Analysis on the Impact of the COVID-19 on Higher Education in China

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Abstract. The outbreak of novel coronary pneumonia in late 2019 was characterized by a highly contagious virus. In response, the national government reacted quickly and took proactive measures, which played a very important role in effectively controlling the spread of the outbreak. The prevention and control of the Newcastle pneumonia epidemic has led to advances in a number of areas, including higher education. The content of higher education has been expanded, the way higher education is taught has been reformed, and reforms in the way universities are governed have been promoted. From the perspective of education model, the epidemic is the touchstone of educational information. Under the epidemic situation, the loopholes of traditional teaching mode have been exposed. Online education has ushered in new opportunities by virtue of its immersive advantages, but it also faces many challenges. This paper provides an in-depth discussion of the impact of COVID-19 on higher education in both negative and positive aspects, and proposes solutions towards alleviating the digital divide, and put forward possible suggestions from three aspects of colleges, teachers and students.

Keywords: New crown pneumonia; online classes; education.

1. Introduction

The COVID-19 outbreak in late 2019 has spread rapidly around the world due to its extreme ability to spread. The outbreak has also caused unprecedented damage to the education sector. In response to the inability to conduct offline classes due to the epidemic, China has adopted the concept of "no classes, no school" and is continuing its educational mission through online teaching. Online classes are an emerging learning method that provides learners with a series of Internet-based tutorials that include videos, images, and interactive text. This massive shift from offline to online teaching has allowed the entire national higher education system to function under the epidemic. However, the digital divide that arises with the level of information technology development in each region is the number one challenge to online teaching and learning. Nowadays, limited by the level of economic and informatization development, the digital divide is formed by the gradual widening of the information gap between different countries, regions. How to cross the digital divide and make online education available to all regions of the country has become an important issue in education research at this stage.

In addition, as the epidemic enters its middle and late stages, the domestic epidemic is still occasionally recurring on a small scale, although prevention and control has become normalized around the country. Therefore, online classes are still an indispensable educational measure at this stage. Although, online classes do ensure the completion of teaching tasks under the epidemic. However, some studies have shown that long-term online classes did not improve students' academic performance; on the contrary, students treated online classes negatively. Therefore, during the epidemic, when online classes have become the norm, there is a need for active action among students, teachers, and universities to ensure the quality of teaching and learning. This paper will discuss the challenges faced by higher education during the epidemic and suggest measures that can be taken by students, teachers, and universities respectively.

2. The Current State of Education in the Context of the Epidemic

Since the beginning of 2020, affected by the epidemic, universities nationwide have gradually opened the era of online classes. Online education is able to break through both time

The limitation of location is one of the best ways to address the distribution of educational resources and individual student differences. However, in the face of the first nationwide online class of such a large scale, most of the feedback received is that the online class experience is not good due to the lack of experience of most teachers in online teaching, the incomplete construction of the online class platform, and the lack of offline face-to-face interactive teaching authenticity.

In addition, China is a vast country, and due to geography and some historical problems, the level of development varies from region to region. The already uneven development of information technology, coupled with the digital divide in the epidemic, has had an increasingly serious impact on education with the advent of the online classroom era. This is mainly reflected in the adequacy of information hardware and equipment, access to information resources, and information literacy gaps. This has also gradually led to inequalities in education. Data show that during the epidemic, an average of 74% of students in Beijing, Shanghai, Jiangsu, and Zhejiang regions (all of which are cities with high GDP in China) have devices at home that allow for online education [1]. The survey showed that the top five constraints to large-scale online learning were slow and laggy Internet speed (59.6%), lack of terminal devices such as computers and cell phones (39.5%), shortage of equipment for recording online resources (38.7%), difficulty in the cost of online learning traffic (31.2%) and lack of basic materials for teachers to create online lessons and resource packages (30.8%) [2]. It is a great challenge for the existing education system in China to ensure that educational tasks are not left behind under the epidemic.

3. Educational Impact of New Coronary Pneumonia

3.1 Negative Immpacts

3.1.1 Students' anxiety caused by the change of teaching mode

The traditional way of education in higher education is offline teaching, however, the sudden attack of the epidemic forced the teaching mode of offline teaching to stop, and the demand for online classes emerged in large numbers. Student survey data shows that teachers and students are relatively unfamiliar with online teaching and will be used to traditional teaching. Although online education resources are abundant, teachers and students are not able to make good use of these resources. The epidemic disrupted the original teaching plan, and online education resulted in teachers not being able to know exactly the progress of students' learning, which inevitably increased students' anxiety. In addition, students lose the supervision of their teachers when studying at home as opposed to in a traditional classroom. Some students report that being in an overly comfortable environment at home plus having poor self-control can easily lead to distractions, or even having online classes on but doing other things [3].

