

Exploration of Teaching Methods and Management Analysis during the Epidemic

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Abstract: After the first outbreak of the COVID-19 epidemic in Wuhan, China, in 2019, there were several localized outbreaks in China. Education in China has been affected by this, home isolation and network teaching have been used a lot. The original teaching methods and teaching approaches can be implemented during short-term quarantine. However, their drawbacks gradually became apparent with the repeated outbreaks of the epidemic. In this paper, the author summarizes the defects of the original teaching model after several online teaching activities, improves the teaching model from the physical and psychological aspects of the class participants, the teaching environment of the teachers, and the teaching equipment, and proposes a new teaching and management model.

1. Introduction

COVID-19 had its first breakout in Wuhan, China, in the winter of 2019. Since then, several successive localized regional outbreaks within China occurred in 2021. China has a large patient base, but the ability of mobilization and its scientific, technological, and medical economy puts China in a position to mount a national response to the virus and achieve results within a few months. During the epidemic, the main means are: strictly guard against imported patients; trace the movement trajectory of close contacts and sub-close contacts; reassure the public; reserve medical resources; supply the quarantined with basic living materials; achieve zero infection. The selection and transformation logic of the prevention and control strategy was based on the guidelines of Academician Zhong Nanshan. It was determined from the survival conditions of the virus, transmission routes and infectivity, combined with the normal habits of human life, and finally achieved results. Among the prevention and control strategies of various countries, the Chinese prevention and control strategy has proved to be effective. Under the influence of the epidemic, Chinese people's living habits have changed, and so has the way of teaching in schools.

2. The Teaching Methods and the Management Model during the Epidemic

2.1 The Teaching Methods and Existing Problems

Starting from the leading idea of prevention and control, universities, middle schools and primary schools have developed their own teaching methods, of which online classes (hereinafter collectively referred to as online) are the main teaching methods. That is to make the classes in classrooms (hereinafter collectively referred to as offline) under normal circumstances conduct online teaching through the Internet. In the initial stage of the epidemic, this method ensured that the students can learn normally while avoiding close contact between people and reducing the risk of infection. But as time progressed, the shortcomings of online teaching gradually emerged:

The first is the class time. Taking a 45-minute class and a 10-minute break as an example. The teaching and breaks can be conducted normally during offline teaching. However, during online teaching, it is common for students to be late for the second class. Analyzing the reasons, there are bells to remind students during offline teaching. Students and teachers play a role of mutual supervision. Online teaching is carried out in a virtual environment, and teachers and students cannot be seen during the class. As a result, the rest time of online classes is mainly based on the

students themselves. Even if they are late, teachers and other students won't know. There is no supervision. Students can hear the course content when they are not in front of the device, and think that they are not violating the class discipline. Online classes make students stare at electronic devices longer than offline classes, and they are more likely to get tired in class. The solution is to shorten the online class time and extend the recess time [2]. For example, a 35-minute class and a 15-minute break between classes. There are also schools that replace the normal offline courses with 4 classes in the morning by reducing the number of classes in the morning (for example, only 2 classes in the morning), but it does not help the online supervision.

The second is the attendance rate of students. The attendance rate reflects the enthusiasm of the students. In offline teaching, the attendance rate is guaranteed by fixed seats or roll call. After the students enter the classrooms, they are less likely to arrive late and leave early due to space constraints and personnel supervision. During online teaching, the attendance of students is controlled by online sign-in or online roll call. It is unknown whether the online sign-in person will be the student, and whether the student will leave after sign-in. Let's take two different classes in the same grade and major as an example:

The total number of students in class 1 is 26, and the total live broadcast time is 1 hour and 37 minutes = 97 minutes

Total duration of class participation (minutes)	Percentage of total hours of class participation (%)	Number of participants	Participants as a percentage of the total (%)
87 and above	90 and above	10	38.5
78-86	80-89	11	42.3
68-77	70-79	2	7.7
58-66	60-69	0	0
49-57	50-59	0	0
48 and below	49 and below	3	11.5

