

Research on Home Based Online Learning of Remote Rural Students During the Epidemic

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Abstract: During the COVID-19 epidemic, the unprecedented online education of "no suspension of classes and no suspension of schools" was carried out throughout the country. This survey comprehensively analyzed the actual operation, subjective and objective influencing factors, and students' learning motivation of online classes in remote villages of Zhaoqing City, Guangdong Province. It investigated and analyzed the effect, advantages and disadvantages, and outstanding problems of online teaching in primary and secondary schools of Zhaoqing City under the epidemic situation from the perspectives of students, parents, and teachers, and discussed the teaching methods and strategies to improve the quality and effectiveness of online teaching from a partial perspective, Focusing on improving online teaching focus and online teaching activity, this paper puts forward detailed countermeasures and suggestions on optimizing online learning integrity, providing the following value reference for improving governance and consolidating the development of online teaching construction in Zhaoqing City and even the whole country.

1. Introduction

In 2020, the sudden COVID-19 epidemic had an unprecedented impact on the national society and economy, and also put online education to an unprecedented test. The Ministry of Education issued the notice of "using the network platform to 'suspend classes and schools'", which officially opened the prelude to the nationwide online teaching [1]. For a while, teachers' ordinary classroom experience lost its usefulness. Most of the two-way interaction between teachers and students became a one-way street. The active and passive roles between teachers and students were exchanged. The flexibility and tolerance of teaching and learning were greater. The "digital driven" teaching really entered thousands of households. This large-scale national online course has not only changed the traditional teaching methods on campus, but also will have a profound impact on China's future education [2].

How to strengthen and improve online teaching and improve the quality of online teaching will become a challenge for many teachers [3]. This paper uses the questionnaire method to collect relevant data from teachers, parents and students in three different identities. It conducts an in-depth study on the current situation and existing problems of online teaching for remote rural students in Zhaoqing City, clarifies the advantages and disadvantages of online teaching, and discusses the existing problems, proposes corresponding solutions, and provides some reference suggestions for

the development and online learning.

2. Survey Design and Development

2.1 Data Collection Method

This study investigated the attitude and situation of online teaching under the epidemic situation from three different perspectives of students, parents and teachers. According to the actual situation of the respondents, the student questionnaire puts forward the attitude towards online teaching and its impact. According to the perspective of the respondents, the parents' questionnaire puts forward the problems that students should pay attention to when facing online teaching, such as their attitudes towards them. From the perspective of the investigators, the teachers' questionnaires put forward the influencing factors and attitudes in their online teaching.

2.2 Data Acquisition and Processing

This questionnaire was conducted online through the questionnaire star. Finally, 136 questionnaires were collected from students, 703 from parents and 150 from teachers.

2.3 Basic Information of Samples

2.3.1 Student Sample

It can be seen from the survey results that the number of male students accounted for 38.24% and female students accounted for 61.76%. The number of female students we sampled was far greater than the number of male students. 9.56% of the students are in primary school, 29.41% in junior high school and 61.03% in senior high school. The preliminary analysis is due to the fact that primary school students can not freely control electronic products, so the data obtained is less. In high school, they have certain self-control ability, and often have their own mobile phones, so it is easier to get the data of high school students.

2.3.2 Parent Sample

Among the parents who participated in the survey, 32.57% were male and 67.43% were female. In terms of the relationship with children, 67.99% of the respondents were mothers and 26.88% were fathers. The educational level of parents is shown in the following figure. It can be seen from the figure that 61.88% of parents have only junior high school education and only 3.84% have bachelor's degree or above.

2.3.3 Teacher Sample

The proportion of male and female teachers participating in the survey is 3:7, with women accounting for more; From the perspective of education level, most teachers have bachelor's degrees, accounting for 78%, 8% of them have junior college degrees, and 4% have master's degrees; Most of them have taught for more than five years; The proportion of primary school students to junior high school students is about 2:7:1; Most of the subjects taught are concentrated in the three major subjects of language, math and English.

3. Investigation Results and Analysis

3.1 Analysis of Students' Learning

3.1.1 Whether Students Pay Attention during Online Classes

Most of the students can't keep their concentration on their studies during online classes. 58.82% of the students can't concentrate in class, and only 41.18% can keep a more focused state in class. It can be seen that how to ensure students' concentration in online teaching courses is still a difficult problem.

