

# How Much Impact Does the COVID-19 Epidemic Have on the Third-grade Students in Senior High School?

## -- A Comparative Study of Senior Students from China and the United States

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### Abstract

Covid-19 has greatly affected everyone around the globe and schools are no different. Since its emergence in December 2019, the whole world has witnessed a number of changes in a trial to curb its spread and eventual deaths caused by the virus. The education sector was specifically affected by the pandemic and there have been various changes in teaching arrangements since while there had to be an extensive closure of schools, institutions had to find ways of keeping the education calendar rolling. In both China and The USA, senior students had to keep on learning after sometime through online courses which ensured conducive adjustment in line with the pandemic. Mode of teaching meant that students had to spend a portion of their time on screens in order to catch up with the syllabus. Impacts included increased pressure as most teachers had to be swift with their programs as they had lagged behind during the few months of total shutdown. And as studies have shown, there are a number of positive and negative impacts of online learning on students' academic achievements.

### Keywords

Novel coronavirus pneumonia epidemic; Senior students; Teaching mode; Psychological pressure; Academic achievement

### 1. Introduction

Against the backdrop of the COVID-19 epidemic, schools at all levels in China have responded to the call to "stop classes and stay in school" by adopting online teaching as the main teaching method during the epidemic. This phenomenon is unprecedented. The popularity of the domestic network education using first is attributed to the rapid development of computer technology and network teaching. Followed by the school promptly to carry out the emergency response measures, organize the teacher prepares a lesson in class, and access timely application equipment to complete the course. Under the combined effect of many forces, the online classroom directly replaced the traditional classroom during the epidemic in China. Around the same time in the United States, in February 2020, schools at all levels began preparing for the potential impact of the COVID-19 epidemic on their communities. As the epidemic worsens in the United States, many schools have been forced to stop face-to-face teaching and start online classes to cut the spread of the virus. Compared with China, online education in the United States has a relatively early start and a complete system. However, in the context of the COVID-19 epidemic, online courses in the United States have encountered

some problems. Therefore, under such a big change, it is meaningful to compare the obstacles encountered in promoting online courses in China and the United States.

## 2. Literature Review

In this literature study, a literature search got conducted on cnKI, CNKI Research, Wanfang Database with "High school Online classroom during COVID-19" and " Psychological status of high school students" as the keywords. Relevant studies have been conducted since the initial development of the epidemic. It was not until the later period of the epidemic that there was relevant literature on students' study effect and psychological state in online classes. It is seen from the research on online classroom in the context of the COVID-19 epidemic has started very early, but the research on this stage is still in its infancy. In sorting out relevant literature and comparing the presentation of various data, the learning effect of students in online classes can be summarized in two aspects:

### 2.1. Degree of Limitation of Network Teaching Mode

Liu Lin et al. (2020) point out three points. First, because the Internet is rarely used for teaching in our country, this new form has been adopted in haste, making it impossible for teachers and students to adapt quickly to the teaching mode of online courses. Second, many teachers were forced to adopt the old "teacher speaks, students listen" mode during the epidemic period due to technology limitations and other conditions. This mode makes the interaction between teachers and students in class poor, and the communication is not timely, so the students will gradually become boring. Thirdly, there are also some problems with the practice test teaching mode. In the network classroom, the mass release of papers exercises so that the students learning process into the process of understanding the problem. At the same time, due to the lack of an invigilation mechanism, students' test results can not truly reflect their learning level to some extent. Yang Fei (2020) put forward some new ideas. In her paper, she pointed out that there was a lack of overall planning in the classroom during the epidemic, and teachers paid more attention to the knowledge rather than students' thinking process. At the same time, some teachers may drag classes or lack communication with students in online classes. She stressed that many of the problems in offline classrooms had been exacerbated in online classrooms. In addition, Shi Shenglei (2020) also proposed that online teaching requires the self-discipline of students and the cooperation of parents. Having a good family atmosphere is one of the keys to help students improve their learning effect.

