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Online Teaching During the "School is Out, but Class is On" Period: Based on 33,240 Online Questionnaire Surveys Across China

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Abstract. *During the COVID-19 pandemic, the Ministry of Education of China issued a call for "School is Out, but Class is On". Various regions responded to and issued relevant policies to use Internet educational resources to carry out teaching activities. In this context, we conducted a network questionnaire survey on district and county education administrators, school administrators, teachers, students, and parents nationwide. It aimed to understand the online teaching situation and the attitudes of different subjects towards online teaching during the "School is Out, but Class is On" period. Based on this, we summarized the problems existing in online teaching during the "School is Out, but Class is On" period and put forward countermeasures to better serve online teaching, to ensure the healthy development of online teaching after the pandemic, and to provide a reference for coordinating national forces to carry out online teaching in response to unforeseen public crises in the future.*

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Introduction

DUE to the continued COVID-19 pandemic, the Ministry of Education of China issued the "Notice on the Delay of the Start of the Spring Semester 2020" on January 27, 2020, requesting that the start of the spring semester be appropriately postponed, and encouraging all regions to use the Internet and information-based education resources to provide students Learning support to ensure "School is Out, but Class is On" (The Ministry of Education of China, 2020b). To this end, schools at all levels have been developing plans and conducted online teaching. Many experts and scholars also voiced the first time, such as Zhu et al. (2020) proposed an all-media learning ecological solution; Jiao et al. (2020) analyzed the typical cases of online teaching of "School is Out, but Class is On", to put forward relevant suggestions for online teaching for different practice subjects. To understand the implementation status of "School is Out, but Class is On", the "School is Out, but Class is On" charity alliance led by Beijing National Center for Open & Distance Education Co., Ltd., united with the National Engineering Laboratory for Intelligent Technology and Application of Internet Education, and jointly developed a survey questionnaire and conducted a nationwide survey based on the "Teacher Training" cloud platform to understand the status quo and find problems to better serve the specific implementation of online teaching. This provides a reference for coordinating the nation's efforts to conduct online teaching under the unforeseen public crisis in the future.

The Status Quo of "School is Out, but Class is On" Under Pandemic Prevention and Control

Policy Guarantee and Guidance

Since the announcement of the delayed start of the spring semester, the corresponding "School is Out, but Class is On" work implementation plan has been successively issued from the central to the local to the school. On January 29, 2020, the Education Department of Hubei Province, the pandemic disaster-stricken area, issued the Guiding Opinions of the Provincial Education Department on the implementation of network teaching during the pandemic prevention and control of the province's primary and secondary schools. In terms of teaching resources and other aspects, it provides comprehensive guidance for online teaching (Hubei Provincial Department of Education, 2020). On January 30, the Wuhan Municipal Education Bureau issued the "Notice of the City Education Bureau on Delaying the Start of Spring 2020 School Work" (Wuhan Municipal Education Bureau, 2020a), and the supporting release of "Wuhan City Elementary and Middle Schools During the Fight Against COVID-19 Pandemic "Online teaching implementation plan" (Wuhan Municipal Education Bureau, 2020b), made more detailed planning on online teaching related content. On February 12, the "Notice on Work Arrangements for "School is Out, but Class is On" in the Office of the Ministry of Education and the Ministry of Industry and Information Technology of the Ministry

of Education on the extension of the school start period of elementary and middle schools" (The Ministry of Education of China, 2020a) was published, further regulating the content of student learning, organization and coordination, connection between inside and outside class. As of early February, all parts of China have completed the formulation of supporting documents for online teaching, which provides guarantee and convenience for teachers and students participating in online teaching, and provides a policy basis for home-school communication and collaborative teaching.

Platform Selections and Teaching Mode

Judging from the policy documents of the education departments in various regions, the main sources of online platforms are (i) National public service platforms for educational resources, provincial and local public service platforms for resources. (ii) Education authorities at all levels organize the openly available network resource platforms in a targeted manner and guide schools to choose according to their needs. (iii) Resources and platform donations spontaneously carried out by educational institutions.