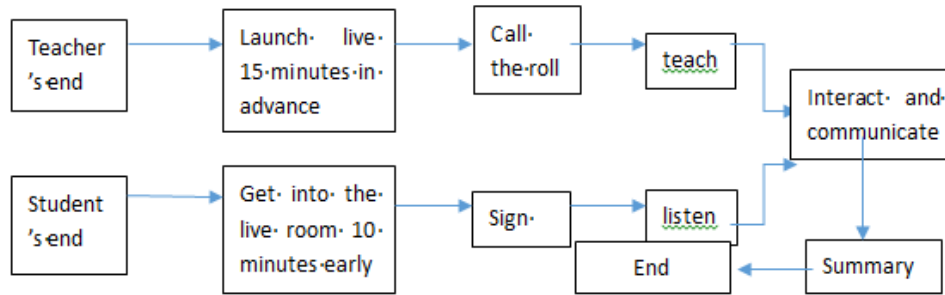
The total number of students in class 2 is 19, and the total live broadcast time is 1 hour and 37 minutes = 97 minutes

Total duration of class participation (minutes)	Percentage of total hours of class participation (%)	Number of participants	Participants as a percentage of the total (%)
87 and above	90 and above	9	47.4
78-86	80-89	3	15.8
68-77	70-79	1	5.3
58-66	60-69	1	5.3
49-57	50-59	0	0
48 and below	49 and below	5	26.3

80.3% of the total number of students participated in class 1 for more than 80% of the total time, and about 20% of the students participated in the class for less than 80% of the total time. 63.2% of the total number of students participated in the 2 classes for more than 80% of the total time, and about 37% of the students participated in the class for less than 80% of the total time. It is 9.7 percentage points and 26.8 percentage points lower than the offline average attendance rate of 90%, respectively.

Then comes to the effect of online teaching. More than half of the students said that the amount of knowledge received in online classes was smaller than that received offline. Whether the online classes can be carried out normally is interfered by a variety of factors, such as the speed of the network, the network itself, the computer at the teacher's end, the computer at each student's end, the impact of temporary notification of nucleic acid testing, and the impact of temporary distribution of living materials. Once a power outage occurs, the online classes fail completely. If the teacher's computer loses power, the entire class will have to be reattempted at another time.

2.2 The Management Model



From the above management model, it is clear that the duration and attendance of a lesson need to rely on third-party inspection, and the inspector cannot check the listening status of the students. The quality assurance of the whole lesson relies on the teacher, each student, and the third-party inspector, and the role of mutual supervision between the teacher and the student is weakened by the network, and the course communication is changed from human-human communication to human-computer communication.

3. Reason Analysis

3.1 Weak Online Class Supervision and the Screen Reduces Emotional Communication

The main body of the online classes consists of the teacher, the students, and the electronic device. Among them, the electronic equipment is in direct contact with the students. The teacher, the students and the classroom are in a virtual state. There is no interactive communication among students. The communication with the teacher is limited to the teacher opening the microphone. The teacher cannot get timely information whether the students are sitting in front of the equipment, and cannot make judgments through the students' reactions, such as private communication, expressions, eyes, gestures and voices. There is no emotional communication during the class. The effect of continuous microphone and communication is much lower than offline face-to-face communication, and the class tends to be mechanized.

3.2 Virtual Environment

Virtual education has become an important part of today's education as it enables synchronous communication between teachers and students when they cannot communicate face-to-face. In offline teaching, teachers judge the learning effectiveness of students through in-class communication, attendance, and off-class visits and assignments. Each student's every move and verbal expression in the classroom can reflect the inner thoughts and drive for learning. The virtual environment does not allow teachers to judge by their eyes, looks, and behavior, and they cannot even know in time whether the students are in front of the computer or not, which reduces the means for teachers to understand the students. At the same time the students get to know the teacher is also carried out across the screen, losing the cognition brought about by visual sensory effects. The senses can establish a complete and coherent process of emotional thought development and tap into personal emotions [3]. The virtual environment diminishes the role of the senses, leaving the teacher's voice and PPT to convey the information.

