



Impact of COVID-19 Pandemic on Teaching and Learning

Shuai Wang*

King's College London, London, England

*karry_wangshuai@163.com

Abstract. The COVID-19 pandemic outbreak happened in 2019, which influences the economy, society and education of the society. It firstly broke out in Wuhan, China and spread widely within a few months, affecting 153 million people (Flores et al., 2021)⁴. The COVID-19 pandemic has drastically influenced our lifestyle and has significantly disrupted our society. The government has implemented many policies for the COVID-19. For instance, most individuals are forced to stay at their home due to lockdown during the serious pandemic. The COVID-19 pandemic causes several serious challenges to individuals' life and study. Especially in terms of education, teachers have to take online classes instead of face-to-face class because of the lockdown. With schools and universities being forced to shift towards remote teaching, they must adapt to new ways of teaching, learning, and interacting (Pocinho et al., 2020)⁸, which means quickly adapt to a dramatically different learning environment. This change has caused numerous challenges for both students and teachers, and it has highlighted existing inequities in access to technology and resources. Undoubtedly, the COVID-19 pandemic has resulted in a huge impact in teaching and learning according to above description. Many previous studies have explored the short-term impacts of Covid-19 pandemic on teaching and learning, such as the sudden shift to remote instruction and disruptions to the academic arrangement. There is a need to examine the positive and negative effects of the pandemic on education. Specifically, this study will begin by examining the positive impacts of the pandemic, including analyzing the rapid online learning and the resources of the pandemic on teaching and learning (i.e. student achievement, graduation rates, learning ways...). And it will then examine the negative efforts of the pandemic on existing educational inequalities, including disparities in access to technology and resources. Finally, it will look for some strategies of teaching and learning in the COVID-19 pandemic, discussing differences and similarities linked with the positive and negative impacts. This paper provides a comprehensive review of the literature on the impact of COVID-19 on teaching and learning. There are three positive impacts linked with this issue, which is the different implications for student engagement and motivation, not being limited by place and time, as well as the multiple choices in teaching and learning. Despite of three positive impact, there are also three negative impacts on teaching and learning during the COVID-19 pandemic, which is the imbalance of educational resources, disrupting standardized test or university admissions and the deterioration in quality of

study. Some corresponding strategies are mentioned in my study, including allocating resources wisely, standardizing the examination system and changing the teaching methods. The purpose of this study is to identify the positive impact and the negative impact on teaching and learning during the COVID-19 pandemic.

Keywords: Online Teaching and learning, COVID-19 pandemic, Strategies

1 Introduction

This article examines the impact of the COVID-19 pandemic on the field of education, specifically focusing on teaching and learning. The article highlights the formidable challenges posed by COVID-19 in this sector, such as the abrupt transition to remote learning for schools and universities, necessitating students and teachers to adapt to novel methods of instruction, assimilation, and interaction. Furthermore, it addresses how COVID-19 exacerbates disparities in access to educational resources and technology. Subsequently, it delves into the positive repercussions of COVID-19 on teaching and learning processes, including heightened student engagement and motivation levels due to innovative approaches employed during this crisis period that transcend geographical limitations and time constraints while offering diverse pedagogical options. Lastly, the article proposes various strategies for educators to cope with COVID-19's impact on teaching and learning practices through resource allocation optimization, standardized examination systems implementation, as well as modifications in instructional methodologies.

2 Positive Impacts

2.1 Motivating Students' Engagement

Students' engagement in traditional learning is different from online learning. Traditional learning requires students to take face-to face class. Online learning allow students to maximize their involvement in the classroom. It replaces offline courses and provides students and teachers with a novel communication format. It is a great changes for students to find motivations to participate in online course discussions. Students can stimulate their engagement through vigorous discussion. For students, they can use online resources to engage in online discussions since they can explore relevant knowledge related to a specific course. Generally, online learning can significantly stimulate student engagement changing in teaching patterns during the COVID-19 pandemic.

2.2 The Removal of the Place Constraints and Time

Due to the COVID-19 pandemic, teaching methods have drastically changed from offline to online. In terms of place constraints, learning online can guarantee students not being infected by COVID-19 pandemic without taking offline courses, which means

that students can continuously learn not be limited by places (Asghar, 2021)¹. Specifically, Regarding international students (i.e. Chinese students), universities can offer online courses in the context of student not being allowed to leave China because of the COVID-19 policy. Students can learn the international courses from famous universities. Regarding time constraints, students have classes according to their plan. Additionally, recorded online lessons and lectures enable students to review materials, which can improve their learning retention, understanding and performance. In this context, it is more inclusive for students with different needs of learning styles. For some online courses, students have the flexibility to adjust their progress according to their own schedule. Overall, online learning allows students take courses not limited by time and place, and they have the flexibility to arrange their own time for some recorded online lessons during the COVID-19 pandemic.

