

# A Brief Discussion About the Impact of Coronavirus Disease 2019 on Teaching in Colleges and Universities of China

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**Abstract**— In China, education is being impacted by Coronavirus Disease 2019, known as COVID-19 for short, which affects millions of families. Under such a special circumstance, higher education is supposed to not only shoulder its mission of teaching and educating, transferring knowledge, but also assume the heavy responsibility of maintaining social stability and building spiritual home. Under this general situation, in which Chinese puts epidemic prevention and control first, colleges and universities gradually carry out online teaching in China. However, a variety of problems surface in this practice. How about the effectiveness of the online teaching? What are the challenges faced by higher education? Can online teaching meet the educational demand in this special period? The authors consider the characteristics of the epidemic emergency, the challenges faced by teaching in colleges and universities, and the current teaching mode, and put forward some suggestions for the current practice, hoping to provide reference and inspiration for the practice of online teaching in colleges and universities.

**Keywords**— Corona Virus Disease 2019; epidemic emergency; teaching in colleges and universities; online teaching

## I. INTRODUCTION

Affected by the outbreak of COVID-19, China's Ministry of Education (the MOE) issued an announcement to postponing the start of the spring semester. [1] And then, the teaching plan and teaching order in colleges and universities were completely disrupted by the outbreak as well. In order to alleviate the impact of this epidemic on normal teaching order and traditional teaching, the MOE issued guidance on how to organize and manage online teaching in colleges and universities during the outbreak of COVID-19 in early February. [2] The guidance requests colleges and universities to make the organization and implementation plans of online teaching immediately. In order to ensure the quality and

progress of teaching during the epidemic prevention and control period, colleges are supposed to make full use of all high-quality online courses and actively unfold online teaching, driven by the service support of MOOC platforms and laboratory resource platforms, relying on all kinds of online course platforms, campus network learning space, etc. at all levels. Everyone might have already scented the revolution upon the traditional teaching since the online teaching has become a mandatory at the beginning of this semester.

## II. THE FEATURE OF EPIDEMIC EMERGENCY

In the 21st century, human beings are facing unprecedented development opportunities as well as in crisis. The epidemic emergency refers to the public health hazard which is related to infectious diseases and needs urgent measures to handle. It breaks out suddenly, massively, making a great impact on public health or economy, politics, society, etc. (has caused or may cause harm). [3] Exploring those outbreaks of various infectious diseases in human society, such as SARS, H1N1 and COVID-19, we find that those outbreaks show strong infectiousness, fast transmission rate, high morbidity and high short-term mortality, especially in respiratory diseases. With the rapid development of urbanization and internationalization, once an outbreak occurs, it will affect widely and cause more damage to people, economy and society than any other period in history. [4]

## III. THE DIFFICULT CIRCUMSTANCE FACED BY THE TEACHING IN COLLEGES AND UNIVERSITIES

In order to ensure the online teaching in colleges and universities during this period of epidemic prevention and control as well as realize "suspending classes without stopping teaching and learning", by February 2, 2020, MOE had

organized 22 e-learning platforms to provide more than 24,000 online courses for free, covering 12 disciplines at undergraduate level and 18 disciplines at higher vocational education level.[2] In addition, the MOE called for the improvement of quality of online learning process and multiple evaluation system. Meanwhile, colleges and universities were required to establish the policy of mutual recognition and conversion of credits for online course learning and ensure that students' academic performance would not be affected by the epidemic. Briefly speaking, traditional teaching in colleges and universities are facing many challenges during the special period of high requirements and high standards.

#### A. Challenges Faced by Online Teaching Platforms

In the process of information construction, colleges and universities mainly focus on hardware acquisitions. In contrast, they usually ignore the technological literacy of practitioners and platforms' ability of operation and maintenance. In the case of online platforms, there are also plenty of problems like thresholds when using online platforms, difficulties in integration and data connection between products. Therefore, software construction is weak, and those online platforms are unable to satisfy the emergency needs for thousands of people to study online simultaneously. For instance, on February 3, 2020, more than 5 million people attended online classes at the same time on an online teaching platform, causing a "network crash". Online platforms are often stuck, disconnected or even crashes during using, and the problem of pressure overload occurs on cloud-based services of all Alibaba, Huawei and Tencent. Those have not only caused plenty of serious teaching accidents, but also hindered universities and colleges from normal operation.

