

Investigation and Reflection on the Support of Online Course Construction for Teaching During the COVID-19 Epidemic in Primary and Secondary Schools

Sun Yang

School of Education Science, Xianyang Normal University, Xianyang, Shaanxi 712000, China
Email: sunyangdjzxx@163.com

ABSTRACT

In early 2020, COVID-19 occurred in China and had a wide impact on education. Schools at all levels were forced to delay the start of school, and actively carry out the online education work of "suspended class but ongoing learning". However, in the process of promoting this work, many primary and secondary school teachers still do not know what platform to use and are unwilling to use online courses when dealing with online education work. As early as 2012, the Chinese Ministry of education carried out the pilot work of educational informatization nationwide, so why are teachers still at a loss in the face of online education? Based on the investigation of the contents and current situation of online course construction in primary and secondary schools in 2019, such as micro course, video open course, online teaching platform, "one teacher record an excellent lesson, one lesson has been taught by a famous teacher", "three connections two platforms"¹, MOOC. Based on the reflection of the problems existing in the application of network course education in primary and secondary schools, this study puts forward suggestions for the development of network education in primary and secondary schools in the future.

Keywords: *Online course, support, COVID-19 Epidemic, Investigation and Reflection*

1. INTRODUCTION

In early 2020, the COVID-19 Epidemic outbreaked in China and spread rapidly. In January 31st, WHO placed the epidemic as Public Health Emergency of International Concern. All schools were postponed by the epidemic. The Ministry of Education issued a notice requiring primary and secondary schools to use the network platform to "suspended class, ongoing learning", and primary and secondary schools in all provinces and municipalities responded positively. The Ministry of education calls on teachers to actively organize online education activities using various network resources^[1]. But in this process, there are also many problems, such as teachers don't know how to carry out online teaching, the use of live software is not skilled, and the appropriate resources are relatively scarce. However, as early as 2012, the Ministry of education carried out the pilot work of educational informatization nationwide, among which the content of the pilot work in primary and secondary schools is "high-quality resource sharing mechanism and application

mode", "school-based education resource construction mode". So why are primary and secondary school teachers at a loss when facing online teaching for such a long time after the pilot work of educational informatization? In 2019, researchers conducted a survey of online courses in primary and secondary education informatization pilot schools. The results of the survey can confirm why the current situation of primary and secondary education informatization course construction can give teachers limited help and support in this public health emergency.

2. RESEARCH CONTENTS

In 2012, Shaanxi Provincial Department of education selected 39 primary and secondary schools for educational informatization pilot. These schools invested funds to accelerate the improvement of hardware and software construction, not only improving the level of information-based teaching, but also driving and leading the construction of information-based courses in other schools. At the

beginning of 2017, the pilot work of educational informatization was completed. In 2019, researchers through online visits and conducted field research on the construction and application of online courses in pilot schools. This paper mainly investigates online courses such as micro courses, video open courses, online teaching platforms, "one teacher record an excellent lesson, one lesson has been taught by a famous teacher", "three connections two platforms", MOOC, etc., which are highly recognized by primary and secondary school teachers.

In this study, 39 primary and secondary education informatization pilot schools in Shaanxi Province are selected as the survey samples. In addition, in order to compare horizontally and find the gap, 7 other non pilot schools in Xi'an, Xianyang and Weinan (informatization construction level is above average in these regions) are selected as the samples for the survey.

3. RESEARCH IDEAS AND METHODS

The idea of the research is to visit the official website of the sample school first, and analyze the content, quantity and visit amount of each school's online

course by content analysis method. The specific method is to log in to the official website of the school, look for such column plates or secondary interfaces as micro class, MOOC, video open class, "one teacher record an excellent lesson, one lesson has been taught by a famous teacher", "three connections two platforms", record the resource form, resource category, update situation, number of people visited and used in the informatization course, and more objectively and comprehensively understand the situation of these schools informatization curriculum construction and use.