### 2.2. Psychological Status of Students in the Context of the Epidemic

Dai Xiaorong et al., in their paper (2020), focused on the psychological status and source of stress of the candidates in the third year of high school. Most students are depressed and anxious when facing the college entrance examination. At the same time, according to their statistics, the level of stress and depression of students during the epidemic period was significantly higher than during the normal class period. The incidence of stress, anxiety, and depression showed an increasing trend with the rise of grade. Wang Huan and other authors mentioned that students' psychological state in the third year of high school is a great issue that needs to be paid close attention to due to factors such as college entrance examination, study, and epidemic situation, family and society. Therefore, it is suggested that schools and relevant departments should take care of students in grade three of high school, and make targeted psychological counseling and intervention for students, so as to alleviate their academic pressure and college entrance examination pressure, and reduce the impact of the epidemic on students' academic performance. Guo Suwan (2020), the chief physician of the Medical Psychology Department of Nanjing Brain Hospital, emphasized the anxiety state in the online courses of high school students and specific ways to relieve anxiety. The college entrance

examination has always been a source of great pressure for students. Today, the COVID-19 epidemic has aggravated the uncertainty of personal safety and exam arrangements, making many senior high school students face these uncontrollable uncertainties in addition to the heavy academic burden. In addition to students' psychological burden due to their studies and examinations, the quality of the family atmosphere at home is also an important factor affecting students' psychological state. In this regard, Chen Suyi (2020) pointed out the reality and difficulties of family education in the context of COVID-19. Her analysis shows that in many family education, parents only focus on student's achievement and lack in-depth communication. At the same time, some parents are not good at communicating with high school students, which has shaken their confidence in family education. All these phenomena affected the psychology of the students who were experiencing the epidemic.

Like high school students in China taking online courses due to the epidemic, high school students in the United States face great mental and physical hardships. In a report in The Boston News, many students have lost family members to COVID-19, and students have developed feelings of anxiety, depression and isolation. In the Data of the United States, the real-time education policy published by the government is worth exploring. In the document, the Government requires schools to provide key services and courses for students, including their social-emotional, behavioural and mental health, to help reduce the health gap. Special education services, after-school programmes and mental health services are also provided for students in need. School staff, including school nurses, psychologists, therapists and others, were asked to develop plans to consider allowing them to hold virtual meetings instead of face-to-face school visits. As far as school extracurricular activities are concerned, virtual activities are required as far as possible to replace field trips, student gatherings, special performances, school-wide parent meetings and spirit nights. In this document, many contents describe the mental health problems and countermeasures of the school staff, students and parents, which shows the importance the United States attaches to the mental health of all those involved in the implementation of educational measures during the epidemic period. Gonzalez (2020) et al. described the psychological state of American students in the paper. In the current epidemic situation, students can find many motivations and rewards by themselves and continue to work. Comprehensive online course teaching is a new state, so students don't have any previous experience to refer to in the learning process. Without any previous reference, students need to be confident to follow the course correctly and keep learning to avoid missing any important content. Another explanation is that they are afraid of missing the school year, so they will try harder to overcome any difficulties during the closed period of the epidemic.

### **2.3. The Homework Quality and Academic Performance of Students During the Online Courses**

In their written paper, Li Yan et al. (2020) established that learners with pass grades vary less than the ones with lower grades within the pandemic. Thus the underlying value got related directly to the anxiety value of the learners. Mahons and his colleagues (2020) articulated in their article that since the pandemic results in isolation at homes, the work and rest of students are not regularly based on the school setting. The majority of learners contain biological disorder clocks that influence them to low efficiency of learning. Accordingly, Liu Jianliang et al. (2020) tallied the learners and established the evaluation for the overall impact for the online education; they related that one-third of the learners got a great satisfaction whereas half of them got much more satisfaction. That showcase that major learners may maintain with them, achieve stable grades, and advance their learning through online classes. According to Dai Xiaorong et al. (2020), it is found that approximately 50% of learners deem that the epidemic had a great influence, and some of the learners were in a status of excellent learning. Comparatively, when the state of the students is lower, the pressure would also follow the same

path. In the context of the quality of the homework, it is depicted that more than half for statistics through the Zhang Li (2020) learners can accomplish their homework timely, and the amount of learners who could undertake the initiative to assess within class again is responsible for the majority.

### 3. Research and Design

#### 3.1. Research Issues

In both the United States and China, the underlying study focused on three major concerns. Within the epidemic, the variation amidst the modes of online teaching in the United States and China were related (live broadcast, online group discussion, recording, interaction and question answering, and teacher guidance). For the measure of psychological, the Self-rating Scale of Anxiety (SAS) got utilized for both students in U.S and China. Also, students in both cases were asked to engage in single-factor analysis and t-test, which showed that most Chinese students had anxieties related to the U.S. For the academic results (quality of job), Chinese used evaluation of the academic performance to assess the quality of course contents, teaching quality and construction. The U.S focused on quality of experiences on external reviews like the Quality matters, which aimed at the construction of the course alone.

