

# Online Teaching at Peking University during Covid-19

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Abstract: Online teaching was supposed to be an auxiliary method of Peking University teaching, but in the special period of the covid-19 outbreak, online teaching has become the main teaching method of colleges and universities for the moment. It is imperative that universities and colleges train teachers in conducting online education within a short period of time, ensure the success of online teaching under unprecedented pressures and challenges, enable online teaching to play the role of conventional teaching, plan for the seamless transition from online teaching to conventional teaching after the end of the pandemic, and foster the sustainable development of online teaching.

Keywords: online teaching, Covid-19 Pandemic, teaching and learning

Online teaching was supposed to be an auxiliary method of Peking University teaching, but in the special period of the covid-19 outbreak, online teaching has become the main teaching method of Peking Universities for the moment. It is imperative that Peking University train teachers in conducting online education within a short period of time, ensure the success of online teaching under unprecedented pressures and challenges.

## 1. A variety of online teaching approaches adopted

On January 30, Peking University set up a teaching work leading group headed by President during the covid-19, established a task force of teaching affairs and lectures composed of the teaching affairs office and technical support departments, and held a university-wide conference on teaching work to convey the implementation plan and arrangements of online teaching. *The Implementation Plan of Peking University during the Pandemic Prevention and Control in the Spring Semester of 2020* (University, Peking University news, 2020) makes it clear that teachers can choose multiple online teaching platforms. Taking into account the distinctive characteristics of various courses offered by different departments and schools, the acceptability of varied online platforms to teachers, the sudden increase in the Internet traffic, and the different electronic devices and Internet access conditions of teachers and students across the country and around the world, PKU offered “5 + N” modes of online lectures, including live-streamed lectures, pre-recorded lectures, MOOCs, webinars, and studio lectures. Additionally, online education can be done through video conferencing, email communication and WeChat groups, providing students with learning materials, tips and guidance as well as all types of interactive education. PKU requires teachers to announce the disciplinary requirements of online lectures and the methods for appraising students’ learning, use the public curriculum service platforms inside and outside PKU to conduct online teaching, organize online discussions, answer questions and provide mentoring, assign homework, and conduct online tests and other learning assessment. Teachers are also required to establish a coordinated mechanism with the

online platforms to ensure the quality of teaching, make full use of the data of learning behavior analysis to keep abreast of the online learning results of students. What's more, teachers should accelerate the development of sufficient online test questions that are distinctive and highly representative so as to help students with online learning and improve their motivation and difficulty of the curriculum.

On February 17, the first batch of universities and colleges in China started to offer online courses as scheduled. According to the research of the China Education and Research Network (CERNET, 2020), many universities and colleges began to coordinate the resources several weeks in advance to make sure the first online courses can run smoothly. Shanghai Jiaotong University conducts online teaching through four modes, namely, live-streamed lectures, pre-recorded lectures, MOOCs, and webinars. Xi'an Jiaotong University adopts the combination of online and offline education, and provides two teaching programs that respectively rely on live-streamed courses + on-demand courses at third-party platforms, and synchronous live-streamed courses + on-demand courses in live classrooms. In addition to developing 138 online courses, Chongqing University also provides more than 4,000 shared courses for teachers and students to select. The survey on online teaching shows that huge video traffic is the biggest challenge to all the online teaching platforms during the pandemic. At the beginning of this semester, nearly every online teaching platform went down from now and then, making students' complaint about them trending on social media. During the first two weeks, some teachers and students complained about and criticized the instability of the platforms. Practice has shown that adopting diverse online teaching methods is an effective way to address this problem.

The most suitable mode(s) can be chosen for each course in Peking University, while in many cases several modes are adopted in parallel for one course. In reality, most undergraduate courses are given in the live-streamed mode, accounting for 50% of the total, while the webinars, the pre-recorded lectures, and the MOOCs account for 23%, 19% and 7% respectively. As most postgraduate courses are taught in smaller-sized classes, online teaching modes can be more diverse, mainly focusing on live-streamed courses and webinars. Taking into account the nature, contents, teacher-student interactions and exchanges, around 25% of the courses adopt two or more modes, and comprehensive use of multiple modes prove to be conducive to better learning.