3.1.2 Teachers' intentional powerlessness

Under the previous education model where traditional offline education was dominant, online education had not been given enough attention. Before that, teachers did not realize the need to be familiar with online education platforms and online classroom tools in advance. In addition, some traditional teachers did not have enough IT technology water assessment, and they needed to spend a lot of time to get familiar with online teaching tools. As a result, it is more difficult for teachers to teach. In addition, unlike face-to-face offline teaching, online classes lacked teacher-student interaction, and most teachers reported that they could not get immediate feedback from students about their courses. As a result, it is not possible to make timely improvements to the teaching curriculum. The quality of the course cannot be optimized.

3.1.3 The online teaching system is not functional

Incomplete educational platforms can lead to problems like unstable network, unsynchronized voice, unclear picture quality, etc., which can lead to poor teaching experience for teachers and students. The frequent occurrence of similar situations will cause students' focus on the course to plummet; over time, students will become sloppy with online courses and will look for reasons not to study well from objective technical problems. However, it is not easy to establish an online education platform with stable network, good management system and high-quality courses.

3.1.4 Educational inequality caused by the digital divide

It is important to realize that not all students can effectively adapt to online learning tools, and that some students or schools do not even have enough money to purchase learning devices. The ownership and use of learning devices by students determines the access and quality of learning for learners. However, due to the level of economic and informational development, students in different regions do not have access to the same information devices. While students in economically developed regions have immediate access to independent learning devices when "universal online classes" are launched in a hurry, students in less developed regions are unable to keep up with the pace of online education due to information lag and financial constraints. This directly led to their inability to access teaching opportunities in the face of the epidemic, raising concerns about educational equity issues.

3.2 Positive Impacts

3.2.1 Promoting the reform of China's higher education approach

The epidemic has mainly promoted a shift from offline to online education. Online education has broken the traditional time and space restrictions, and this change is actually a change in the way of education. Imagine, if the development of online classes more and more perfect, for some courses that do not need offline, online courses can save the public resources of the school, while saving the commuting time of teachers and students

In addition, catechism is a product of the Internet plus education. This platform was utilized by major universities in China during the epidemic MUOC, a networked course, is a new shift in the development of open educational resources in the field of education and a close combination of traditional teaching activities and online information technology [4]. According to the data provided by the Ministry of Education, the number of MOOC in China has exceeded 61,900 as of November 2022. China ranks first in the world in terms of the number of MOOC and the number of learners. Shanghai Jiao Tong University has announced that it will build a Chinese MOC platform with Peking University, Fudan University, Zhejiang University, Nanjing University, University of Science and Technology of China, Harbin Institute of Technology, Xi'an Jiaotong University, and Tongji University, Dalian University of Technology, and Chongqing University. With catechism as an opportunity, Chinese universities are improving the quality of teaching and learning while sharing quality courses online. These universities are the first to "test the waters" of China's teaching model reform, the first to explore the inter-university joint minor training model, and to explore and implement the "online open course" resources open to the community.

3.2.2 University research advantages to serve the major strategic needs of the country

In the fight against the epidemic, as of February 10, 287 hospitals affiliated with 123 universities and colleges of higher education and comprehensive universities holding medical education nationwide sent 7924 medical and nursing personnel to assist Wuhan and Hubei Province, and more than 350 affiliated hospitals were fully engaged in local epidemic prevention and control, becoming the vital force in the prevention and control of the new crown epidemic. [5] In the face of such a nationwide or even global epidemic, universities should take advantage of scientific research, strengthen the construction of basic disciplines and continuously export innovative talents.

4. Measures to Mitigate the Negative Impact of the Epidemic on Education

4.1 Alleviating the Digital Divide

First, reducing the cost of access to IT equipment is an effective measure to cross the digital divide and achieve equality in education. The cost of access is mainly influenced by the economic base and national policies, and the state can reduce the cost of access to IT devices through economic development and policy making. In other words, the state can make it possible for families that would otherwise be unable to provide a computer for their students at their own economic level to obtain one with the support of policies. Policies such as these could be to reduce the cost of near-access to IT tools, along with compensatory measures. One example is Singapore's Personal Computer Regeneration Program. This program offers vetted applicants the opportunity to purchase a computer for less than $300 or for free through a joint government-industry effort [6]. This also demonstrates the feasibility of a policy to reduce the cost of access to IT equipment.