#### 3.2. Research Methods

**Table 1** Tools of research

Dimensions	Number of titles
Online Learning	1, 2, 3, 4
Mode Learning Online	1, 5, 7
Interaction Learning	1, 5, 7
Anxiety	

#### 3.3. Study Jects

**Table 2** The rate of recovery, and the number of valid questionnaires.

Source of student	Gender	Achievement Dissemination
USA	73 female students and 80 male students	Medium (58); general 32%, better (10%)
China	80 female students and 82 male students	Medium (60%); general 30%, better (10%)

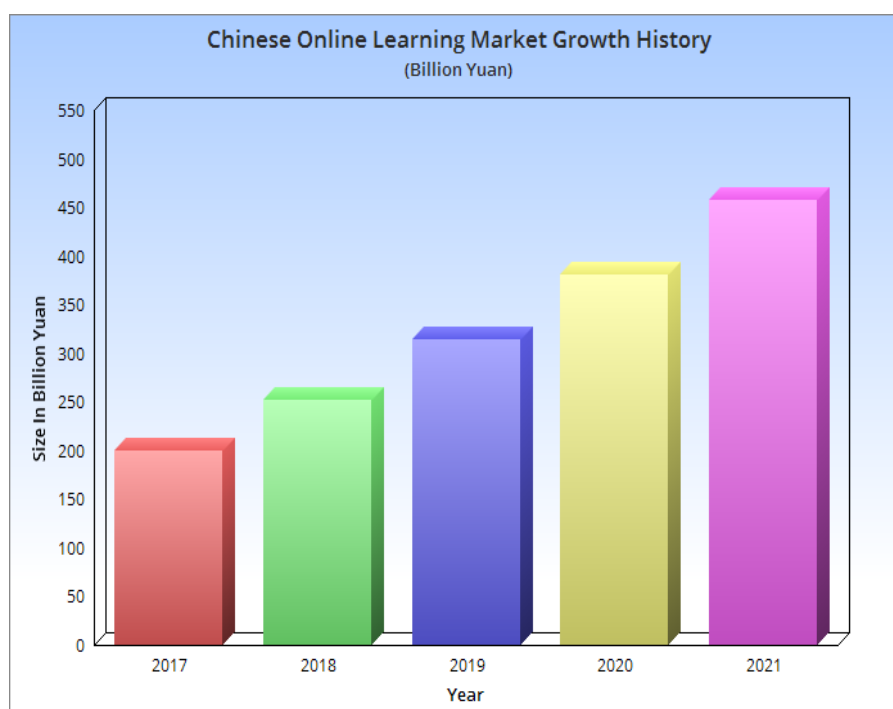
### 4. Data analysis and Discovery

#### 4.1. Mode of Teaching

The modes of teaching compose mainly; recording, live, teaching guidance-coaching, panel, online discussion, interactive and question answering techniques. The situation in the United States and China differed significantly, and it had some relative differences. Distance or online learning have greatly facilitated the process of learning within higher learning for several years; however, during the pandemic, it has acquired quite more significance, and its effectiveness has been established tremendously. For instance, prior to the pandemic, 7 of 20 million students in the United States were involved in distance learning for the third grade profession, whereas in China, approximately 45 million learners had enrolled in online education, as shown in Figure 1. (Yang et al., 2020). However, the case has greatly changed where each of the nations has seen

more than 90% transition to online to counter the impacts of the COVID-19 pandemic (Yao et al., 2020).

Learning Institutions in the United States pledge to a commercial product in their management of learning as more than 92% of this institution (more than 3 000 markets) is managed through live teaching, recording, canvas, panel, online discussion, and teacher guidance-guidance as they desire to learn (Yang et al., 2020). In China, most online efforts seem to be established on the MOOC network, which is made available for the learners and not probably not pledging to the commercial podiums for the persons to use. The platforms used in China include; live broadcast, panel, recording, online group discussion, and teacher guidance (Zhao et al., 2020). Ideally, the two full and most established online courses within the United States include; Quality Mattes and the Blackboard, which are not the leaders of this area in China.