There are four commonly used online teaching and service modes: (i) "TV teaching video" mode. It is organized by the provincial and local education authorities or audio-visual halls and broadcast live through TV stations or dedicated digital TV channels. (ii) "Live Class" mode. Teachers are encouraged to design their courses based on actual conditions and conduct live broadcasts through the online platform. (iii) "Classes communicate with each other" mode. Provincial and local education authorities coordinate the organization of courses organized by local excellent teachers according to the subject catalog, which is regularly based on local education platforms, and carry out online tutoring and online Q & A. (iv) "Optional resources + online question answering" mode. The school uniformly selects teaching resources, compiles guides, and pushes them to students for independent study through websites, class exchange groups, etc. Teachers answer questions through common tools such as QQ and WeChat.

Systemic Service Support

Online teaching is not a simple "classroom shift". It requires teachers and instructional designers to build front-end curriculum resources, as well as strong back-end service teams to provide technical and service support. Specifically, education authorities and schools should actively strengthen guidance and supervision, and adjust implementation paths on time based on online teaching practices. Relevant domestic Internet service agencies, cloud service providers, and other enterprises in China actively responded to provide service support for the stable operation of online teaching cloud platforms, ensuring smooth network and stability of online use by large-scale users. All educational institutions should do a good job of allocating various resources such as software and hardware facilities, basic networks, teacher resources, professional counseling, etc., optimize personnel deployment, and fully guarantee the smooth implementation of "School is Out, but Class is On". More importantly, under pandemic prevention and control, the implementation of large-scale group online teaching nationwide requires the

establishment of one or more professional teams that provide common support services to allow teachers to focus on teaching and improve organizational efficiency and teaching effectiveness.

Survey of Online Teaching during the "School is Out, but Class is On" Period

To gain a deeper understanding of the current status of online teaching during the "School is Out, but Class is On" period, this study surveyed the "Questionnaire Star". The items in the questionnaire include basic information, existing preparations for dealing with "School is Out, but Class is On" online teaching, and knowledge and attitude towards online teaching. The questionnaire was distributed from February 5th to 11th, 2020. A total of 33,240 valid questionnaires were recovered, including 907 district and county education manager questionnaires, 777 school education manager questionnaires, teacher questionnaires 2,401, student questionnaires 17,025, and parent questionnaires 12,130.

Sample Overview of District and County Education Administrators

The statistical results of the 907 district and county education managers questionnaires show that the district and county education managers participating in the survey come from 28 provinces, municipalities and autonomous regions in the country, and most of them are staff members and below (88.31%). The specific job distribution is shown in **Figure 1**.