Then visit on the school, discuss with the teachers to understand the current situation of online course construction in the school, what are the successful experiences worthy of reference and promotion, and what are the problems in the construction and use. At last, a questionnaire about the current situation of online course construction is compiled, which is distributed to some teachers and students of the sample schools to fill in. The collected questionnaire is input and analyzed by SPSS, and the research results are obtained. The research methods and the number of schools investigated are shown in Table 1.

Table 1. Research methods and number of schools surveyed

	Content analysis	Interview	Questionnaire survey
Pilot School	39	5	5
Non Pilot School	7	4	4
Total	46	9	9

The researchers went to 9 schools to conduct field research and questionnaire, and received strong support from teachers and students of the research school. A total of 137 questionnaires (35 teachers, 102 students) were distributed, 133 were recovered (32 teachers, 101 students), the recovery rate was 97%, of which 130 were valid questions (31 teachers, 99 students), the effective rate was 94%.

4. ANALYSIS OF SURVEY RESULTS

4.1. Analysis of website visit results

By visiting the websites of 46 sample schools, we can see that most of the websites of schools have micro

courses, video open class, "One teacher record an excellent lesson, one lesson has been taught by a famous teacher " and public service platform for education resources are better to build and more resources. Because these two platforms are leaded and vigorously promoted the information construction projects of Shaanxi Provincial Department of education in order to break the imbalance of educational resources, let more primary and secondary schools enjoy the famous teachers' classroom, promote the interaction between school teachers, so all schools also actively cooperate in this respect. The achievements in the construction are also the richest. Show in Table 2.

Table 2. Information course construction of school website

		micro courses	video open class	MOOC	One teacher record an excellent lesson	public service platform for education resources
Pilot School	Construct	21	9	0	31	34
	No construct	18	30	39	8	5
Non Pilot School	Construct	4	1	0	3	5
	No construct	3	6	7	4	2
Total		46	46	46	46	46

54.3% of the school websites have micro courses modules. Through interviews, it is learned that with the increasing application of micro lesson in teaching in recent years, and the Shaanxi Provincial Department of education has held many micro lesson competitions in primary and secondary schools, driving teachers to innovate in education and teaching, many schools have organized relevant training, so most teachers have training experience in micro lesson production, and make and upload own micro lesson. There are 10 schools with school-based excellent courses, which are early information-based course construction projects. Because the teaching video of excellent courses is relatively lengthy and does not conform to the law of network learning, the application effect is not good, and gradually becomes useless.

Through the comparison of visiting websites, it is found that almost all the schools with good online course platform construction are pilot construction units of educational informatization. The construction of education resource platform and micro courses in these websites is relatively complete, which has played a leading role. The overall level of informatization course construction of the websites of seven non pilot schools is not as good as that of the pilot schools.

However, from the survey results, most of the "one teacher record an excellent lesson" and micro courses in these schools are fragmented and have no system; the production level of school-based excellent courses is not very good, most of them are constructed in the way of classroom record, and they do not design and make network courses from the perspective of learners, but they have realized having network courses and basically do not have teaching practicability. This also shows why many teachers choose to use QQ, Ding Talk, Rain Class and other software to carry out live teaching instead of teaching with information-based courses or after-school auxiliary teaching.

4.2 Analysis of questionnaire results

4.2.1 Current situation of online course construction in primary and secondary schools

According to the survey, 92% of the schools have built information courses of different disciplines based on the platform of "one teacher record an excellent lesson" and "three connections two platforms", mainly including three subjects Chinese, Maths, English, nearly two-thirds of the schools surveyed have built information courses. Followed by biology, physics, geography, chemistry, history, morality and rule of law. This is also highly coincident with the importance of Chinese, Maths, English in school. These three subjects are still the most important in basic education, and the construction level of other subjects is similar. Through the survey, we know that the construction of primary and secondary school informatization courses mainly relies on the "comprehensive service platform of Shaanxi education connected to everyone", on which teachers can record videos, upload resources, open their own learning space, and build courses in the space. Students can visit through the registration account, watch teaching videos, and leave messages to get answers and help. However, the richness and practicability of construction resources depend on the willingness and energy input of teachers, as well as the promotion and incentive policies of the school. From page view and content update, the application of these courses is not very good, and there is a situation of paying attention to construction and neglect application. So when online education is really needed, these courses are basically abandoned.