2.3 Improving Students' Independence and Innovation

In terms of independence, the shift to remote learning has provided students with greater flexibility in planned schedules, which can arrange personal time freely and improve students' independence (Huguet et al., 2021)⁵. This has motivated students to discover and develop new talents and skills, thus enhancing their confidence which is important to develop their independence. As the pandemic has disrupted daily routines, students have more time to reflect on their future goals and aspirations. This means they can motivate them to work harder and put more efforts into their studies. Regarding students' innovation, the technologies related to online learning have provided new opportunities with students to mutually communicate and collaborate, thus promoting their innovation while learning online. The pandemic has also provided opportunities for students to develop much resilience and adaptability skills as they navigate through challenging circumstances. Recognizing these benefits can increasingly provide students, teachers, and school systems for independence and innovation, which can foster a more positive approach to education.

3 Negative Impacts

3.1 The Imbalance of Educational Resources

Since online learning greatly depends on technology support, the lack of electronic equipment in some developing countries leads to inequality in educational resources. For instance, students from low-income families suffer the imbalance as they do not have the access to technology devices and internet connectivity. During the COVID-19 pandemic, learning depends on the availability of information and communication technologies. However, in some areas, students have limited, non-existent or slow internet connections, which lead to render time online frustrating and less effective. Additionally, some students have access to the same quality of digital devices (i.e. computers, tablets, and smartphones) to enable them to participate in learning. Furthermore, students with learning differences, disabilities or mental health challenges may require additional support to enable them to meet their educational goals. The virtual teaching

and learning environment during the COVID-19 pandemic can lead to the inability or inadequate delivery of special education services as this techniques may not always align with the specific needs of students with learning differences, disabilities or mental health challenges (Li et al., 2021)⁶. Overall, the COVID-19 pandemic has further exposed disparities and imbalances in access to educational resources. Consequently, it has become essential to ensure equal access to technology and digital resources for students, especially those marginalized and under-served communities, which can eliminate the imbalance and ensure that all learners have the opportunity to realize their full potential through quality education access.

3.2 The Disruption of Traditional Test and University Admissions

The COVID-19 pandemic has caused a serious disruption to standardized tests and university admissions. Regarding the traditional test, with the test centers closed or exams canceled (Sunder et al., 2020)¹⁰, students have been forced to endure extended waiting times for their scores or risk their health by attending crowded testing centers. Additionally, the shift towards online testing has created new complications such as technical glitches and the possibility of students cheating (Sunder et al., 2020)¹⁰. Moreover, changes in university admissions policies have led to confusion and uncertainty for both prospective students and universities. Many universities have moved to a test-optional admissions process, meaning that students can choose whether or not to submit their SAT or ACT scores. This shift has been welcomed by some as an opportunity to level the playing field for students who cannot afford test prep courses or who do not have access to testing centers, while others worry that it might these students who have prepared and done well on these tests. Overall, the pandemic has disrupted the traditional test in higher education and university admissions.

3.3 The Decline in Study Quality

In the context of Covid-19 pandemic, the quality of teaching and learning has been impacted since online learning has become a main education platform. The sudden shift towards online learning has come with numerous disadvantages, which have led to the deterioration in the study quality being provided (Bader, 2021)². Firstly, online learning lacks the physical interaction, which hinders student engagement and decreases learning efficiency. While implementing online learning, courses impose distorting challenges to students' attention and cognitive abilities with the ease of distractions in their environment. Secondly, the technological disparities of students also affect the study quality. Compared to students living in developing areas, students who live in developed areas have sufficient access to the required devices related to online learning. This difference results in students living in developing areas suffering difficulties in participating in class and accessing learning materials when they learn online. Overall, the COVID-19 pandemic has significantly impacted the study quality, which lead to a deterioration of the study in teaching and learning. The drastic changes in methods, the inconsistency in delivery materials and student engagement have adversely affected the academic progress of many students.

4 Corresponding Strategies

4.1 Allocating Resources Reasonably

Reasonably allocating resources of teaching and online learning can mitigate the imbalance of learning resources. To allocate these resources reasonably, institutions can invest in technology to ensure that students, specifically in developing areas, gain sufficient access to relevant devices. For instance, institutions can distribute laptops or tablets and Wi-Fi dongles to students who lack access to these resources. Schools should provide training for individuals to upgrade their technical skills, which can enhance teaching atmosphere. The training would enable the people to modify their teaching approaches, choose appropriate technologies and provide more effective feedback to students. Institutions can employ hybrid learning models to function on mixed delivery methods that combine classroom and virtual learning. This will enable students to interact with people at the same time, regardless of location and reinforce their learning through virtual learning. Furthermore, teachers can work towards producing consolidated learning materials and let most students use this materials during online learning. These learning resources would comprise lectures, readings, and assignments that can be accessed remotely, which is easier for students to access the resources (Dong et al., 2021)³. Investing in technology for students, training for teachers, hybrid learning models and consolidated learning materials will result in a more effective educational process, which will make online learning accessible to all students regardless of the circumstances.

