

# Online Learning Problems and Strategy Analysis of Online Teaching in Primary School Mathematics

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DOI: [10.36348/jaep.2021.v05i10.003](https://doi.org/10.36348/jaep.2021.v05i10.003)

| Received: 08.09.2021 | Accepted: 12.10.2021 | Published: 19.10.2021

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## Abstract

The online mathematics teaching in primary schools under the background of COVID-19 epidemic is an important measure to implement the policy requirements of the Ministry of Education of "suspending classes without stopping teaching, and closing classes without stopping school". When adopting online teaching in primary school mathematics through network resources, it is not only to follow the development of the era of science and technology education, but also a science and technology park to cultivate teachers and students' innovative learning. Starting from the online teaching practice of primary school mathematics during the COVID-19 epidemic prevention and control period, this paper proposes the common problems existing in the online teaching of primary school mathematics. Finally, from the three aspects of teaching platform, teachers and students, we discuss the optimization strategy of online teaching in primary school mathematics, so as to better develop online teaching in the future, and better serve the teachers and students.

**Keywords:** Primary school mathematics, online teaching, coping strategies.

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## INTRODUCTION

Primary school mathematics is to cultivate primary school students to learn basic computing, simple geometry, data survey and other mathematical abilities, and so that students can flexibly apply knowledge to real-life mathematical problems after learning. At the beginning of the Spring Festival in 2020, the comprehensive outbreak of COVID-19 led to school suspension and classes, while "face-to-face" teaching cannot be carried out, which made the development of online education push to the express track (Mahmood, 2021). Internet companies have quickly promoted and opened up free live classes with the most sensitive sense of smell. Subsequently, in order to start school as scheduled and in response to the state's call for "no suspension of classes", primary schools across the country adopted an online teaching model, which is a new teaching method derived from the new era of rapid development of information technology. Online teaching is remote teaching, which can complete the tasks of "teaching" and "learning" through a variety of methods such as the Internet and multimedia. It builds a bridge between time and space and realizes resource sharing. However, this is definitely a familiar and unfamiliar field for most

teachers, which is a big challenge for them. As for the primary school students in the lower grades, they are still at the age of active and playful. According to the feedback from parents, the effect of students studying at home is uneven. Especially after returning to school, the teachers found that most students had various problems in the understanding, mastery and application of mathematics. Thus, it is learned that online mathematics teaching has some problems for primary school students. Combined with the problems caused in the specific practice process of online teaching, this paper discusses the method of primary school mathematics online teaching to improve the effect of teaching.

## RESULTS AND DISCUSSION

### Common problems facing online mathematics teaching in primary schools

There are cumbersome operations and network congestion problems in the teaching platform equipment. In this fast-developing Internet era, online education platforms are emerging one after another, but each has its own advantages and disadvantages. The most frequently used online education platforms during the epidemic include DingTalk, Tencent Classroom, Chaoxing Xuetong, Yu Classroom, QQ, Tencent Conference, etc. The functions developed by various

teaching platforms and the teaching resources they possess are different. Teachers of each subject choose different teaching platforms according to different teaching methods, and learn to operate its various functions, which requires teachers to learn in advance. A variety of teaching software and proficient use, but also requires parents and students to register information in advance to understand the operation steps of the general function. The cumbersome software operation steps are easier for young teachers or senior students who often use mobile phones, but not easy for older teachers, parents and primary school students with lower age groups. This not only brings many unavoidable operational troubles to teachers but also to some parents and students.

Various online teaching platforms also have a common drawback "network congestion". At present, online education in China is at a turning point in its development and is not yet mature. At the same time, due to the epidemic, countless teachers and students from universities across the country have flooded into the platform at the same time to prepare for classes. For a short time, thousands of users gathered on the same platform to carry out teaching activities, and such a large data communication makes it difficult for the online teaching platform to carry. In addition, the performance and network stability of mobile phones, computers or tablets are necessary conditions for online teaching. The implementation of online teaching in a short period of time cannot guarantee that every teacher and every student can successfully enter the online teaching platform. If some families live in remote areas, do not have broadband, and have extremely poor internet speeds, they will enter or exit the class intermittently during class, which will not achieve the desired class effect. These problems can cause software background paralysis, network lag, congestion and other problems (Van der Spoel *et al.*, 2020).

