

# New Thoughts on the Construction of Online Education Platform in Colleges and Universities during the 2019-nCoV Epidemic

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**Abstract.** Affected by the novel coronavirus pneumonia, schools across the country are facing the problem of postponed school opening. In order to respond to the call of "suspended class, ongoing learning", online education has become an important measure to maintain the normal teaching work. Through the investigation and analysis of online learners, this study finds out that current online education platforms have many problems remaining to be solved including the learning questions not getting answered in time, the learning environment not real, the function of the platform not perfect. Further, it puts forward some solutions, such as strengthening online interaction, integrating virtual simulation technology, using 5G technology and creating adaptive platform, in order to promote the further improvement and development of online education platform.

**Keywords:** Online Education Platform; Suspended Class; Ongoing Learning; Online Learning.

## 1. Introduction

In December 2019, a novel coronavirus pneumonia appeared in Wuhan, Hubei Province, and quickly spread to the whole country. In order to effectively reduce the number of people gathered and strengthen the prevention and control of the epidemic, the Ministry of Education put forward the request on January 27, 2020 for all kinds of schools at all levels to postpone the opening of the spring semester [1]. At the same time, to solve the home learning problem of 200 million [2] students in China, the Ministry of Education issued a notice of "suspended class, ongoing learning"[3] in February. At present, online education has become an effective means to guarantee students' home learning.

In recent years, online education, as a new learning method, has made great achievements in the field of education. With the development of educational informationization, various education platforms emerge in endlessly, and the users of the platform are also growing. According to the statistics of relevant data in April 2020, the number of online education users in China is 423 million, and the number of mobile online education users is 420 million [4]. Online education not only set off a learning boom, but also attracted the attention of many scholars and researchers.

Generally speaking, the research in the field of online education in China is mainly divided into two aspects: basic theoretical research and applied research. The content includes educational informatization, distance education, online curriculum development, etc. However, there is a lack of attention to the development and optimization of online education platform. As online learning in the context of the epidemic is separated from the support of traditional teaching, how to better meet the learning needs of online learners has become a new challenge for the development of online education platform. Therefore, this study takes this as a starting point to summarize and sort out the status of the mainstream online education platform in China. Through questionnaires and interviews, this paper investigates the impact of online education platform on learners' online learning during the epidemic, analyzes some problems existing in the online education platform at this stage, and puts forward new thinking on the optimization and development of online education platform, in order to better promote the development of online education platform.

## 2. Analysis of Online Education Platform

Under the background of "Internet plus education", a large number of online learning platforms come into being. In this study, five platforms with relatively more complete functions and more users

during the epidemic were selected as sample platforms for analysis. For convenience, P1 to P5 are used to code the sample platform. The basic information of each sample platform is shown in Table 1.

**Table 1.** Basic information of sample platform

Name of learning platform	Platform code	Users
Superstar learning	P1	Mainly college students
Chinese University MOOC	P2	Mainly online college students and employees
Netease cloud classroom	P3	All ages
Tencent classroom	P4	All ages
The tree of wisdom	P5	Mainly college students

With the continuous development of science and technology, online education platforms are also constantly improving. Considering that most of the platforms have little difference in basic operation control functions, this study mainly focuses on the course information, video resource components, learning interaction, learning evaluation and other auxiliary functions of the platform. The function classification of each sample platform is shown in Table 2.

**Table 2.** Function classification of sample platform

classification	describe	assembly
Course form	Forms of learners' participation in courses on the platform	Recording and broadcasting courses
Video resource component	Operational components available for platform video resources	Offline cache, resource collection, content navigation
Learning interaction	It can assist users in interactive learning between teachers, students and students	Study discussion, comment, study group and resource sharing
learning evaluation	Using the platform to test and feedback students' learning	Process inspection, homework after class, online test
Auxiliary functions	Auxiliary functions other than formal courses, learning interaction and evaluation	Book reading, learning notes, course evaluation, schedule, learning duration record, relevant recommendations

Based on the different details and functions of different platforms, this study classifies and summarizes various functional components in five online education sample platforms, and the statistical results are shown in Table 2. Where "√" indicates that the platform has some function.