4.2 Standardizing the Examination System

Standardizing the examination system can effectively solve the the disruption of traditional test. For instance, institutions can establish a standard online examination platform and make all students use. The standardized platform should ensure that students are exposed to the same examination setup and provide an unbiased examination process. Specifically, the examination questions should be reasonable and accurately represent the teaching materials. The teachers should communicate effectively and ensure that the questions represent the entirety of the material covered in class. Institutions should employ plagiarism detection software to ascertain that students do not indulge in the use of external aids during the examinations such as copying from other students. Furthermore, teachers could use video conferencing tools such as Zoom and Skype to monitor students remotely during the examination process to prevent malpractice (Nikou, 2021)⁷. Video monitoring would be used by teachers to ensure that students work independently and remain focused throughout the examination process. Institutions should brief students about the importance of academic integrity, the examination procedures and expectations. By conforming to standard online examination platforms, using plagiarism detection tools, employing video monitoring technology and communicating effectively, teachers can maintain ease general worries about challenges to the fairness of online exams (Samsonova, 2020)⁹. These solutions will ensure the system is fair to students and upholds academic integrity.

4.3 Changing Teaching Methods

To adjust teaching for quality teaching and learning during the COVID-19 pandemic, it is necessary to change teaching methods. The shift towards using technology will significantly improve teaching methods during the pandemic. Interactive learning tools can be employed to engage students in learning activities. This could include the use of quiz games or online interactive assignments to improve student engagement. Institutions may consider creating specialized online discussion forums for students to discuss their thoughts, queries and learning from others. This would enable students to feel engaged in significant virtual learning communities despite remotely studying. Furthermore, blended learning solutions could be implemented to allow online and offline classroom activities to be combined to create a hybrid learning experience that fosters student interaction with their peers and strengthens their connection to the course material (Vijay, 2020)¹¹. Teachers could provide additional instructional support outside of class hours through easily accessible online office hours, virtual teaching assistants (TAs) or additional learning resources. Improving online learning experiences creates the opportunity to offer effective learning to a wide range of students. Overall, virtual and interactive learning tools, online communities, blended learning model-sand instructional support offer solutions to mitigate the challenges faced by the traditional teaching methods.

5 Conclusion

The COVID-19 pandemic began in 2019, which influences the education of the world. As a result, many individuals are forced to stay at their home because of the lockdown during the serious pandemic. Schools and universities are forced to shift towards online teaching. In this context, the pandemic brings many changes for both teachers and students. Three positive and three negative effects of the pandemic on education are researched by this study. This study also gives three corresponding strategies.

Regarding the positive effects, the pandemic can motivate students' engagement as the shift to online learning. It provides students and teachers with a novel communication format and vigorous discussion. Furthermore, the shift to online teaching and learning can remove the place constraints and time. During the COVID-19 pandemic, learning online can guarantee students not being infected by the pandemic. Because of the pandemic policy, students are not being allowed to leave China, thus universities offer online courses to keep the teaching arrangement. The online courses are recorded by the school, which enable students to review materials. Moreover, this shift can improve students' independence and innovation. Specifically, it has provided students with greater flexibility in planned schedules. It is beneficial for students to improve their independence. The technologies used in online learning have provided new opportunities with students to mutually communicate and collaborate, thus promoting their innovation during the pandemic.

In terms of the negative impacts, online learning causes the imbalance of educational resources. Specifically, the lack of electronic equipment in some developing countries is unequal in educational resources. The online teaching and learning during the

COVID-19 pandemic causes the inability or inadequate delivery of special education services as this pattern may not always align with the specific needs of students with learning differences, disabilities or mental health challenges. Furthermore, the teaching and learning during the pandemic can disrupt of traditional test and university admissions. In this context, students have been forced to endure extended waiting times for their scores as the test center closed. Many universities have changed to a test-optional admissions process, thus students can choose whether or not to submit their scores. Moreover, this change will decline the study quality during the pandemic on teaching and learning. Because of the lack of physical interaction, online learning hinders student engagement and decreases learning efficiency. Compared with the students in developing areas, students who live in developed areas have sufficient access to the required devices related to online learning.

In order to solve the negative effects above, the government should allocate resources reasonably. For instance, institutions can invest in technology to ensure that students, specifically in developing areas, gain sufficient access to advanced devices. For avoiding the disruption of traditional test and university admissions, universities can standardize the examination system. Institutions can establish a standard online examination platform and make all students use. And teachers could use video conferencing tools to monitor students remotely during the examination process. They can also change teaching methods, meaning that they can use quiz games or online interactive assignments to improve students' engagement and provide additional instructional support outside of class hours through easily accessible online office hours, virtual teaching assistants (TAs) or additional learning resources. They can use virtual and interactive learning tools, online communities, blended learning model and instructional support to keep the study quality. Overall, teaching and learning have both advantages and disadvantages mentioned from this study and all of this points have the corresponding solution during the pandemic.

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