



# INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES



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ISSN: 2222-6990

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To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v12-i11/15491> DOI:10.6007/IJARBSS/v12-i11/15491

**Received:** 09 September 2022, **Revised:** 12 October 2022, **Accepted:** 29 October 2022

**Published Online:** 19 November 2022

**In-Text Citation:** (Hongchen et al., 2022)

**To Cite this Article:** Hongchen, Z., Kasimon, D., & Ahmad, A. M. (2022). The Use of DingTalk among Middle School Teaching during the COVID-19 Pandemic in China. *International Journal of Academic Research in Business and Social Sciences*, 12(11), 2814 – 2825.

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**Vol. 12, No. 11, 2022, Pg. 2814 – 2825**

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## The Use of DingTalk among Middle School Teaching during the COVID-19 Pandemic in China

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### Abstract

Due to the impact of the COVID-19 pandemic, all teaching and learning activities around the world have shifted online. DingTalk has broken through the shackles of the pandemic and built a bridge between teachers and students, so that teaching activities can continue. Although the application of DingTalk for online teaching is an emergency measure, it also faces challenges in the application process. Therefore, this study explores the advantages and disadvantages of DingTalk in online teaching during the COVID-19 pandemic. In this qualitative study, through semi-structured interviews, ten teachers from a middle school in China were selected as interview participants. Purposive and snowball sampling techniques were employed to identify participants. The findings were analyzed using thematic analysis to interpret the findings and draw conclusions. The results show that using DingTalk for online teaching can potentially be a successful practice. Despite its potential, however, DingTalk also has its own limitations. Nonetheless, this application has benefited thousands of teachers and students, providing educators with a new way of thinking regarding the medium of teaching and learning. This research contributes to the study on online media particularly in the context of teaching and learning, and how the online medium can potentially promote continued development in the teaching field.

**Keywords:** DingTalk, Online Teaching, COVID-19

### Introduction

The COVID-19 pandemic has had a significant impact on people's lives and activities. This has also affected teaching and learning. Due to the unprecedented situation, the only electronic access between teachers and students is online classrooms (Mathew et al., 2020). However, teachers are unable to observe students' online learning in real time, and it is difficult for students to solve learning problems in real time. The COVID-19 pandemic has made online teaching far more difficult than traditional teaching (Pokhrel and Chhetri, 2021). In order to solve the problem of education under the COVID-19 pandemic, the Ministry of Education of China has put forward the initiative of "Maintaining in Disrupted Learning". Education departments, institutions, schools, etc. in various localities carry out online teaching through various forms. Industry observers predict that the adoption of online teaching in developing countries will accelerate over the next decade (Shafie et al., 2021). Many researchers also

believe that the use of online media for online education is an important part of future education (Kaplan and Haenlein, 2016; Friedman and Friedman, 2013; Harasim, 2000).

DingTalk was founded in 2014 as an enterprise communication and collaboration platform. Later, because of its rich functions, convenient and efficient operation experience, it stood out as an online education platform during the COVID-19 pandemic (Zhang et al., 2020). Like WeChat and WhatsApp, it uses text and voice as the primary means of communication. It is convenient for teachers and students to communicate in a timely manner after encountering learning difficulties. At the same time, it can transmit various materials such as documents, pictures, audio-visual videos, etc. In order to promote DingTalk to create a better online teaching environment and teaching resources for teachers and students, it is necessary to understand the advantages and shortcomings of DingTalk in the application of online teaching.

### **Research Objectives**

In recent years, especially since the COVID-19 pandemic, instant messaging system and online education have become hot topics. This is also the research direction of many researchers. As one of the instant messaging system, DingTalk plays an irreplaceable role in online teaching. Many studies have shown that applying DingTalk in teaching is a very suitable choice (Pimme and Rambe, 2018; So, 2016; Bere and Rambe, 2013). Previous studies regarding Dingtalk had focused on students in higher education, with most of the research objectives being students' satisfaction with DingTalk or DingTalk's role in student learning, and the vast majority of relevant research has been conducted using quantitative research methods (Yang, 2020; Hoq, 2020; Pimme and Rambe, 2018). However, there is a lack of study on the application of DingTalk in secondary education, especially the perspective of the teacher group. Therefore, this study uses a qualitative research method to explore the application of JS middle school teachers to DingTalk in online teaching process. This is able to enrich the literature in this field of study. The central problem of this study is the use of DingTalk in the online teaching process. This has a lot to do with DingTalk's support for education and the development and widespread use of DingTalk itself. Therefore, the research objectives of this study are as follows:

**RO1** : To investigate the use of DingTalk in the online teaching process in middle school.

**RO2** : To explore the advantages of DingTalk in the application of online teaching process in middle school.

**RO3**: To explore the disadvantages of DingTalk in the application of online teaching process in middle school.

### **Literature Review**

#### **Online Learning**

Harasim (2000) notes that the history of online teaching began in the 1980s. With the growing development and popularization of network technology, online education has become more convenient and efficient. Online teaching is defined as teaching that supports learning through digital devices (Clark and Mayer, 2016). It is a new type of teaching mode, through the network to carry out teaching activities. The development and maturity of some instant messaging system in the early days have popularized the concept of online education on a large scale. Online teaching is not a simple transfer of classroom space, nor is it a simple

webcast (Peachey, 2017). Online teaching cannot apply the traditional classroom teaching model to the process of online teaching. Furthermore, Gulden et al (2016) notes that online teaching increases participants' motivation with its novelty, diversity and flexibility. At the same time, it can also use network technology to help teachers grasp students' learning more accurately and improve their teaching level and ability (Anderson, 2004). Some researchers believe that the digital transformation of educational systems began more than a decade ago, accelerated by the COVID-19 pandemic (Borup et al., 2020). The next section will cover the related content of DingTalk.

### **DingTalk**

DingTalk is positioned as an instant messaging system. It was established in 2014 and was initially widely used as an enterprise management platform in major enterprises in China. Later, due to its simple operation and stable operation, it was upgraded to software suitable for online teaching process during the COVID-19 pandemic. Help teachers and students ensure the normal development of teaching activities during the "study must not stop" (Huang et al., 2020). DingTalk was supported by more than half of China's schools as soon as it was launched during the pandemic. By the end of 2021, DingTalk has more than 500 million users in China (Wu and Fitzgerald, 2021). In the process of online teaching, DingTalk is convenient for teachers and students to communicate in a timely manner after encountering learning difficulties. Simultaneously, teachers and students can use it to publish bulletins and answer doubts in a timely manner. Next, the importance of DingTalk for online teaching is introduced.

### **DingTalk and Online Education**

During the COVID-19 pandemic, DingTalk became the first choice to deal with online education in society (Chen et al., 2020). Numerous studies have shown that DingTalk can promote education and provide many potential benefits for online education (Chen et al., 2021; Peng et al., 2020; Zhang et al., 2020). In the face of the uncertainty of the COVID-19 pandemic, DingTalk has the ability to quickly promote the implementation of online classrooms and provide flexible selectivity for online teaching (Bdair, 2021). Suliman et al. (2019) believes that the use of DingTalk in the teaching process can play a motivating role and is an effective teaching tool.

Instant messaging system play an important role in the field of education (So, 2016). In recent years, there has been a lot of research on it in education. During the pandemic, the most used online teaching platform is the DingTalk. Xiong and Bai (2020) found that DingTalk has served as an online teaching platform during the pandemic, making online teaching more efficient than face-to-face teaching. Gulati (2020) believed that DingTalk was widely used during the pandemic. So it's foolish to ignore it in any online teaching environment. Its advantages include ease of use, accessibility, etc. (Li et al., 2021). DingTalk can help smooth online teaching, especially in the current pandemic situation (Morin, 2022). However, the widespread use of DingTalk also exposes some problems. For example, limited platform capacity, unskilled teacher operations, limited network conditions. Therefore, there is still room for improvement and reflection in online teaching through DingTalk. The objective of this study is to explore the application of DingTalk in the online teaching process, which can enrich the literature in this research field.

DingTalk is an important platform to support online teaching during the COVID-19 pandemic. It is necessary to study DingTalk with a deeper and more comprehensive understanding of it. All in all, the research on the application of DingTalk to online teaching during the pandemic is still in its infancy, and the research results are relatively few and the research content is not comprehensive enough. Researchers will draw on previous research and combine their own data. Contribute to research on the use of DingTalk on middle school teaching during the COVID-19 pandemic. It is reiterated that the objective of this study is to understand the use of DingTalk in the online teaching of middle school. Qualitative research methods and semi-structured interviews will be used to complete the objective of this study. The methodology for this study will be presented in the next section.

### **Methodology**

This research mainly adopts a qualitative research method, guided by the grounded theory. This study aims to understand the personal experiences of those involved in the study. Therefore, the researchers chose qualitative research. Fidel (1993) argues that qualitative method is the best way to delve into human behavior. Therefore, the application of qualitative research is very important.

Data collection through semi-structured interviews. Purposive sampling and snowball sampling are used. Using NVivo software and thematic analysis techniques to analyze data, interpret research results and draw conclusions. Reliability and validity are an important aspect of research (Heale and Twycross, 2015). Triangulation can illustrate methods to test or maximize the validity and reliability of qualitative research (Golafshani, 2003). To better handle validity and reliability, the researchers also hired another expert to establish the validity of qualitative data and overcome personal biases.