4.2.2 Information course knowing

33.3% of the teachers are very familiar with it online courses, and 54.5% of the teachers are quite familiar

with it. With the development and wide application of network and information technology, as well as the educational administration holding various kinds of information-based teaching competitions at all levels to promote the construction of various teaching platforms, most teachers know and understand the network courses, and also participate in the construction and use of these information-based courses. Especially in the winter of 2016, Xi'an and Xianyang city started the first level response measures due to the heavy pollution of haze, and primary and secondary schools in the city were suspended class but ongoing learning. Many teachers gave online lectures through live network, Air Class and other ways, so that teachers and students could experience the teaching application of online courses.

89.2% of the students know or basic know the information-based courses. It can be seen that the ratio of teachers' and students' cognition of the information-based courses is relatively consistent. Because primary and secondary school students' cognition of the information-based courses mainly depends on the application of teachers, teachers will arrange some homework in the network platform for students to study and complete at home due to various situations, so that students can know the information-based courses.

It can be seen from the nationwide online education this year. Although teachers have a better understanding of information-based courses, most of them do not choose to use online courses for teaching or auxiliary teaching in actual teaching. Instead, they use QQ group classroom, Ding Talk, Rain Class and other software to carry out live teaching. Some teachers were inquired and learned that, first, teachers have no confidence in students' self-learning ability and self-discipline by using online courses; second, school leaders, in order to maintain normal order, require teachers to carry out live teaching.

4.2.3 Students use information-based courses situation

92.8% of the students have used QQ, wechat, teaching app and live website. They know how to use online learning, which has a lot to do with the suspension of classes caused by heavy pollution in 2016. In the suspended class but ongoing learning, many teachers have carried out various non face-to-face teaching activities through these media tools and platforms, and strengthened the students' application and understanding of online learning. Some students said that after that activity, they knew and used some course learning websites, such as zuoyebang, yuantiku, Wanpeng education, 101 education, etc. to learn outside the classroom.

It is worth noting that the question "have you ever applied a paid website to study certain subjects? ", "What is the learning effect after applying these online

courses? ", "Where are these online courses doing well? ". 10 students answered that they had used the paid online courses, and 8 of the 10 students thought their scores had improved. They thought that in the paid online courses, the subject knowledge taught by the teachers was relatively clear and systematic, and they learned more clearly. The knowledge they didn't understand could be timely tutored, and the questions they didn't know could also be carefully answered.

In this suspended class but ongoing learning, most of the previously paid learning websites have opened the right of free use during the epidemic, which is a very good thing for many graduating classes and students with strong initiative. For other students whose self-discipline is not enough or who usually need strict control by teachers, this may be the time to widen the gap with the top students.

5. CONCLUSION AND DISCUSSION

5.1 The fragmented information-based course in primary and secondary schools cannot meet the requirements of students' online learning. The best form of online course construction is the integration of resources by the education administration department.

The teaching content of online courses needs to be systematic, which requires teachers to design and teach each lesson well from the beginning to the end, and online courses have high requirements for video recording and production, which is hard to be met by one school and one teacher. In the pilot stage of information education, the education administration has invested a lot of energy and material resources to build "one teacher record an excellent lesson " and service platform of Shaanxi education connected to everyone, but these resources are not systematic. In the "suspended class but ongoing learning", the vast majority of teachers still choose the online live broadcast mode for teaching activities, which is not proportional to the input and output of online courses. There are two provinces and cities that can learn from the practice of "suspended class but ongoing learning". "Shanghai Education Commission organizes teachers with rich teaching experience to develop teaching resources, and students' school teachers provide guidance and interaction to students through the network or other platforms."^[2] "Jiangxi Province selects excellent teachers, who prepare lessons collectively through the network of their school, carefully record each online course, and watch it through cable television, network television and other platforms "^[3]. Because the teaching content of primary and secondary school courses is relatively unified, so you can choose multiple excellent teachers to carefully

prepare and record online courses, which not only shortens the time but also improves the efficiency. Since the students can't see the original teachers in the physical space, the teachers can choose to let the excellent teachers in the video instead of themselves, and they can also spare time to devote their energy to the preparation of exercises, after-school guidance and Q & a work. Of course, this also puts forward higher requirements for the education administrative department, which needs them to coordinate resources as a whole, do a lot of work in a short time, such as selecting teachers, recording courses, uploading resources, and actively promote the application of this way.