3.3 Electronic Devices

The popularity of electronic devices. Economic development and speed efficiency is greatly improved, leading people to another misconception that electronic products can do everything, electronic devices to do work will replace all human labor. Take the transmission of information, for example, the need to transmit information on emotions, judgment, and process, electronic devices and network transmission ability is weak. When chatting with friends on QQ, the emotions of the person they are chatting with are weakened by the network or even not perceived, and the same is

true for online classes. The teacher's language and expressions are cut down by electronic devices, the students' reaction to the teacher is weakened by the network, and the effect of listening to the lesson and the teacher's perception of the students' learning is weakened, which will enhance the various adverse effects of the epidemic and the anxiety during quarantine.

3.4 Online Classes Are Harmful to the Eyes and Require Higher Brain Concentration

Offline classes are a collaboration of human limbs and brain-eyes. At least 80% of external information in the cognitive system is obtained visually. Taking a class focuses the information obtained by the students' eyes on a small device, making the students ignore the teacher of the class and making it more difficult for the teacher to attract the students' attention across the screen. Students are unable to go out and move around. Their clothing, food, housing and transportation are affected, and means of leisure and entertainment are restricted while online classes increase the task, thus exacerbating the side effects of the epidemic.

4. Improvement Projects

4.1 Change the Class Structure System, from a Single Professional Course to Multi-Field Multi-Channel Knowledge

The online classes include knowledge of epidemic, infection prevention, basic medical knowledge, and basic living knowledge. For example, how to use common household materials to kill germs on vegetables, clean teeth and wash face; how to deal with minor ailments in life and neck and shoulder pain caused by prolonged head down; how to reduce the risk of infection caused by not being able to have timely follow-up examinations during the epidemic due to pre-existing diseases; how to reduce the risk of infection caused by not being able to seek timely medical treatment due to home isolation or by going out to collect essential household items.

Increase physical activity. Everyone is isolated at home during the epidemic and physical activity is restricted. Anaerobic exercise significantly enhances inhibition of auditory tasks [1], and aerobic exercise improves an individual's attention, inhibitory control, and speed of brain functioning. Prolonged cognitive manipulation leads to decreased brain error monitoring, lower correct judgment, and longer reaction times, making isolated individuals more susceptible to adverse reactions and even serious mental health problems. Due to the spatial interval factor, achieving the same learning effect, online instruction requires higher attention than usual. Continuous long operation tasks are one of the main triggering causes of brain fatigue. Physical exercise is the most effective solution, so physical exercise will be used throughout online teaching. Aerobic exercises include swimming, jogging and calisthenics, among which jumping rope and calisthenics are suitable for college students in online classes, and doing housework is suitable for home isolation office workers. The daily online classes are scheduled for 15-20 minutes of fitness activities.

Literature and art change minds and habits and are part of the human spiritual world. Life during the home quarantine of the epidemic is more monotonous than usual, and literary courses are used to promote the exchange of ideas. Basic singing and dancing literature is suitable for related enthusiasts. Popular ways such as popular drama and music appreciation. Among them, music appreciation can be placed before or during the 15-minute break between classes. It can not only play a transitional role and alleviate anxiety and fatigue, but also be combined with sports, such as rhythmic exercises and calisthenics-type activities. Art promotes the development of the visual cognitive system of the brain, promotes balanced brain development, and helps the brain to be in the best learning environment [4].

Study program professional courses. Normal professional courses are conducted in cooperation with knowledge of the epidemic, sports, basic survival, and literature. After ideological adjustment and adaptation, reduction of epidemic anxiety and brain fatigue, enhancement of physical functions and strengthening of resistance, the necessary basic conditions for professional classes are consolidated. Students are more willing to join the courses, and their concentration level increases accordingly.

