, Wang Qinlei. (2020) *Characteristics, problems and innovations of online teaching method of "no classes, no school" during epidemic prevention and control* [J]. *Journal of Electronic Education Research*, 3:20-28.
- [5] Zhu Zhiting, Peng Hongchao. (2020) *All-media learning ecology: a practical solution to the schooling problem in times of large-scale epidemics* [J]. *China e-learning*, 3:1-6.