A semi-structured interview was conducted with ten teachers in a middle school in China. The interviewees came from different grades, taught different subjects, were well distributed and representative. Each interview lasts mostly one hour. Follow-up with the participants to clarify questions or additional material that are not yet clear in the interview.

### **Discussion**

A good online education platform is a complete online education service provider (Simamora et al., 2020). Including rich teaching functions, convenient operation experience, etc. It can not only facilitate teachers to carry out the design of teaching activities, but also facilitate students' learning. Affected by the pandemic in 2020, all teaching activities in various schools in China have moved online, and the number of online education users has risen sharply (Huang, 2020). The instant messaging system DingTalk builds a bridge between teachers and students, and teachers can teach online through DingTalk. The advantages of DingTalk in the application are as follows

#### **Comprehensively Record the Teaching Process and Review it At Any Time**

According to Teacher 1, one of the biggest advantages of using DingTalk for teaching is that it can fully record the teaching process, which is convenient for students to take notes and repeat to listen to the difficult points. Even if students miss the live broadcast for various reasons, they can still watch it back and replay it.

*"At the end of each lesson, DingTalk will automatically push the class content to the students, and will also push the relevant materials of the class to me. I can see the participation of the students and know if the students are in class on time. Some students' mind often wanders in class and miss some knowledge points. They were too embarrassed to ask me, so they learned autonomously by watching the replay. This also helps students consolidate their knowledge points. Ask me again when they encounter a learning problem, and I will give them further guidance."*

Similarly, Teacher 4 emphasized the advantages of DingTalk during the interview. He believed that DingTalk's playback function is equivalent to the teacher repeating the knowledge points for the students, so that the students can grasp all the content of the class.

In addition, for some students with strong learning self-discipline, they can use fragmented time to learn. For the key points or difficulties that are not understood in the class, they can also repeatedly look back and facilitate review. This not only helps teachers reduce the amount of work tasks, but also allows students to improve their self-directed learning ability.

### **Break the Space-time Limit, without Geographical Restrictions**

During the pandemic, students and teachers were unable to communicate face-to-face. DingTalk provides a platform to help teachers and students complete their teaching tasks (Chen et al., 2020). Teachers used DingTalk to complete live teaching, breaking the space limit. DingTalk supports classroom playback, which allows students to use this function to review and consolidate in time, breaking the time limit.

When it comes to the advantages of DingTalk teaching, flexible time and place is one of them. As pointed out by Teacher 2, with DingTalk online teaching, teachers have a more diverse choice of teaching venues.

*"Online teaching really breaks the time and space limitation! During the informal teaching time, students encountered learning problems and left me a message in DingTalk. Even if I'm not at home, I can explain it to them on my phone. Communicate with them anytime, anywhere, and solve problems in a timely manner."*

Along similar lines, Teacher 8 acknowledged the freedom of DingTalk teaching in the realm of time and space.

Teacher 4 also added that DingTalk teaching no longer needs to have a fixed place and time.

*"DingTalk is a handy software that can be downloaded on a phone or computer. In the past, if teachers or students had important things in their homes, we could only take time off. But now, as long as I have a mobile phone or computer, even if there is something to solve, I can enter the class after a busy time. For me, so long as the network is smooth, any place can get me into the teaching state."*

This view was echoed by Teacher 7. She also mentioned this advantage in interview.

*"During the pandemic, everyone needs to stay at home. Classroom teaching is no longer possible. I was worried that the students' course progress would not be*

*completed properly. When I used DingTalk, I realized that it was equivalent to a virtual classroom. It has all the basic functions needed in teaching, and even some functions that make teaching more interesting. I don't have to worry about the spatial distance caused by the pandemic at all. I can teach at home. "*

In the interview, most of the teachers expressed their love for DingTalk as an online teaching method, which can be independent of geographical restrictions, and they can teach courses at home. For some incomprehensible places, students contact the teacher to answer questions at any time after class. This advantage of DingTalk has greatly accelerated the teaching progress and improved the teaching effect.

### **Platform Resources and Functionality are Rich and Easy to Use**

During the pandemic, teachers can use DingTalk's internal statistical tools to count students' attendance, homework, etc. Based on the data, it is possible to understand the students' learning situation and problems in recent periods. This helps teachers adjust teaching content and methods in time to form a virtuous circle.

Teacher 2 argued that DingTalk teaching has a very interesting personality function, even more than face-to-face teaching.

*"I am satisfied with the teaching scene created by DingTalk. It provides blackboard, courseware import and other functions. I can mark courseware and blackboards, much like a face-to-face class. And there are various functions such as raising hands and liking, which I think is more interesting than face-to-face teaching. "*

This view was echoed by Teacher 10. At the same time, according to Teacher 5, DingTalk's rich expand resource can achieve the purpose of helping students improve their quality.