## **2. Serving teachers and students for online teaching**

The pandemic may bring a new education revolution featuring Internet + education, but is online teaching a kind of education in the real sense? "There is no student in front of you, but the students seem to be everywhere." Inability to have face-to-face communication and lack of interaction are difficulties that distinguish online teaching from conventional classroom instruction.

### **2.1 Feedback from teachers and students**

In Peking University, (University, online teaching report in Peking University, 2020) three quarters of teachers have online experience before this semester, 84.2% of them have participated in the online teaching training of Center for Excellent Teaching and Learning, and 88.7% of them think the training is of great help. More than half of the

students have online learning experience before. More than three-quarters of students have not changed the number of courses they choose because of online teaching. This semester, 16% of the students reduced the number of courses selected, mainly one. Only 6.4% of the students increased the number of courses, and most of them increased one course. More than four fifths of teachers and students think that online teaching is "over expected" or "equivalent to expectation". In the report, more than half of the teachers who adopted the combination of online and offline teaching, want to adopt the live streamed lectures mode after the pandemic is over. 47% of the students think that online teaching can only be used as a temporary alternative to offline teaching; 36% of the students think that online teaching can be used as an auxiliary means of offline teaching, combined with offline teaching; only 13% of the students think that online teaching can completely replace offline teaching. 49% of teachers think that online teaching can only be used as a temporary alternative to offline teaching, or offline teaching should be adopted; 39% of teachers think that online teaching can be used as an auxiliary means of offline teaching, combined with offline teaching; only less than 10% of old teachers think that online teaching can completely replace offline teaching.

## 2.2 Design for students' independent learning

Online teaching provides a good opportunity to promote students' independent learning. So when designing the courses, Professor Mu Liangzhu from School of Physics of PKU said, teachers can reduce "teaching" activities and maximize students' "learning" initiative, seizing the opportunity to change the interaction between teaching and learning and motivate students to learn. More than 50% teachers in PKU prefer live-streamed lectures, and create conditions to help students learn independently in order to improve the effectiveness of online teaching. Professor Jiang Guohua of PKU believes that the quality of the coursework and class presentation of the three-week course Financial Statement Analysis has been greatly improved compared with the previous years. What's more, the education mode of no face-to-face interaction between teachers and students can also pressure students to spend more time and energy on learning. Wu Jiewei, teacher of the School of Foreign Languages, described, "Whenever I pose a question, many answers would pop up in the chat box. I even had to tell my students to stop answering questions for the moment. This is something I've never experienced in the offline teaching." (Professors, 2020) Speaking of students' attention, some teachers believe it is easier for students to concentrate in front of a computer screen than in a large classroom. Students' independence and self-discipline is very important in online courses, and teachers must be able to motivate students to learn by using exquisite instructional design to involve students in the learning activities and teach them how to enjoy the fun of learning.

## 2.3 Cultivating the technological literacy of teachers and students

Online teaching has changed the mode of education and locations of teaching activities, but the quality of the lectures remains unchanged. Students of Yenching Academy of PKU come from over 40 countries and regions around the world. After returning to her

home in Pennsylvania, Savannah is trying to adjust her schedule to stay focused at night (local time) and actively participate in class discussions. Teaching assistant Federico Verly in Buenos Aires, Argentina, turns on his laptop fifteen minutes before the lecture, logs into the video conferencing platform Zoom, uploads course materials to the Canvas platform, and starts organizing online discussions. Professor Xu Defeng of Law School teaches two courses on the “Tencent Meeting” platform in the form of live-streamed courses, puts the backup on the PKU platform ClassIn, and records his lectures on the bilibili (University, Learning across the World! Online Teaching Solutions of Peking University, 2020) platform familiar to students. Wu Yuechen, Student of the Department of History, takes most of the lectures in the form of online live streaming + offline discussion. She said, “With the live streaming, I can go back to the parts I find difficult to comprehend and try to learn repeatedly. I don’t need to worry about failing to keep up with the teachers when taking notes.” Student Naren Dalai believes that although he found it hard to adapt to these platforms at the beginning, he started to enjoy the charm of the choice of online learning after trying this mode these days. Before the pandemic, the only mode was to take lectures at classrooms. Online learning in midst of the pandemic is quite challenging for students, as different courses are taught in different methods or even on different online teaching platforms. Getting familiar with all these will produce some additional “cognitive burden”. Students have to cultivate their literacy in IT so that they can adapt to various requirements quickly. (xiaoming, 2020)