5.2 Online learning is a supplementary way of conventional learning, so we should strengthen the training of teachers and students in using online courses to teach and learn

It is the first time that online learning is used to replace conventional teaching in this epidemic in the whole country and even in the world. The study habits and self-discipline of primary and secondary school students cannot adapt to online learning. According to the research, only 53% of the students think they are more suitable for online learning, 45% of the students feel anxious because they study online at home, and 48.1% of the students think that their parents also feel anxious because of their online learning arrangements [4]

However, the experience and practice of online education accumulated in this "no suspension of classes" can be regarded as an educational programme in the modern governance system of education, because with the development of information technology, the use of online course learning will be an important supplementary way of normalized learning. The epidemic let the students experience the online learning practically, at the same time, to a certain extent, it also cultivated the habit of online learning and the consciousness of lifelong learning. After the epidemic, if students want to strengthen their self-learning, they can supplement and strengthen it through online courses. In the future work, we should strengthen the training of teachers on how to carry out online education. "Teachers should be designers of students' learning activities and provide learning support framework. We should be the organizer of students' learning activities and organize students' communication and interaction" [5]. And in primary and secondary school information technology courses to join the use of online learning content, strengthen the adaptability of students and operational skills, so that teachers and students can use the network to teach and learn activities freely.

5.3 Online training institutions provide high-quality digital education resource services as a means of after-school auxiliary learning will be the development trend of online courses in the future.

In this epidemic, many well-known online education institutions have opened the use rights of the platform in response to the call of "no suspension of classes". Researchers visited some well-known network platform courses and found that their course platform resources are rich, service awareness and construction concept are also very advanced. For example, using artificial intelligence to grade homework can intelligently identify problems and push solutions. After the epidemic, when the services provided by online education institutions are no longer free, many parents and students who have tried these resources will pay for the resources of these platforms. These online platforms are funded and constructed by the company, providing more thoughtful services for consumers. Online courses can expand the scale of students, dilute the cost of enterprises, reduce the cost of course learning, and enable enterprises to invest more funds in course construction and services. It will be the trend of online course construction and application in the future to let professional people do professional things, to build information-based education resources by specialized enterprises, and to purchase services from schools or students.

1. Broadband network connected to every school, high-quality resources connected to every class, network learning space connected to everyone, building public service platform for education resources, public service platform for education management

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REFERENCES

[1] Circular of the general office of the Ministry of education, the general office of the Ministry of industry and information technology, on the work arrangement of "suspended class but ongoing learning" during the extension of primary and secondary schools [DB/OL]. [Http://www.moe.gov.cn/srcsite/a06/s3321/202002/t220200212_.html](http://www.moe.gov.cn/srcsite/a06/s3321/202002/t220200212_.html), 2020-02-12.

[2] Suspended class but ongoing learning! The Shanghai program was launched, and the "classroom in the air" was recorded! [DB/OL]. https://www.sohu.com/a/374677413_391459, 2020-2-20.

[3] Suspended class but ongoing learning Jiangxi Province uniformly arranges online classes for primary and secondary school students [DB/OL]. [Http://jx.people.com.cn/gb/n2/2020/0203/c190181-33758087.html](http://jx.people.com.cn/gb/n2/2020/0203/c190181-33758087.html), 2020-2-3.

[4] [5] no school suspension: how about the effect of home-based learning [DB/OL]. https://news.gmw.cn/2020-03/20/content_.htm, 2020-3-20.

[6] Cheng Dongmei. Research on the construction, sharing status and construction mode of digital education resources in Higher Vocational Colleges [J]. *China Vocational and technical education*, February 2016.