3.1.2 How to Solve Learning Problems

When encountering problems in the learning process, most students choose three ways to solve problems: "think by themselves, ask the teacher if they have no ideas", "discuss with classmates" and "seek answers online". Among them, discussing with classmates accounts for the largest proportion. It can be seen that most students prefer to solve problems in discussion. This will also serve as a reference for teachers in teaching classroom design, and appropriately increase the group discussion links of students. However, 36.76% of the students still lack some enthusiasm for learning. Instead of "facing difficulties", they "quit".

3.1.3 Whether Teachers can keep Up with Their Teaching Progress

In the learning process, only 21.32% of the students can fully understand the teacher's teaching content, and more people are in this state, accounting for 45.59%. And there is a phenomenon that it is difficult to keep up with the students in the classroom. 22.06% of the students can only understand a small part, and 11.03% of the students can not even understand. This phenomenon of two-level differentiation not only leads to the lag of teachers' teaching progress, but also makes the students who cannot understand fail to keep up with their studies and participate in the classroom, which is easy to lose their interest in learning.

3.1.4 Interference Factors

There are many interference factors in the online learning process, and students believe that "electronic products", "environmental noise", "parents' excessive concern" and "visual interference" are the four main interference factors, accounting for 69.85%, 53.68%, 51.47% and 52.94% respectively, of which "electronic products" account for the main factor. "Physiological interference" and other factors have less interference, accounting for 45.59% and 29.41% respectively. There are also students who are not interfered with, accounting for 30.15%. This shows that although there are all kinds of external factors interfering during online classes, there are still students who are not interfered.

3.1.5 Motivation to Answer Questions

26.47% of the students answered questions actively, 44.12% wanted to answer questions but did not take the initiative, and 29.41% did not want to answer questions. It can be seen that 70.59% of them have the intention to answer questions, and they do not resist answering questions. It is more caused by other reasons, such as being in a noisy environment, not daring to answer questions in front of everyone, and being introverted.

3.1.6 Favorite Interaction Mode

Most students like "sending bullet screen/comments" and "award-winning interaction". It can be seen that students prefer the way of actively participating in the classroom to the passive way of being whipped by teachers. Students are more interested in more interesting ways, showed as Table 1.

Table 1: Interaction Mode Favored by Students

Interactive modes preferred by students	Proportion
Send bullet screen/comments	69.85%
Award winning interaction	58.09%
Problem relay	49.26%
Voice connection	38.97%
Video connection	36.03%
Turntable roll call	33.09%
Other	23.53%

3.1.7 Advantages of Online Teaching

Most students think that the advantages of online learning are "playback function makes learning more efficient and more independent", "access to high-quality educational resources, and ability to listen to famous teachers". The number of people who agree on these two points is the largest and the same, accounting for 63.97%. The second is "breaking the restrictions of time and space, allowing free activities of educational resources and free and controllable learning time", accounting for 54.41%. The advantage is that "the learning environment is quieter and more comfortable than the school", accounting for 49.26%. A few people think that the advantages are "teachers pay more attention to students" and other advantages, accounting for 34.56% and 26.47% respectively.

In general, 57.35% of the students prefer traditional offline education and 40% prefer online teaching, which shows that both have advantages, and many students get used to online teaching more quickly.

3.2 Analysis of Parents

3.2.1 Occupation of Parents

As students and parents in remote areas are investigated, the number of farmers and farmers is the largest among the data collected, with a total of 91. The second is the working class and the self-employed, 46 respectively. The remaining occupations are relatively small in number and wide in scope. It can be seen from the data that the vast majority of parents are farmers, which also makes it difficult for parents to provide children with a good learning atmosphere.

3.2.2 Supervision of Parents on Children during Class

56.61% of the parents occasionally checked their children's school attendance, 22.62% of the parents were always with their children, 14.37% of the parents only asked about their children's learning orally, 6.26% of the parents were in other situations, and 0.14% of the parents did not care about their children's learning performance. It can be seen from the data that parents care about their children's academic performance, but only 1/4 of them can always supervise their children in class. The purpose of this question is to confirm whether the supervision of parents has an impact on children's concentration in class.

3.2.3 What Parents should Pay Attention to during Online Teaching

Parents think that there are mainly four aspects that should be paid attention to in the online teaching process: children's distraction; Pay attention to the moderation of participation in the learning process; to create a relatively quiet classroom environment for children; Pay attention to protecting children's eyesight.

3.3 Analysis of Teachers' Teaching

3.3.1 Software Used By Teachers

The teachers who use Tencent conference account for the largest proportion, with 28.67% and 24.67% respectively for QQ or WeChat groups and DingTalk. The diversity of online teaching software and different forms bring different feelings to students and teachers, showed as Table 2.