Through table 3, we can see that each sample platform has the basic functions of resource arrangement, online interaction, learning evaluation, etc. However, the interaction mode, evaluation indexes and auxiliary functions of different platforms are not the same. For example, during the epidemic, Tencent classroom, which has the advantage of convenient live operation, lacks online testing and other functions, so it cannot meet the needs of evaluation of online learning. It can be seen that the functions of some online education platforms are not perfect at present. At the same time, the courses provided by each online education platform are mainly in the form of live broadcast or recorded broadcast, and the teaching method is single, so it is difficult to provide timely feedback for students. However, learners' learning needs are diversified. Only a fully functional platform can bring learners a better learning experience.

**Table 3.** Function table of each sample platform

Functional classification	Component name	P1	P2	P3	P4	P5
Course form	Video Course	√	√	√	√	√
	Live course	√		√	√	√
Resource arrangement	Offline caching	√	√	√	√	√
	Resource collection	√		√		√
	Content navigation	√	√	√	√	√
Learning interaction	Study and discussion	√	√	√	√	√
	Like comments	√	√	√	√	
	Learning groups	√				√
	Resource sharing	√				√
learning evaluation	Test questions in class		√			
	Homework after class	√	√			√
	Online testing	√	√	√		√
Auxiliary functions	Book reading	√				√
	Learning notes	√				
	Course evaluation			√	√	
	Schedule	√			√	
	Learning duration record				√	√
	Relevant content recommendation				√	√

### 3. Problems of Online Education Platform during the Epidemic

In order to effectively understand the impact of online education platform on learners' online learning during the epidemic, this study uses questionnaire and interview methods to investigate the online learning of learners during the epidemic period from the perspectives of platform use, timeliness of problem-solving, perfection of platform functions, effectiveness of learning evaluation, etc., and obtains the current online learning situation through data analysis. There are four main problems in the education platform:

#### 3.1 It is Difficult to Solve the Problem in Time

Different from the face-to-face teaching in traditional classroom, distance education through online education platform still has some limitations in the timeliness of problem solving. On the one hand, it is difficult for the platform to provide accurate and intelligent answers to students' questions. Considering the maximum use of teaching resources, platform content is often committed to meet the common needs of most learners, which leads to the problems encountered by individuals in the learning process are difficult to be taken seriously. In the traditional classroom, teachers can get feedback from learners' expressions and body movements, and students can also raise their hands to ask questions. However, most of the online education platforms still present their courses live and recorded, which makes it difficult for students to express their doubts in time. On the other hand, teachers' response through online learning platform also has a certain delay. And because some teachers are not proficient in technical operation and there are too many teaching tasks, teachers still cannot respond to students' questions on the platform in time, so timely communication and discussion is more difficult.

#### 3.2 Lack of Authenticity in Learning by Online Platform

The electronic learning environment allows multiple scenarios to coexist, while breaking the space limit, it also leads to the cutting of the integrity of learning activities. While the traditional classroom provides the corresponding physical space for students, it constantly reminds students of the importance of learning and give students some restrictions to a certain extent [5]. According to

constructivism learning theory, learning is a process in which students adjust and update the existing cognitive structure to realize the integration of new and old knowledge. Taking the experimental class as an example, students can continuously improve their cognitive structure through practical operation in the traditional experimental class. However, online platforms can only present experimental content in the form of video, which cannot give students real experimental experience, nor provide students with direct experience. Therefore, many learners think that learning on the online education platform lacks a certain sense of reality, which will further affect their learning state.

### **3.3 The Functions of Online Education Platform are not Comprehensive Enough**

According to the survey, it can be found that the basic functions of online education platform are relatively complete, and most learners think that the platform can meet their basic learning needs during the epidemic. But for some personalized needs, the platform cannot fully satisfy the students. That is to say, most of the platforms have the basic functions needed for learning, but there is still some room for improvement. Combined with the specific analysis of the functions of the platform in the early stage, take Tencent classroom online education platform as an example. It can be found that the platform does not have online testing, learning community and other functions, so users can not timely understand their learning status and knowledge points in the classroom, and cannot communicate and discuss with teachers and students on a large scale through the platform. The lack of function of online education platform will lead to poor experience of user learning, which will impact the effectiveness of online learning. In this process, it is easy for learners to lose their interest and perseverance in learning, or even withdraw from online courses halfway.