**Figure 1.** Chinese online learning market growth history

Comparatively, the experiences of online teaching got discussed between one American and two Chinese professors. The models of online learning like the ongoing evaluation program, demand-driven learning model, information content, outcome, improvement and adaptation were all related critically. For the United States, the desire to learn platform is used while a self-developed platform is utilized for the Chinese country (Zhao et al., 2020). For both, countries students receive notices, receive and submit assignments, engage in board discussion, and communicate through group online.

The experiences of instructors in the U.S is associated with the iterations of desire to learn and blackboards platforms. In that case, they have formulated D2L for its learning institutions (. The major user's fortis case contain; distance education personals, supervising teachers, students and teacher's assistance. However, the Chinese applied self-developed management and online teaching platform where the users composed learning centre administrators, educational administrators, school administrators, teachers and students. Both the tools of learning provides optimum needs and experiences for the students. Students participate in an online discussion, receive and send assignments and communicate with the other students and their educators. For example, one of the features provided by the platform in China is enabling



submit the details of graduation. For the case of the U.S, that got accomplished through external software from the platform.

The two countries embraced the significance of course evaluations online. That did not involve student evaluation but rather the evaluation of the course content and design. The firms had alternatives for the terms of external and internal review by considering the commercial issues. The U.S experiences involved an external review for the external review within the Quality matters, which focused on the quality of the contents and course as shown in the section of academic performance.

#### **4.2. Psychological Stress**

Researchers presumed negative relations amidst the independent variable that is psychological distress among the students within online learning. For the measure of psychological, the Self-rating Scale of Anxiety (SAS) got utilized for both students in U.S and China. Students in both cases were asked to engage in single-factor analysis and t-test, which showed that most Chinese students had anxieties. Comparatively, it got established that female students had more anxiety and those students from a high school status had more psychological distresses.

#### **4.3. Academic Performance**

The academic performance composes the quality of operations within the tools used, contents and different types of the courses offered; for instance, in Chinese, the evaluation of the academic performance composed of assessing the quality of course contents, teaching quality and construction (Zhou et al., 2020). The U.S focused on quality matters on the experiences of external reviews like the Quality matters, which aimed at the construction of the course alone. Based on course contents and construction, the evaluation team contained the educational experts of technology who conducted a significant evaluation of technicality (Zhou et al., 2020). Courses get released online after a comprehensive mandatory evaluation. At the accomplishment of the underlying course by students, they are offered an alternative to complete a survey concerning the instructor and the course. That offered an additional segment for the instructor to promote their course via the feedback of the learners.

### **5. Research Conclusion and Discussion**

There was a single distinct area where the platform of China has shown superiority; that is, the single podium of learners to submit all jobs. For the U.S platform, learners were supposed to utilize an external platform for the submission of assignment. Nonetheless, most advanced tools administrators for course present in the U.S examples would offer the more seasoned educators a greater control level. Uninterestingly, it would be subjective for instructors' consensus for each platform, as there were variations for the experiences, access site and speed on the internet, which could impact decisions.

Accordingly, whenever considering the diversity of certificates, specifically, the third grade certificate, the offering within the United States was significantly significant to the highschools in China (Chen et al., 2020). That is particularly an area to consider for future research since it is presently unknown why the Chinese compose graduation programs. Seemingly, that is concerned with how the senior operating students fully enrol through online learning. One of the major variations amidst the fully on the programs got limitations for the employed learners (Sun et al., 2020). That is a substantial variation on how major third grade highschools in the U.S provided online learning. For the quality performance, evaluation within the U.S opts for external reviews, which depicted the robust experience of reviews making the students pass. The evaluation for the Chinese involved a matter for experts with greater distinction. For both cases, the evaluation of performance was mandatory. In the psychological distress during the pandemic, it got related that it prevailed particularly for the females as opposed to males. The

digital gadgets were tiresome for the learners to use. According to Sun et al. (2020), it is related that most students in China had anxieties, as was shown by the Anxiety Scale (SAS) as opposed to the U.S students Sun.

For the case scenario shared, it is seen that all the institutions engaged in capable serving during this COVID-19 pandemic era within their online programs and aimed at the targeted population of students. Whether the offerings online were streamlined or diverse, provided that the institutions and student need were achieved, neither would be seen as utterly superior. The third grade high schools in the U.S appear major load online to its respective institution's significant program and respective student. These two countries embrace online learning via diverse models, but they seem to serve the same roles effectively.

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## Appendix

X Data	Y Data
2017	200.26
2018	251.76
2019	313.36
2020	380.74

Data on Chinese Online learning market.