#### B. Challenges Faced by Teachers' Teaching Attainment

For a long time, there have been two main players in education: teachers and technology. The former provides the core content for education, while the latter provides the dissemination mode for the content. Under the situation of COVID-19 outbreak, the technology holds dominant position while teachers and students are almost in a passive adaptation state. To carry out online teaching, teachers need to learn how to use new software, turn the courseware into electronic version and adjust the pace of the class. Besides, they even may not get any response when interacting, which cause them great stress.

#### C. Challenges Faced by Teaching Evaluation in Colleges and Universities

The environment in which online learning takes place is different from that in traditional learning. On one hand, in traditional classroom, teaching and learning activities mainly take place in the physical real space. On the other hand, when learning online, numbers of learning scenes take place under the support of information technology. With the wide application of network broadcast and online platform, the evaluation methods and tools used by colleges and universities to obtain students' learning effects, interaction forms and learning progress have become mature. Data fusion, data standardization and specifications promote large amounts of data in learning environments to provide new opportunities for

colleges and universities to evaluate, measure, and record learning.[5]

#### D. Challenges Faced by Students' Learning Capability

Internationally, online learning is a support for independent learning, while it is centralized and on course timetable in China. The large-scale live teaching sacrifices large-scale personalized learning advantages and fails to play a positive role in students' independence and motivation. Online learning requires more self-discipline, self-direction, and a sense of mission and responsibility. Although they may have more flexibility in their studies, ultimately, students must take greater responsibility for their ability to finish on time. Instead of subverting traditional education as capital hype claims, online education has many disadvantages. For example, it emphasizes the scale effect (one teacher lecturing, thousands of students learning) while ignores the individuality and diversity of education. Furthermore, it mainly adopts teaching mode, with poor interaction and less learning effect than face-to-face teaching. Moreover, Online learning has higher requirements on students' autonomous learning ability and autonomous management ability. [6]

### IV. ANALYSIS OF THE TEACHING MODEL ADOPTED BY COLLEGES AND UNIVERSITIES UNDER THE EPIDEMIC EMERGENCY

After the outbreak of epidemic, online teaching in universities is roughly divided into four modes: live teaching, recording teaching, MOOC teaching, and research and discuss teaching, etc. Live teaching refers to the unified schedule of lessons by the Academic Affairs Office, the lecturer teaches the lecture in real time through the video live broadcast platform, and the students listen to the lesson online in real time. During the process of real-time live lectures, teachers should focus on forming effective interaction with students. The length of the online class is the same as the schedule; the recording teaching emphasizes that students learn through recorded video before class. According to the time schedule of the Academic Affairs Office, teachers use the live video platform to carry out online classroom teaching activities, mainly including difficult explanations, group discussions, exercise explanations, etc.; MOOC teaching emphasizes that students learn through MOOC course resources before class, according to the time schedule of the Academic Affairs Office, teachers use the live video platform to carry out online classroom teaching activities, mainly including difficult explanations, group discussions, exercise explanations, etc.; the research and discussion teaching mode is different from what is commonly referred to as seminars. Before class, teachers are required to provide learning materials such as PPT, video, audio, homework, thinking questions, etc. for students to study before class, and organize students to organize online discussion, Q & A and interaction through Canvas, QQ group, WeChat group and other forms during the scheduled class time of school. Teacher play more attention on whether the teaching process achieves the course teaching goals, whether achieves the effect of offline teaching, and whether the students gain something. For those who want interactive discussions through ZOOM live broadcast, they can apply for a virtual conference room for

discussions through the school's ZOOM system. In the selection of various online teaching modes, teachers and managers in addition to consider the functions, such as live teaching methods and effects of online teaching platforms, on-site blackboard presentation, screen sharing, PPT synchronous display, classroom interaction (classwork, barrage, speech), course notification, document sharing and synchronous changes, terminal support, attendance, etc., and they also should consider the performance of the online teaching platform as a whole.

#### V. OPTIMIZED STRATEGIES FOR ONLINE TEACHING IN COLLEGES AND UNIVERSITIES UNDER THE EPIDEMIC EMERGENCY

Online teaching is completely different from offline teaching, the choice of tools used should focus on stability, ease of use, and sense of design, it also challenges teachers' classroom design and information literacy, etc. There are indeed many problems in the current online teaching practice, but the analysis and answers to these problems will become a valuable asset, which can not only solve the urgent needs, but more importantly, explore a feasible way for educational reform.