The online teaching method is simple and lacks teacher-student interaction. There are cumbersome operations and network congestion problems in the teaching platform equipment. The learning of primary school mathematics is not only to let students obtain mathematical knowledge, but more importantly, to allow students to experience the process of exploring mathematical knowledge, so as to gain mathematics learning experience, mathematical thinking and mathematical thinking methods. In addition, students in the lower grades of primary school mainly focus on intuitive thinking. In online teaching, teachers can only teach with limited teaching aids, and most of them rely on PPT to explain or record videos. There is basically no presentation and teaching of physical objects. During the operation, students only hold pens and books for listening and practicing, and cannot do it by hand.

Online teaching makes teachers and students not in the same space. Teachers are like speaking "stand-up crosstalk" on the screen. In this case, it is impossible to see the changes in the expressions of the students at the time, nor can they hear the voices of the students in time. The only way to understand the students' learning situation at the time is through text barrage. In addition, for students in the lower grade, it takes a certain time to say a sentence or two in the input box, so that the course may be delayed or the students' questions can not be answered, which makes it difficult to carry out online teaching activities (Albrahim, 2000). Moreover, in the traditional offline teaching, the teachers will open a new class based on the common things in the students' life or familiar interesting stories to introduce the new class, and then guide the students to get close to the teaching goals according to the students' reactions at that time. This teaching method can achieve a very good teaching effect, but when the online teaching again adopts this teaching method, the teachers cannot clearly know whether the students have a strong sense of situational substitution, so it is not easy to guide according to the students' immediate response. This is a test of teachers' educational wit. Without enough online teaching experience, it is difficult to make changes in time, so that the actual teaching effect is not good.

Online teaching replaces the "face-to-face" teaching method, and there may be a lack of design in teaching. Some teachers may only give lectures, especially for the subject of mathematics. Many people think that as long as the subject is thoroughly explained, students will be able to do the problem. This is actually a wrong idea, which will cause students to block their mathematical thinking and think about problems. This requires teachers to put forward appropriate questions in class, guide students to take the initiative to think, and mobilize the enthusiasm of thinking. To be able to fully diverge students' mathematical thinking and draw inferences from one another, it is necessary not only to know that there are multiple solutions to this math problem, but also to be clear about the nature and formula used in this math problem. Therefore, in primary school mathematics teaching, teachers must interact with students by designing questions to enhance students' mathematics consciousness.

The lack of effective supervision of online teaching and the lack of overall construction of teaching knowledge. Although the students in the lower grades of primary school have been in school for several years, their self-control ability is relatively poor, and they do not yet have the ability to self-manage and learn independently. In the study and life, teachers and parents are needed to help and supervise (Morreale 2021). Especially in online class hours, students study online at home. Because there is no specific learning atmosphere, coupled with the lack of effective supervision and timely interaction, students will

gradually relax their attitude towards learning, and their academic performance will gradually decline.

Students' online learning is greatly influenced by the family atmosphere. In order to allow students to better accept online learning, parents prepare an independent computer or mobile phone for students to effectively prevent interference from outside information. However, only a small number of parents can meet this condition, and most parents can only prepare an old mobile phone or their own mobile phone for the students. On the other hand, some parents may have to work or take care of the elderly, children and other reasons, do not have time to take care of their children's study, then let their children alone online classes in their own room or send their children to their grandparents' homes, so that the elders urge the study. And because of the family environment is more temptation, students are susceptible to influence when learning alone, which will lead to a decline in students' focus on learning. Even some students just open the online class software without listening to the teacher's lectures, as time passes, there will be obstacles to the connection of mathematical knowledge points, which greatly affects the learning effect of students.

At present, the videos recorded in online teaching are basically one teacher one lesson, that is, each outstanding teacher is invited to record a learning video of the content. Although the teachers who recorded the video are all experienced and excellent teachers, each of them has different styles. The content explanation can only be based on the content of this class, without systematic teaching. The content that students learn is fragmented and does not have the ability to integrate the knowledge in series.