Overview of the Sample of School Administrators

The statistical results of 777 school education administrator questionnaires show that 72.33% of the school education administrators participating in the survey came from primary schools, and 15.06% came from junior high schools. In terms of geography, the school education managers participating in the survey are mainly in the western region and the northeast region, of which 317 people in the western region (Sichuan, Chongqing, Guizhou, Yunnan, Shaanxi, etc.), about 40.8%; the northeast region (Heilongjiang, Jilin, Liaoning, etc.) with 291 people, about 37.45%; eastern region (Beijing, Tianjin, Hebei, Shanghai, Jiangsu, etc.) 102 people, about 13.13%; central region (Shanxi, Anhui, Jiangxi, Henan, Hubei, etc.) 66 People, about 8.49%; another 1 person (about 0.13%) is from Hong Kong, Macao, and Taiwan. In terms of school size, most of the school administrators participating in the survey came from medium-sized schools, of which 37.58% came from schools of more than 1,000 people, and only 10.55% came from schools of less than 100 people (**Figure 2**). As far as administrative duties are concerned, 75.55% of the school administrators participating in the survey are grassroots managers, 9.14% are principals or executive vice principals, 5.66% are deputy principals in charge of teaching, and 9.65% are deans of academic affairs.
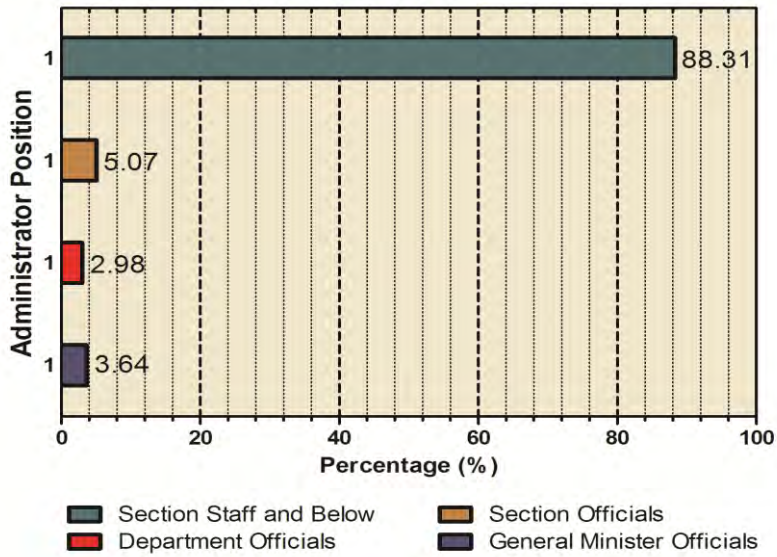
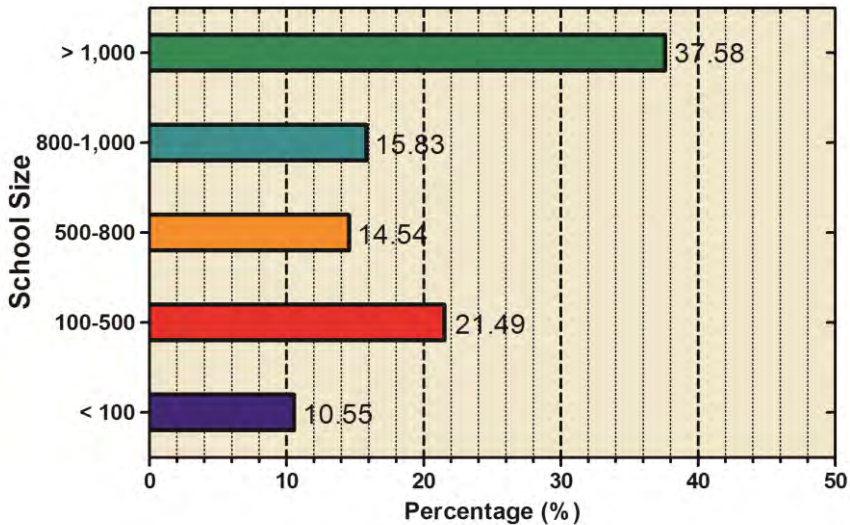**Figure 1. Distribution of the District and County Education Administrative Officials.**

Figure 2. School Size and Proportion

Teacher Sample Overview

The statistical results of a total of 2,401 teacher questionnaires show that the teachers participating in the survey come from 31 provinces, municipalities, and autonomous regions in China and the majority are female teachers. The ratio of men to women is about 1:2. There were 1,294 (53.89%) young teachers (under 34 years old), 840 (34.99%) middle-aged teachers (35-48 years old), and 267 (11.12%) old-age teachers (over 49 years old). 58.34% are urban school teachers, 39.62% are rural school teachers, and about 2% are teaching site teachers. 83.42% are elementary and middle school teachers (Elementary teacher 52.98%, Middle teacher 30.44%), 8.37% are kindergarten teachers, 6.54% are high school teachers, and 1.67% are vocational teachers (**Figure 3**). Therefore, more than half of the teachers participating in the survey were Chinese and mathematics teachers (52.2%), followed by English and phonetic beauty teachers, and relatively few teachers in other disciplines.

Student Sample Profile

The statistical results of 17,025 student questionnaires show that the students participating in the survey come from 32 provinces, municipalities, and autonomous regions across the country, with 8,139 males (47.81%) and 8,886 females (52.19%). More than half (75.14%) students come from urban schools, 22.1% of students from rural schools, and only 2.76% of students from teaching points. Most of them are elementary school students (56.16%), middle school students (28.09%), and high school students (15.21%), followed by secondary vocational school students (0.54%).

Overview of Parent Samples

The statistical results of 12,130 parent questionnaires show that the majority of parents participating in the survey are women, and the ratio of men to women is about 1:2. Elementary school students had the most parents (69.1%), followed by middle school students (18%). In terms of age distribution (**Figure 4**), most parents are 30 to 39 years old. In terms of the area where the children attend school, 43.1% of parents in the eastern region, 26.7% in the northeast region, 19% in the western region, 11.1% in the central region, and 0.1% in other regions. About 77.6% of parents were from urban schools and 22.4% were from rural schools.