Table 2: Software used by teachers

software name	Proportion
Tencent Conference	55.33%
QQ or WeChat group	28.67%
DingTalk	24.67%
Xuexitong	6%
Netease Cloud Classroom	8%
YY live broadcast	1.33%
Other	36.67%

3.3.2 Ways for Teachers to Master Students' Learning

As shown in Table 3, 74.67% of teachers solve students' problems and master students' conditions through online question answering. 54% of teachers provide online tutoring assignments and 50% provide after-school discussion and guidance. It can be seen from this that there are many ways of online help, and more teachers are willing to directly use online question answering, which is simple and fast.

Table 3: Ways for teachers to master students' learning

Ways for teachers to master students' learning	Proportion
Line answering	74.67%
Online tutoring assignment	54%
discussion after class	50%
Classroom test	43.33%
supervised by parents	28%
Other	16%

3.3.3 Obstacles Teachers May Encounter during Online Teaching.

Due to changes in teaching forms and methods, teachers may encounter various problems in the online teaching process [5]. Among them, network stuttering and less effective expression than offline are two major obstacles, accounting for 80.67% and 74.67% respectively. This shows that problems with network equipment in online teaching have a great impact on teaching, and it is difficult to

replace offline education online.

3.3.4 Teachers Think the Advantages and Advantages of Online Teaching

There are many advantages of online teaching. Teachers feel that the most important thing is to make the classroom novel and interesting and achieve educational fairness, accounting for 59.33% and 54.67% respectively. At the same time, there are also many people who believe that online learning can improve students' consciousness, accounting for 34.67%, and it is convenient for teachers to correct homework, accounting for 26%. It can be seen that with the progress of network technology, teachers are gradually getting used to and accepting online learning. In view of the shortcomings of online learning, the biggest problem is that students are not self-discipline enough, and classroom order is difficult to manage, accounting for 88.67%. The second is that teaching is not targeted, accounting for 64%.

4. Results and Analysis

Through the analysis of the questionnaire data, we found that online teaching at this stage has many advantages, but also many problems.

4.1 Advantages of Online Instruction in Primary and Secondary Schools

First of all, students can break the restrictions of time and space and learn more easily and freely [6]. Students can search for the knowledge they want on the Internet. The teaching resources are rich, which is conducive to students to obtain more knowledge outside the classroom. Improve the cost performance of learning. At the same time, students can learn knowledge points that they did not understand once through playback, which makes learning more efficient and more independent.

Secondly, teachers can make the learning process more interesting and recordable by using the network platform and software, so as to improve students' interest in learning and facilitate teachers to conduct data based analysis and evaluation. At the same time, teachers can better use other high-quality online resources to achieve education fairness and improve classroom efficiency [7].

Finally, parents can better participate in the learning process. Parents can study with students to understand their learning progress and difficulties, so as to provide better guidance.

4.2 Problems of Online Teaching in Primary Schools

4.2.1 Poor Learning Atmosphere and Barriers to Communication between Teachers and Students

88.67% of teachers think that online teaching has problems such as poor interaction between teachers and students, inability to grasp students' learning situation in time, and students' wandering in class. They think that the network is often stuck (this is due to both network speed and platform software); 68% of the teachers thought that the after-school practice tracking was not in place and the teaching quality declined. 69.85% of the students thought that electronic products, such as mobile phones and computers, had a great impact on their learning; More than 44% of students will not actively answer questions when teachers initiate online course interaction. For all teachers and students, the most important thing to improve online teaching is to increase interaction links, classroom feedback and incentive models [8].

4.2.2 Students have Poor Autonomous Learning Ability and Lack Self-Control

Students' initiative is the premise of adapting to online teaching, and also an important factor affecting the teaching effect [9]. In online teaching, teachers act as supporting role, focusing on guidance, encouraging students to actively participate in classroom discussions and ask questions boldly. Teachers can no longer find out students' understanding through students' classroom performance as in the past, so as to control their teaching progress. At the same time, online teaching also has problems such as network delay. Online teaching reduces students' dependence on teachers' supervision, and online teaching also lacks peer reference. The survey found that up to 69.85% of the students were vulnerable to electronic products during online classes, followed by environmental factors.

4.2.3 Some Teachers are not suitable for Online Teaching Mode

There are many differences between online teaching and offline teaching. 34.67% of teachers are not good at using the teaching platform, and think that the presentation effect is not as good as offline teaching. 64.74% of teachers think that the school needs to carry out online teaching training for teachers. It can be seen that the improvement of online teaching quality puts forward new requirements for teachers [10]. Teachers need to organize and design appropriate teaching programs to guide students to learn independently and improve learning efficiency.