### **Optimizing Strategies for improving online mathematics teaching in primary schools**

Schools should make overall arrangements and carry out online teaching in a planned way. Before the implementation of online teaching, the school should immediately set up online teaching groups for each grade, adjust its ideas, discuss and formulate a plan to effectively supervise and control online teaching activities. In order to ensure that online teaching activities are carried out in an orderly manner, school leaders and teachers at all levels should work together to carry out online teaching at multiple levels and diversification according to one goal, and rationally deploy and formulate mathematics teaching goals and homework requirements for each grade, and make full use of online enrichment (König *et al.*, 2020).

Secondly, the school can carry out special training on online teaching according to the actual situation. For the purpose of online teaching, mathematics teachers of each grade develop online primary school mathematics teaching plans in line with their own schools, further study the due process of

online teaching, and further improve the classroom efficiency.

Families and schools should use data analysis skillfully to form effective supervision. For primary school math classes, there is too much content in mathematics calculations and application of mathematical knowledge to solve practical problems, so it is necessary to ensure that students are allowed to perform calculations every day, mainly with live classes. In the online teaching stage, teachers should gradually change from "speaking with experience" to "talking with data". Teachers can make full use of other online practice software to timely understand the students' online learning situation, the students' individual situation and the overall situation of the class, so as to have a good idea. Teachers can make full use of the hidden functions in the teaching platform software, and effectively and quickly understand the students' learning situation.

### **Teachers should prepare lessons carefully and build a knowledge system.**

For the development of online learning content for elementary school mathematics, it is necessary to form a professional team for in-depth development and research. After fully studying the age characteristics, study habits, knowledge background and elementary school mathematics textbooks of the lower grades of primary school students, develop corresponding online teaching courses with characteristics. After the beginning of the elementary school, most of the new knowledge has been learned online, and relearning with zero foundation is not realistic and unnecessary. Before the start of offline semester, teachers should have an in-depth understanding of the online learning and home learning of the students taught, and conduct an exercise or survey on the students at the beginning of the semester to fully understand the students' grasp of the knowledge and weaknesses, and determine the semester teaching plan.

Class is the central part of teaching, and preparing a class is the prerequisite for a good class. Although online teaching does not require teachers to prepare every lesson as a high-quality class, it must be carefully designed. The content of online teaching must not be too full. It is necessary to plan the learning segments reasonably and implement the method of small steps and gradually overcome them. Moreover, most of the teachers and students in the primary school mathematics teaching class make the students understand and master the mathematical knowledge points through the hands-on operation process. This online teaching is even more difficult for teachers, so lesson preparation is particularly important.

Teachers should not excessively enlarge the shortcomings of online teaching, and should flexibly use the advantages of online teaching to make the best

of the situation, and must not directly apply the offline teaching methods. For the online teaching of primary school mathematics, the content of teaching can be divided into interesting small fragments. In order to attract the attention of students, a number of effective mathematics questions are set up in the teaching process to give full play to the students' subjective initiative.

Whether it is online teaching or offline teaching, the cultivation of students' interest is always the basis of teaching development, and it is also the key content that teachers need to pay attention to in teaching. To arouse students' interest is an essential condition to carry out teaching, especially for primary school students. Every link must not be sloppy, and the teaching content of each link must be carefully designed and interlinked. In the course guidance link, teachers can put forward a small question or to tell a small story close to the life of the students to elicit the question according to the teaching content, so that the student can think about the key information of the problem (Hwang, 2021). At the same time, according to the situation of the problem design, teachers need to make corresponding interesting PPT animation drawings to help students understand the problems and attract students' interest in learning. An interesting question immediately caught the attention of the lower grades, thus stimulating their interest in area discussion.

Teachers should control the pace of teaching and maintain students' learning state. It is more difficult to maintain a positive learning state of students than to stimulate students' interest in learning. For primary school students, the cultivation of mathematics learning attitude is an important issue related to their continuous learning and healthy growth. Teachers must control the teaching rhythm and ensure that the teaching process and teaching rhythm are reasonable, so that students have enough time to personally experience the process of guessing, exploring, verifying, and deriving mathematical knowledge. First of all, before the formal start of teaching, teachers must presuppose the problems that students may encounter in teaching and give corresponding solutions to inspire thinking and consolidate knowledge. Teachers should put the screenshots of the textbook in the PPT one day in advance, inform the students of the teaching equipment to be prepared for the next class, and grasp the teaching rhythm in a planned way, so that every student can participate. Online interaction is much more difficult than offline interaction, which requires teachers to fully imagine what difficulties middle students will encounter in this class before teaching, set a scene for full interaction with students, and leave appropriate time for students to think about in each link. Secondly, teachers should constantly build a problem framework to guide students to think and explore. Although there is no full interaction between teachers and students, it is very necessary to leave enough time and space for students to question and ask questions, so as to provide students

with effective opportunities to participate in the classroom. Finally, the teacher should choose a good time to complete the self-answering questions.