Attitudes of Different Subjects towards Online Teaching during the "School is Out, but Class is On" Period

District and County Education Managers: Encourage and Support

The statistical results of 907 district and county education managers' questionnaires showed that 54.8% of district and county education managers encouraged the develop-
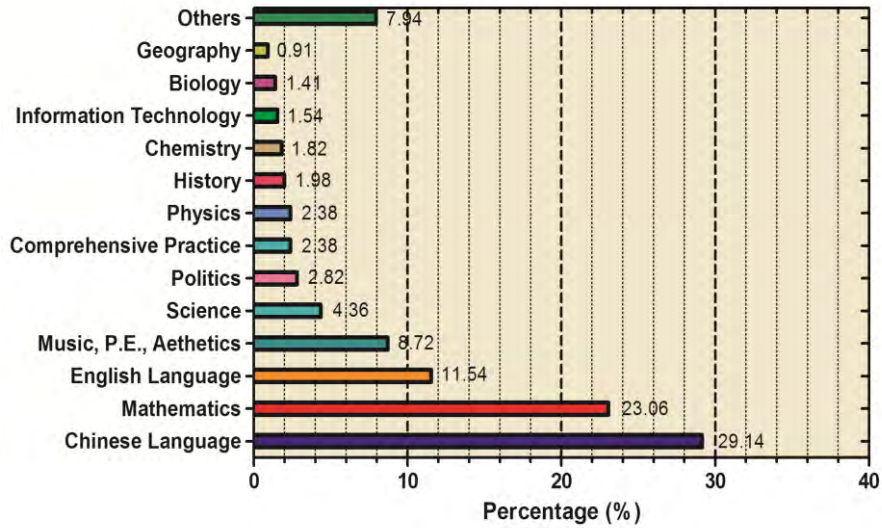
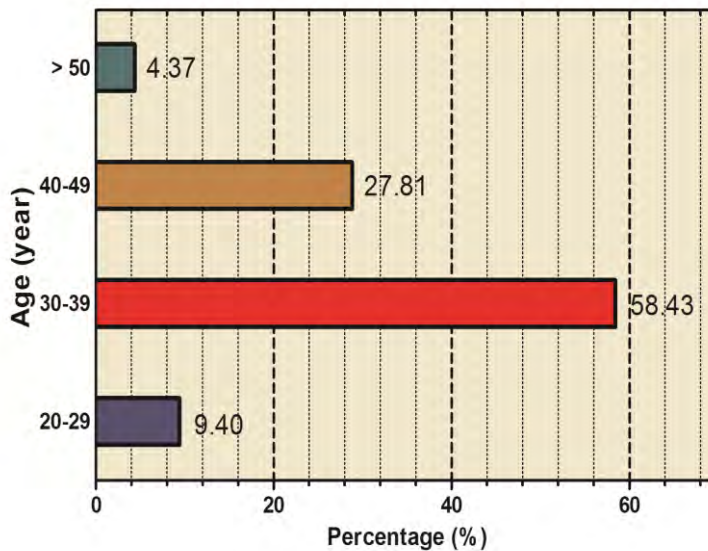**Figure 3. Proportion of the Courses.**

Figure 4. Parents' Age.

ment of online teaching related to teachers; 42.56% did not restrict the specific forms of online teaching; 49.17% chose to introduce high-quality online teaching resources; 43.2% developed a management system for online teaching. It is worth mentioning that the district and county education administrators also realized that online teaching is suitable for personalized learning for students (61.41%), improve teaching efficiency (54.8%), make up for the shortage of resources (41.9%), and solve the shortage of teachers (27.34%) 68.22% of managers even expressed their expectation that online teaching will be a part of the normalization of regional education services in the future. So, district and county education managers have a positive attitude towards encouraging and supporting online teaching during "School is Out, but Class is On".