4.2 Addressing Online Education Issues

Talking about about improving the quality and level of online education, the next three aspects will be from universities, teachers and students.

For universities, the first thing is to strengthen the construction of education platform. The university should build a unified, professional and stable online learning platform for students and staff. This learning platform must have the ability to access other teaching platforms and teaching software in addition to supporting students' course activities. Stability is also a point worth emphasizing to avoid lagging and dropouts during the course. Second, schools can organize professional IT technicians to create an IT department dedicated to providing technical assistance to teachers. To cope with the sudden era of online classes, some teachers who have adapted to the traditional teaching methods cannot master the operation of online education well, plus the main responsibility of teachers is still teaching and educating people. Therefore, a professional IT department can provide technical support for teachers and help with the design of online classes. In addition, schools should not schedule their online classes too tightly, considering the flexibility of online classes. Too much scheduling may cause visual fatigue among students and lead to inefficient online classes. Therefore, to facilitate student scheduling, course assignments and lengths could extend the front to a week rather than a single class. Finally, to ensure students' attendance, schools can set up a class sign-in system [7]. A technical form of sign-in-on-the-fly is recommended, with a random pop-up sign-in for all students during the course of the lesson, with a response time controlled at 1 minute, allowing 1-2 missed sign-ins depending on the total length of the lesson (taking into account unexpected events such as bathroom breaks). A certain error is allowed, so a range of values needs to be set, and the number of check-ins within this range is considered completed, and if it is lower than this specific value is considered absent.

One of the most obvious differences between online learning and traditional offline teaching is that the teacher and students are separated by space and distance. Therefore, teachers should make adjustments to address this situation. First, in a face-to-face environment, the teacher can get more intuitive feedback on the course. Therefore, teachers must pay more attention to communication with students during online classes and keep an eye on the conversation in the chat box so that they can answer students' questions when they are asked. Second, teachers can design the lessons to be more interesting and add fun to learning to draw students' attention to the class. For example, set up group discussions so that students can share their ideas with each other. Third, in order to give students a more objective grade during the online class. The teacher needs to adopt a diversified means of grading, rather than limiting it to final exam grades. The teacher can use but not limited to, for example, class quizzes, group work, student inter-assessment and group inter-assessment. Fourth, the teacher needs to set up the course pages in a clear and concise manner. Students can clearly find the course outline, class links, assignment submission links, course replay, etc. This will also reduce students' anxiety in online classes to a certain extent. Fifth, the teacher must master some basic online

classroom procedures, for example, the teacher should be able to independently open an online classroom and know the location of the chat box in order to communicate with students in the online classroom.

For students, learning attitude refers to the tendency of students to respond to learning in a more stable and selective manner, and is an internal state obtained during learning activities, consisting of three interrelated unities: cognitive, affective, and volitional factors [8]. Moreover, learning attitudes are not innate, but are acquired. Therefore, students must be aware of the importance of learning themselves and to this end correct a positive attitude toward learning. First of all, students must improve their concentration level when they are unsupervised by the instructor during online classes. Not to play with their cell phones or other things that can distract them during class [9]. And try not to study in the bedroom, which is often too relaxed and thus prevents students from concentrating on their studies. Instead, choose the study room or living room. In addition, the major difference between home study and school study is that there are no time and space constraints. It is important to plan the time. To ensure quality and quantity, students may want to set aside ten minutes each day to do their planning for the day. Divide the time spent studying according to importance and assignment submission deadlines, and follow the plan to the letter [10].

5. Conclusion

The development of education in China under the epidemic not only depends on the government to develop plans to cross the educational imbalance caused by the digital divide, but also requires the joint efforts of universities, teachers and students. Improving the quality of online classes requires schools to build stable online education platforms and provide technical assistance to teachers. It also requires teachers to be more active in enhancing interaction with students, improving course grading settings, and increasing course interest. It also requires students to improve their learning initiative and be more self-disciplined on the one hand, and to plan their time division well to adapt to the pace of online classes.

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