Online teaching can also be divided into small groups for discussion. Students can be divided into a group of three. After understanding the division of labor, they can leave the classroom for ten minutes to discuss and cooperate, and then return to the online classroom after ten minutes, and then the groups can exchange ideas. When listening to the results of students' exchange and discussion, teachers should grasp the dominance of online classroom and issue effective instructions to control students' passion within an appropriate range. In this way, the online classroom not only has the voice of the teacher, but also the voice of students discussing and communicating in full swing. At the same time, when asking questions or interacting, teachers should take into account the fact that elementary students are not familiar with electronic products. Teachers can connect with students or ask questions in the form of multiple-choice questions, allowing students to answer with simple numbers. This also tests the tacit understanding between teachers and students. After a period of time, teachers and students will cooperate very tacitly in online teaching. Students can also fully integrate into the classroom and have a high degree of concentration.

Teachers and parents should communicate more to ensure students' learning efficiency. First of all, in the process of online learning, the cooperation between the parents of students and teachers is very important. Teachers should always contact each parent to exchange information about the situation of students studying at home. Due to the poor self-control ability of primary school students, there are many temptations to study at home. Without the restraint of classmates and the supervision of teachers, it is difficult to learn independently. At this time, parents must give full play to the role of supervising students to learn. Some parents are not well-educated, and educating students to learn is mainly through imperative tone or accusations, which will make students bored and learn passively. Therefore, teachers should communicate more with their parents and use the online learning of the epidemic as an opportunity to allow students to have more learning autonomy and learning time management rights, and to transform "other teaching" into "self-study" to help students cultivate the habit of independent and independent learning.

Secondly, mathematics is a major subject, and mathematics is a difficult subject for primary school students. For the learning tasks assigned by online mathematics teaching in primary schools, teachers can cooperate with parents to supervise students' learning. It is necessary to take into account the students' homework in other subjects, so teachers should abandon the sea of questions, not just calculations or exercises

and other boring homework, but design a kind of mathematics homework in combination with life-related questions. Furthermore, teachers can not only assign thinking assignments, but also video assignments. The teacher carefully arranges various and interesting homework for the students, but cannot see the process of the students doing the homework. At this time, teachers and parents need to communicate effectively and cooperate together to understand the students' mastery and acceptability of mathematics homework in a timely manner, and then improve the design of teaching methods in a targeted manner.

Then, teachers can hold parent meetings online according to the actual situation to promote cooperation between the family and the school. It has been a period of time since online teaching has been carried out, and the teachers in each class have also discovered that some problems have gradually emerged. For example, when some students did not complete their learning tasks on time, they would find some excuses to say that they did not receive homework information due to network reasons. Parents may not know these things, so in order to ensure that teachers and parents have a good grasp of the students' learning and living conditions, it is very necessary to hold an online parent conference. Through the media of online meeting, teachers can inform parents of some problems existing in students during online teaching, so that parents can understand the current situation and arouse parents' initiative and responsibility.

## CONCLUSION

Compared with the traditional offline teaching model, online teaching breaks the restrictions of time and space on teaching development, but it also brings new challenges to teaching. Although online teaching is only a temporary move during the epidemic prevention and control period, it is the development direction of education modernization. The organic combination of online teaching and offline teaching forms a new education model, which can more effectively optimize the "teaching" of teachers and the "learning" of students, and promote the continuous and prosperous education

of education. Therefore, teachers should pay attention to the exploration of "online + offline" teaching model, and continue to deepen the teaching reform concept, so as to promote the cultivation of students' core literacy.

## ACKNOWLEDGEMENT

The works described in this paper are partially supported by Undergraduate Innovation Foundation Project of Anyang Normal University (No. 202110479028) and 2021 Provincial College Students' Innovation and Entrepreneurship Training Program in Henan Province (No. S202110479028).

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