4.2 Changing the Way Classes Are Conducted

Discussion and communication will be the main means of communication. The main means of communication will be the interaction with the microphone, inviting students to join the discussion (one-on-one discussion only, no grouping). Improving the way of classes. It should be changed from offline lecture as the main method, supplemented by questions, to lecture as a supplement, discussion as the main method. Or, teacher can leave the topic they need to discuss in class a day in advance of the class (not recommended to use the flipped classroom in its entirety). The number of questions can be 1-2, for students to think. The next class will ask questions first, and the person who is asked will talk about his or her opinion, and then the teacher will explain and hold the discussion.

4.3 Change the Homework Models

Leaving written homework during an epidemic not only makes it difficult to attract students but increases the burden on them and causes them to reject attending the classes. It is crucial to resume normal life, and with all the uncertainties, written homework is a burden. Instead of written homework, Teachers can use thinking questions, which are related to the next lesson and include the key points of this lesson, and use the discussion-teaching-discussion approach, followed by a discussion session to deepen the knowledge and summarize the content, as well as to complete the homework session.

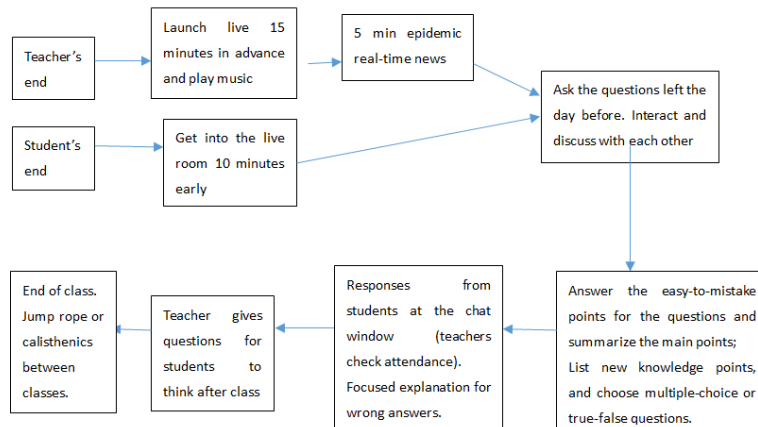
4.4 Management Model is Based on Restructuring the Course Structure Model

Online major classes are conducted in cooperation with knowledge of the epidemic, physical exercise, knowledge of life in an epidemic environment, and knowledge of literature and arts, and cannot be conducted separately. Among them, literature and arts are conducted by playing music, art appreciation and popular drama introduction before the class; epidemic situation and real time development are placed in the first 5 minutes of each class; physical exercise in the form of mass calisthenics and rope skipping is performed at the end of the course; knowledge of life under the epidemic and basic medicine as a special course, once a week is sufficient.

4.4.1 Schedule of Classes during the Outbreak of the Epidemic

Day Number of classes	SUN	MON	TUE	WED	THU	FRI	SAT
1-2		Knowledge of living and medical knowledge under the epidemic			Major course		
3-4	Popular drama appreciation, movie review (elective)		Major course			Major course	
5-6				Dance, aerobics or art appreciation			
7-8							

4.4.2 The Class Model



5. Conclusion

Online teaching isolates emotional communication and limits the students' attention to the knowledge level. Specialized knowledge is boring and needs to be combined with other activities or courses, such as physical exercise, arts and culture appreciation, and knowledge of the epidemic.

Single means of communication between students and the outside world during the epidemic. Face-to-face communication with people around them when conditions permit (keeping a safe distance).

Survival under the contingency comes first. Securing basic life takes priority, and learning knowledge comes second. The main responsibility of schools is to teach and educate people, and the four major functions of university education include the cultivation of talents with the delivery of specialized course knowledge as the carrier. Under the special conditions of the epidemic, survival will be elevated to the highest point, and with survival comes everything, and the focus of education should change accordingly.

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