School Administrators: Relatively Active

School administrators are relatively passive in carrying out online teaching, and their attitudes towards online teaching are also slightly different: some actively formulated specific measures for schools to carry out online teaching based on various educational policies issued by the State and the Education Bureau, such as opening air classrooms based on the teaching week, establish an online curriculum that conforms to the teaching schedule and online teaching characteristics, but some had the phenomenon of copying traditional classrooms directly. The results of 777 school education administrator questionnaires showed that: 68.92% of school administrators believed that the implementation of online teaching can ensure the quality of teaching during the pandemic period; 68.72% believed that online teaching can meet the basic needs of students, but they worried about insufficient teacher preparation; 31.5% of school administrators were skeptical of teachers' basic skills in online teaching. How to effectively organize and implement online teaching, how to ensure that online teaching achieves the same effect as traditional teaching, how to effectively carry out online teaching activities, and how to manage the teaching and learning process have become the focus of school administrators.

Teachers: Positive Attitude but Anxious

Overall, middle and elementary school teachers have a positive attitude towards online teaching. The results of 2,401 teacher questionnaires showed that more than 50% of teachers believed that online teaching can meet the learning needs of students, and 31.9% of teachers were willing to continue online teaching after the pandemic is over. But at the same time, teachers also had a lot of anxiety about online teaching. The main points of anxiety are interaction with students (62.6%), equipment operation (58.6%), and teaching organization (52.1%). In terms of age, middle-aged and older teachers were significantly less anxious about online teaching organization and class manners than young teachers; 72.6% of teachers hoped to receive targeted training, and especially older teachers had more demand for technical application training. From a geographical perspective, urban teachers were more anxious about class manners, software quality, and equipment operation of service providers, while rural teachers were more anxious

about interacting with students and teaching organizations. From the perspective of willingness to use, there were obvious differences between teachers who had different views on the effect of online teaching: those who recognized the effect of online teaching had a stronger willingness to use; teachers under the age of 34 and teachers between the ages of 45-55 had the willingness of future use; at the same time, with the increase of age, the number of people who wanted to continue online teaching has shown a downward trend.

Students: Urban-Rural and Learning Stages Differ Significantly

In general, students have positive attitude toward online learning and strong adaptability. The results of 17,025 student questionnaires showed that although 16.95% of students expressed some concerns, 83.05% still held a positive attitude ("surprise" 36.92% and "happy" 46.13%). This is mainly because students had a positive understanding of online learning. For example, they believed that online learning could be self-paced and had complete and visible learning records. About 61.46% of students thought that they could quickly adapt to the online learning method, and were willing to continue to use this method to carry out learning activities, especially middle school students. Compared with rural schools, urban school students had a more positive and adaptable attitude towards online learning. The major reason may be from urban students had equipment that can meet their daily online learning and they were more familiar with electronic equipment. Besides, there are significant differences in the attitudes of students at different stages of learning on the Internet: high school students had less disappointment, but relatively higher in the worrisome that may be related to the higher pressure they were facing.

Parents: High Expectations and High Concerns

The results of 12,130 parent questionnaires showed that on the one hand, parents had high expectations for the remedy measures adopted by schools for online teaching. About 49.2% of parents hoped to have different online teaching methods such as live classroom, video recording, homework correction and feedback, and parents of urban school students and elementary school students were looking forward to the diversification of online teaching methods. On the other hand, the parents' concerns were also obvious. About 64.1% of parents said they were not clear what type of courses to choose for their children, 52.4% were unfamiliar with online learning operations, and 14.7% said that the network and equipment were in short supply. In addition, parents also had concerns about impaired vision (59.9%), inattention (57.3%), online temptation (49.2%), unanswered questions (43.9%), and poor learning effectiveness (40.9%).

Problems and Countermeasures in Online Teaching during the "School is Out, but Class is On" Period

Existing Problems

Differences in Policy Understanding and Implementation

Education authorities and schools had different understandings of "School is Out, but Class is On" and lacked systematic and long-term planning. Although most provinces and cities had built public service platforms for educational resources, only a few provinces and cities had launched a unified platform. The policies of most provinces and cities were mainly guided by recommendations and standardized requirements. Schools organized and arranged themselves in a specific implementation, so there was generally a "One-Size-Fits-All" implementation of the policy. Schools blindly implemented and organized, mainly live broadcast classroom teaching mode, almost made an identical copy of the traditional classroom teaching. The competent education department did not follow up on the access standards, content review, and supervision of online teaching platforms and resources in time, and also lacked guidance on teacher selection platforms. Also, hidden dangers existed in the intellectual property rights of online teaching courses during the pandemic.