#### 2.4 Timely information feedback and case sharing

To solve the technical problems of online teaching, it is necessary not only to increase the memory, hard disk, server, and bandwidth of the online platforms and to equip teachers and students with better computers or mobile phones, but also to study how to handle the correlation between teaching and technical issues. PKU has collected and put together good teaching examples and experience from multiple departments and schools, releasing the information on the WeChat account on the one hand, and incorporating them into training sessions to organize experience sharing and discussions on the other hand. Student Union of the School of Economics delivered a 34-page survey report on the online teaching within two weeks, collecting students’ opinions and suggestions on various methods, teaching effectiveness, and learning experience of online lectures, and analyzing and processing the data to draw corresponding conclusions and recommendations.

### 3. Sustainable Development of Online Teaching

Online teaching should transition from the role of contingency plan to a more regular teaching method. Its goal is not only to achieve effect equal to offline teaching, but also to study its prospects of sustainable development.

#### 3.1 From the analysis of online teaching to Education Big Data Research

In Peking University, Education Big Data Research Project is initiated in May. From February 2020, 30 million students in more than 2,600 universities and colleges in China have to complete their study through online teaching platforms every day. The large amount of data generated every day provides a rare opportunity to study the teaching behavior of teachers and learning behavior of students. Due to COVID-19, teaching and learning has been moved online world-wide. This has enabled online

learning platforms to record a massive amount of data about online teaching and learning. This offers a gold mine for knowledge discovery from data. Combined with survey data and actual student examination performances, we can perform highly fine-grained qualitative and quantitative analysis of the data to discover actionable knowledge at the individual class and individual student level to help teachers teach better, to help students learn better, and to help platform builders build better online education systems and tools. The latest artificial intelligence (AI) technologies will also be introduced into online platforms and into teaching and learning practices to significantly advance the current state-of-the-art of pedagogy and to produce the next generation of tools and online education programs. Additionally, we will investigate the best integration strategy to explore the synergy of both online and in-person education to produce the best overall education methodologies.

### 3.2 Planning online teaching as a normal method of teaching in universities and colleges

Online teaching should achieve sustainable development after the end of the pandemic. We will not be faced with a choice between online teaching and offline teaching. Instead, every university and college should establish a stable online teaching platform system. Teachers will use mixed approaches to enrich the traditional mode of education, and naturally switch to online teaching in the face of another outbreak of pandemic or emergencies. Professor Hong huaqing of Nanyang Technological University in Singapore has introduced his university's teaching practice based on many years of experience, which allows all the teachers to conduct online teaching for a week instead of having to show up on the campus. Classroom lectures of some courses are even cut to one tenth of the original duration to spare teachers and students from having to spend too much time in traditional lectures, and the effects of teaching and learning are both improved as a result. (Huaqing, 2019)

More and more PKU teachers have started to reflect on classroom lectures based on their practice of online teaching, believing that the achievements of online teaching should be retained within a certain scope in the future. (professors, 2020) Teachers found that combining online and offline education would suit some types of courses, so online teaching can still play a very important role after the pandemic. This round of online teaching exposes constraints in various aspects such as course design, software, Internet, and technical guarantees, and adopting multiple online teaching methods provides the means to be as close as possible to traditional lectures in light of these constraints. It is believed that after the online teaching is widely accepted, more teachers will use mixed teaching method more effectively, studying the best way to combine online and offline teaching, and constantly improving the educational and learning modes.

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