### **3.4 Learning Evaluation System is not Perfect**

As a result of the epidemic, the learning process of learners has completely changed into online learning, and the evaluation process has also changed to online mode. Therefore, some learners think that the current online education platform assessment form is not comprehensive, and cannot accurately and effectively feedback their own classroom performance, learning effect and overall learning situation. Restricted by the space limitation and intelligence level of the online learning platform, teachers can not directly understand the learning state of students, and the current intelligence level of the platform cannot support the multi-dimensional evaluation of online learning, so there are some problems in the evaluation of students' learning process and study results. At the same time, the unreasonable formulation of the evaluation system may also lead to one-sided and limited evaluation results, which is not conducive to students' in-time, comprehensive and accurate grasp of their own situation, thus affecting the overall result of online learning.

## **4. New Thoughts on the Development of Online Education Platform**

### **4.1 Add More Interactions**

One of the significant characteristics of online learning which is different from traditional learning is the lack of interaction between learners and learning environment. The unidirectional and passive learning process puts forward higher requirements for learners' attention, and at the same time makes learners more prone to burnout in the process of online learning. By improving the function of the platform, more and more intelligent interactive links are added in the teaching process, such as using artificial intelligence to carry out semantic analysis of learners' language, to realize intelligent discussion between human and computer. This can not only arouse the students' unintentional attention, which let the students transfer their attention to the learning content without consuming too much willpower, but can also include the online participation of learners into an important aspect of learning evaluation, which is helpful for the platform to obtain more comprehensive formative evaluation results.

## **4.2 Integration of Virtual Reality Technology**

According to the theory of situational learning, knowledge needs to be constructed by learners through certain situations, while virtual reality technology can effectively reduce the limit of distance and bring students immersive learning experience, thus stimulating students' cognition and emotion of knowledge generation[6]. For example, in the learning process of various experimental courses, the platform can simulate the real experimental environment through virtual simulation technology, so that students can choose their own experimental equipment in the virtual scene. And the virtual experiment scene provides the guarantee for the safety of students, so that students have more opportunities to try and make mistakes, to build a more solid knowledge system. This way not only provides more real experience for learners, but also can effectively stimulate students' interest in learning and improve the effect of online learning.

## **4.3 Use 5G Communication Technology to Improve the Stability and Transmission Efficiency of the Platform**

During this epidemic, because too many learners are online at the same time, the stability of online education platform has been greatly challenged. Many platforms have network instability that affects the normal teaching work. 5G technology, as the latest generation of cellular mobile communication technology, can accommodate more users online at the same time and improve network quality with the advantages of high bandwidth and high rate. So online education platform can use 5G communication technology to achieve the goals of reducing delay, saving energy, reducing cost, improving system capacity, and has better network environment support. To bring better learning experience for learners and create a better online learning environment.

## **4.4 Create an Adaptive Learning Platform and Enable Intelligent Education**

At present, most online education platforms are still difficult to meet the differentiated needs of learners. In the process of education, they show more basic tools than intelligent education. And the adaptive learning platform can make decisions based on the big data of students' personality characteristics and learning conditions, and provide students with more personal learning needs. Online education platform can achieve personalized education by constructing learners' portraits, evaluating skills development, generating personal learning paths and other ways to solve learners' complex learning problems. This can not only make more intelligent and humanized learning evaluation for learners, but also effectively reduce the work intensity of teachers and make rational use of teacher resources. In addition, accurate data analysis and intelligent algorithm of artificial intelligence can help the platform to conduct more systematic teaching evaluation and facilitate the education platform to effectively manage online courses [7] [8].

## **5. Conclusion**

During the outbreak, 1454 colleges and universities across the country set up online courses. Online learning has become a necessary way of home-based learning in a short time. The complete online education mode not only brings new opportunities for the development of online education platform, but also exposes many problems of online education platform. Based on the functional analysis of the sample platform, this paper puts forward a new thinking on the development of online education platform from the perspective of learners' needs, in order to promote the construction of a better-quality online education platform in line with learners' needs.

With the continuous development of science and technology, cutting-edge technology will be more fully combined with online education platform, to realize more possibilities. It is expected that online education platform can further promote the development of education modernization in the process of optimizing learner' learning experience.

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