Insufficient Preparation for Basic Education Informatization

The implementation of "School is Out, but Class is On" at the stage of basic education has exposed the serious problem of insufficient preparation: (i) from the competent department to the school to the teacher, short-term emergency and blind response have occurred; (ii) basic education will be fully networked in a short period is a real frustration and obvious "unsuitable". This "unsuitability" is mainly reflected in the basic stage of education informatization, which has always focused on schools and classrooms. However, online training outside the school plays an essential supplementary role in the development of basic education informatization and fails to form a systematic and standardized support service system for elementary schools in China.

The Scientific Characteristics and Applicability of the Teaching Plan are Insufficient

According to the survey data, many regions and schools lack the thinking and design according to local conditions and lack the scientific characteristics and pertinence. The specific performance is as follows: (i) The practice model is relatively simple. The teaching progress is synchronized with the offline teaching, or the schedule is the same as the school learning time. There is no comprehensive consideration, evaluation, and design of the teaching content of different levels and different disciplines. The results of the questionnaire survey showed that 56.6% of teachers tended to use existing or ready-made resources for students to learn independently, supplemented by homework guidance. This approach makes the teaching and learning that are originally separated in both time and space less interactive, and the existing curriculum resources are also difficult to meet the dynamic personalized learning needs of students. (ii) Most of the online teaching currently used is a free and open platform; it is difficult to realize real-

time supervision and comprehensive evaluation of students' learning situations. Besides, the online teaching experience during the pandemic and the teaching after pandemic lack a connection, which may become isolated historical data, and cannot be a guiding reference for the teaching after the pandemic.

Insufficient Informatization Capabilities of Various Subjects

The lack of information literacy is another practical problem in facing "School is Out, but Class is On". At present, the informatization capabilities of various subjects are insufficient. This includes: (i) The ability of the school's information planning and the rapid organization was insufficient. (ii) Teachers' online teaching ability was uneven. The results of the questionnaire survey showed that 42% of teachers felt anxious, mainly because they did not know how to interact with students online, how to organize teaching activities, and how to deal with equipment operation difficulties. Teachers also generally lacked online teaching experience and could not quickly adapt and take advantage of network technology. (iii) Students had insufficient online self-learning ability and it was difficult to guarantee learning participation. The results of the questionnaire survey showed that 38.54% of the students had insufficient confidence in adapting to online learning quickly; 37.1% believed that they were less active in online learning; 45.79% said that teachers and parents were required to supervise to complete online learning tasks. (iv) Parents had insufficient ability to assist their children in online learning. The results of the survey showed that 52.4% of parents reported that they were not familiar with the operation of online learning, and there was no active and effective solution to the problems that might occur in online learning.

Weak Infrastructure Affects the Implementation Effect

Weak infrastructure is a fundamental problem that hinders the large-scale popularization of online teaching. This is mainly manifested as (i) Insufficient infrastructure preparation, such as large-scale access that greatly exceeds the conventional service capabilities of the platform, and problems such as stalls and frequent disconnections seriously affected the learning experience. (ii) Individual users have limited basic equipment. The results of the survey showed that 75.5% of teachers tended to use mobile phones for online teaching, but many teaching platforms and software only support computers, and some institutions' online teaching programs require more than two computers, which brought inconvenience to online teaching for teachers. Also unstable network signals in rural areas have made online teaching a big burden.

Response Measures

During the pandemic prevention and control period, online teaching demonstrated many advantages. The online teaching experience and practice accumulated during the "School is Out, but Class is On" period are very valuable, and it is worth conscientiously summarizing and refining to provide a reference for the subsequent online teaching development.