5. Conclusion

Based on the results of an all-round investigation and analysis, the following countermeasures and suggestions are proposed to improve the effectiveness and efficiency of online learning.

5.1 Improve Teachers' Online Instruction Design Ability

5.1.1 Strengthen Teachers' Instruction Design and Teaching Skills Training

In order to better carry out online teaching, all primary and secondary schools provide teachers with relevant resources such as online teaching skills, micro course courseware making, teaching platform software making, or carry out online training to improve teachers' knowledge and skills related to online education before the formal start of classes. Each primary and secondary school can also adopt the method of "weekly training" and "weekly conclusion" for teaching evaluation, conduct online conference training and test investigation for teachers, let teachers summarize online teaching work every week, put forward problems in teaching and share teaching experience, so as to promote better online teaching.

5.1.2 Innovate Online Learning Methods and Improve Students' Learning Interest

According to the characteristics of online learning, teachers need to redesign the teaching content. Teachers can combine knowledge points to make interesting and trendy video animations, so that students can learn in "seeing" and "listening". Teachers can also optimize the teaching courseware and push the subject knowledge points in combination with small games to stimulate students' curiosity about the learning content, so that students can deepen their memory of knowledge points in interesting games. By optimizing the classroom content, we can organize and manage fragmented knowledge, enrich the visual sense of teaching content, and enhance students' interest in learning.

5.1.3 Use Technology to Strengthen Teacher-Student Interaction and Improve Students' Online Learning Focus

Teachers can use various functions and technical features of the online platform to strengthen interaction and communication with students. For example, interaction can be conducted by randomly selecting students, award-winning Q&A, bullet screen comments, and video speeches. Set up secret signs and welfare receiving links in the course of class to improve students' enthusiasm for class. In addition, online homework question bank can be established and homework can be published through teaching platform or QQ, WeChat group, etc.

5.2 Strengthen the Cultivation of Students' Autonomous Learning Ability and Information Literacy

During online learning, students should realize that traditional learning is different from online learning in terms of methods and habits, and develop the habit of previewing before class, learning in class, and reviewing after class. Set the youth mode on your device to prevent yourself from being affected by games and other factors.

Schools and teachers can provide more technical support services for students, guide the problems existing in the use of equipment, and help develop learning habits.

5.3 Mobilize Parents to Participate Moderately to Provide Better Security for Students

First of all, parents need to participate in students' learning process appropriately. Parents can remind their children of their study time, ask their children about their study and experience in their spare time, and strengthen communication and feedback with teachers.

Secondly, parents should provide corresponding guarantee for students' online learning. Remind children to take eye exercises every day to relax and have a moderate rest. Carry out outdoor sports during non-school hours to improve children's immunity. Strengthen dietary nutrition and balanced diet. Parents can let children eat a balanced diet and eat more fruits and vegetables that are good for eyesight, such as carrots, spinach, tomatoes, etc.

5.4 Improve Online Teaching Management and Supervision Mechanism

5.4.1 Pay Attention to the Construction of Teaching Resources and Increase Students' Autonomy

Teachers need rich teaching resources, and timely display the required teaching resources for students according to the teaching process. Each discipline group or teaching research group shall sort, integrate, classify and reorganize various online courses, micro courses and teaching plans to form a discipline teaching resource package, so as to provide resource guarantee for online teaching. New technologies such as big data and artificial intelligence are used to transplant knowledge resources and teaching methods to the network platform, break through the time and space constraints, and make it easier for students to acquire knowledge.

5.4.2 Optimize the Use of the Platform and Improve the Personalized Settings of the Platform

The selection of education platform should meet the requirements of teaching resource construction, teacher-student interaction, class attendance, homework submission and other functions. It can even innovate and develop other functions of the platform to prevent students from being affected by electronic games and improve classroom learning efficiency. Purchase or recombine

relevant software functions, give full play to their respective advantages to better serve teaching, and optimize and combine different online teaching schemes according to different teaching stages.

5.4.3 Improve Online Teaching Supervision Mechanism, Establish Effective Feedback Evaluation, and Optimize Online Teaching Environment

The management department of the school should combine the teaching characteristics of online teaching, establish and improve the monitoring and evaluation system and management mechanism of teaching quality and status in the era of "Internet + education", and formulate a practical and feasible phased implementation work plan. Education administrators can use Internet technology to fully tap the data resources of teachers and students in online teaching, formulate data indicators to evaluate the quality of online teaching in advance, promote teaching by evaluation, promote learning by evaluation, and dynamically monitor the implementation of online teaching by using data.

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