##### A. Establish the Emergency Response Team

In order to ensure the smooth operation of online teaching platforms, it is vital to establish an emergency response team to maintain classroom discipline. Emergency response team members ought to immediately handle varieties of problems that arise in class and set teaching regulation. They are also supposed to enhance the control of teaching quality and the supervision of teaching process. Besides, it is important to strengthen the evaluation and feedback mechanism through Internet methods. The team should enhance defense management, quality control, data filing, and guarantee to realize “no suspension for teaching and learning”. On the basis of accurately grasping discipline teaching and local teaching situation, it is essential for team members who have broad experience in designing and implementing online teaching to be able to deeply study and understand the online teaching rules, and provide colleges and universities under their jurisdiction with guidance and technical support. [7]

##### B. Select the Efficient Platform

An efficient teaching platform can significantly contribute to online teaching since the platform is the basic support for online learning. As the consequence, it is necessary to select an efficient platform and make every effort to guarantee its operation. Table I shows the feature comparison among several online teaching platforms which enjoy great popularity in China. Besides, colleges and universities should repeatedly test the online learning platform and provide it with sufficient resources of broadband and servers so as to carry out online teaching smoothly. Furthermore, colleges and universities that have insufficient resources should consider non-real-time education a priority and adopt a reasonable mix of real-time and non-real time education, such as MOOC synchronous follow-up, supplementary guidance on micro-lectures, interactive discussion on WeChat, regular test. For the

necessary large-scale real-time teaching, they can try to use audio instead of video to reduce the pressure on the platform and ensure the successful operation of online learning.

TABLE I. THE FEATURE COMPARISON

Function		Platform	ZOOM	Tencent Classroom	Superstar Learning Pass	Rain Classroom	Ding Talk	Zhi Hui Shu
For teachers	Computer		√	√	—	√	√	√
	Moblie Device		√	—	√	—	√	—
For students	Computer		√	—	√	√	√	√
	Moblie Device		√	√	√	√	√	√
Live Video			√	√	—	√	√	√
Screen Sharing			√	√	—	—	√	—
PowerPoint Synchronization			√	√	√	—	√	—
Synchronization of Other File Types			√	√	—	—	√	—
Students' Operation	Text		√	√	√	√	√	√
	Audio		√	√	—	—	√	√
	Video		√	—	—	—	√	—
Replay and Order			√	—	—	√	√	√

a. √ means the platform support this feature.

##### C. Offer Teachers Training of Information Literacy

In this special time, it is important to provide teachers with training of information literacy and offer support for online teaching. For one thing, colleges and universities should help their teachers to learn how to use online resources by various means like online training and online workshop and guide them to change ideas. For another, teachers should improve their online teaching literacy and be well versed in online education technologies and methods as soon as possible. Furthermore, teachers ought to formulate teaching plans scientifically, adopt flexible and diversified information methods to organize teaching as well as achieve a close loop of teaching with self-study, teaching, feedback, summaries and question solving. And teachers must adapt themselves to the “Key to Key” of online teaching from the “face-to-face” of traditional teaching in special period. [8] At the same time, colleges and universities should deploy teaching support services as a priority. They can encourage teachers to offer their students proper guidance and assistance for online learning, so as to ensure the learning effectiveness.

##### D. Application Data Analysis

Collecting data on students learning process and results through online learning platforms as well as other means and conducting learning analysis can provide a basis to grasp the overall teaching status and conducting teaching and management evaluation. In practice, it is significant for manages and evaluation departments of colleges and universities to pay attention to the quality of data, understand

the capabilities and boundaries of data technology, and reasonably integrate the wisdom of field experts and data analysis results. [9]

## VI. CONCLUSION

Nowadays, online education is attracting public attention. However, lots of people, including teachers, parents and students, attach more importance to the form, but ignore “education” itself which is the core of online education. Education is supposed to return to the teaching effect and the interaction between teachers and students. During epidemic prevention and control period, colleges and universities can employ information technology to effectively collect and transmit information and constitute a virtual space for scientific research, teaching, learning, and office work; the space where which can minimize the impact of physical space isolation caused by epidemic prevention and control. [10] It must be emphasized that, online teaching in colleges and universities is not a simply “technical activity” in any case, and the teaching space is not an isolated and closed space. For colleges and universities, the deeper the informatization, the greater the impact of informatization on the epidemic prevention and control. For colleges and universities, it is significant to look at online education from the perspective of “content plus technology”. In order to better develop in online teaching, colleges and universities are also supposed to fully dig advantages of the personalized learning of online education, and find the balance between the convenience of online teaching and the efficiency of traditional education.

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