Macro Control, Strengthen Public Support Services

The informatization foundation and capabilities vary from place to place. To cope with various emergencies, local governments and education authorities need to improve the corresponding management systems and build supporting public service systems. The details include: (i) Strengthen investment to ensure that the school's information infrastructure is in place and promote practical application. (ii) Have a long-term and systematic planning, to guide schools to develop specific methods and implementation plans for online teaching in light of local conditions. (iii) Strengthen content construction and supervision to improve the digital education-related public service system, increase the effective supply of high-quality educational resources, and expand the coverage of online teaching resources of famous schools and famous teachers. (iv) Improve the online teaching-associated support system, provide targeted support services for different users, and ensure the effectiveness of the processing. (v) Establish a supervision and guidance mechanism, strengthen coordinated supervision by all regions and departments, broaden social supervision, and improve supervision efficiency.

Improve the Informatization Capabilities of Various Subjects

To ensure that online teaching can effectively meet the needs of education and achieve a teaching effect not less than that of face-to-face classrooms, all kinds of educational subjects should pay attention to the improvement of informatization capabilities and form a normalized mechanism. (i) Improve the school's comprehensive informatization capabilities, focusing on strengthening management and technical personnel training, and effectively improving the school's informatization management level and capabilities. (ii) Establish and improve a training system that combines long-term basic and short-term targeted training of teachers 'information technology application capabilities, so that targeted training and guidance can be quickly initiated in emergencies. (iii) Deepen the application of information-based teaching practice, cultivate the habit of teachers and students, improve students' self-learning ability on the Internet, deepen parents' understanding of online teaching, and improve the application of information technology for teachers, students and parents.

Build and Improve the Technical Environment and Digital Resource Service System

As the basis of online teaching, the technical environment and resources should be given full attention by competent authorities at all levels. (i) At the macro-level, we must provide targeted assistance to areas with limited teaching equipment and network conditions to meet the basic conditions for students to learn online. In the process of allocating teaching resources, the education department should give full consideration to many factors such as school teachers, software and hardware conditions, network implementation, and academic status of the school, so as to promote the full use of digital teaching resources. (ii) At the micro-level, we should focus on strengthening the

informatization capabilities of education managers and teachers, and provide services such as consulting and technical support to break through technical limitations. It enables education administrators to concentrate on organizing online teacher training, and teachers can concentrate on optimizing online teaching content design. In the future, the government, enterprises, and schools can be laid out following the principle of "infrastructure depends on policies, and individual resources depend on the market." Local governments and education departments should strengthen macro-control and effectively integrate and rationally allocate educational resources. Enterprises should be guided by the individualized needs of schools, leading the development and construction of education and teaching resources, and finally the three parties will work together to create a good "Internet+" education ecology.

References

Hubei Provincial Department of Education. (2020). Provincial Department of Education's guidance on the elementary and middle school of the province to carry out network teaching during pandemic prevention and control. Available at: http://jyt.hubei.gov.cn/fbjd/tzgg/202001/t20200130_2016444.shtml [Chinese]

Jiao, J., Zhou, X., Chen, Z. (2020) A case study of "School is Out, but Class is On" online teaching in the context of pandemic prevention and control. *China Audiovision Education*, 2020(3):106-113. [Chinese]

The Ministry of Education of China. (2020). General Office of the Ministry of Education Office of the Ministry of Industry and Information Technology on the elementary and middle school postponement of "School is Out, but Class is On" related work arrangements notice. Available at: http://www.moe.gov.cn/srcsite/A06/s3321/202002/t20200212_420435.html [Chinese]

The Ministry of Education of China. (2020). Notice on the delay of the spring semester of 2020. Available at: http://www.moe.gov.cn/jyb_xwfb/gzdt_gzdt/s5987/202001/t20200127_416672.html [Chinese]

Wuhan Municipal Education Bureau. (2020). Notice of the Municipal Education Bureau on delaying the start of school in the spring of 2020. Available at: http://jyj.wuhan.gov.cn/news/2020128/n51984963.html [Chinese]

Wuhan Municipal Education Bureau. (2020). Wuhan Elementary and Middle School launched an online teaching implementation plan during the fight against the COVID-19 pandemic. Available at: http://jyj.wuhan.gov.cn/news/2020128/n64324962.html [Chinese]

Zhu, Z., Peng, H. (2020). All-media learning ecology: A practical solution to the schooling problem of the pandemic period. *China Audiovision Education*, 2020(3):1-6. [Chinese]