*"I have always stressed with students the importance of reading some extracurricular materials. At first, I asked students to search for expand resources on their own, and I found that the results were not ideal. I sorted it out myself and sent it to students. This is a huge task and time-consuming. Later, I found out that DingTalk has relevant extension materials for each grade, which are diverse, comprehensive and free. Students can read directly on DingTalk, which broadens the accumulation of knowledge, but also saves time, effort and money. "*

Teacher 1 also added that DingTalk's table statistics function is very helpful to him.

*"DingTalk has powerful statistical function, which is so easy to use! Before each class, I asked students to sign in. After class, I will know the students' attendance and how they are learning when they enter the class. This online teaching process under the COVID-19 pandemic has saved me a lot of effort! I don't have to spend time and effort counting students' classroom data. "*

Moreover, in order to enrich the learning life of teachers and students, help teachers prepare lessons. In the process of continuous development, DingTalk provides teachers and students with a large number of learning resources free of charge (Huang et al., 2020). These abundant

educational resources not only help students to expand after school, but also help teachers better prepare their teaching content. A good online education platform, a complete online education service (Muqtadiroh et al., 2020). It includes rich functions and is easy to operate. In short, online teaching with DingTalk is a good choice.

The media is the means by which communication can be achieved (Rafaeli, 1988). DingTalk online teaching breaks through a fixed, closed classroom environment, making the teaching environment more open and diverse. Teachers can flexibly choose the time and place to teach online, depending on their needs. DingTalk teaching allows teachers to have a new teaching experience. It not only reduces the cost of teaching, but also improves the teaching effect. However, from the feedback of some teachers during the interview, it can also see that DingTalk has certain disadvantages in the application of online teaching:

### **Limited Platform Carrying Capacity**

During the pandemic prevention and control period, a large number of teachers and students participated in online education (Zhou et al., 2020). With limited server bandwidth and capacity, it is inevitable that platform crashes, screen freezes, and out-of-sync sound graphics. This can interrupt the continuity of teaching and indirectly affect the teaching effect. It also affects teachers' enthusiasm for teaching and students' enthusiasm for learning.

Teacher 6 pointed out that DingTalk has provided a teaching platform for teachers and students to maintain teaching during the pandemic. However, system crashes occur from time to time as DingTalk is applied for teaching.

*"In class, I would have the camera turned on as much as possible so that I could see how every student was listening. But if all the students turned on the camera, the system would not work smoothly. If I play some instructional videos to students at this time, the network will even have a long time of frozen. If all students turn off the camera, the instruction will be smoother. But I am afraid that I speak to myself and cannot see the state of the students."*

In a similar vein, Teacher 9 observed that with DingTalk, it is not appropriate to enter too many students in one class, which makes it difficult to ensure the fluency of DingTalk.

Moreover, Teacher 3 also stated that if too many students are accommodated, there will be a delay in sound and picture.

*"The DingTalk can accommodate a limited number of students. If several classes are in class at the same time, there will be a sound delay in asking students to answer questions. And I waste time while waiting for students to answer questions."*

### **Teaching Effectiveness is Difficult to Guarantee**

Teacher 9 on the other hand raised that no matter how much advantage online teaching brings, DingTalk's classroom atmosphere has never been able to achieve the effect of traditional classroom teaching.



*"DingTalk online teaching, everyone is communicating across the screen. This also expands the distance between teachers and students to a certain extent. Sometimes watching the student study seriously on the screen, in fact, he is playing the game with his head down. In short, it is difficult to grasp the students' learning status. Moreover, due to the reduction in the number of examinations, it is not possible to keep abreast of students' knowledge grasp. Problems cannot be detected in time, nor can they be resolved immediately. Students don't know which knowledge points they haven't mastered, and I don't know how effective I am teaching."*

This view was also echoed by Teacher 6, the effect of DingTalk teaching is difficult to control.

*"I recently discovered a serious problem in which some students started copying other classmate's homework. What's more, submit someone else's homework directly. They may feel that teachers' task of checking their homework increases during online teaching, and their 'charade' will not be detected. This kind of behavior is really bad! Everyone's homework is done well, will create the illusion that all students have mastered the knowledge point. During the online class, everyone's grades were very good. When it comes to face-to-face teaching tests, the grades of those who plagiarize will become very poor."*

Judging from the interview results, most teachers said that they were adaptable to using DingTalk during the online teaching process. However, there are problems such as poor network stability and general classroom effect. In the process of carrying out online teaching, it is inevitable that there are some inappropriate situations and problems in the early stage. In general, teachers basically agree that DingTalk's various functions have the ability to guide and support teachers in online teaching. This result not only verifies the recognition of the function of DingTalk, but also affirms the instant messaging system with similar function.

### **Conclusion**

According to online data, during the COVID-19 pandemic, about 140,000 schools in China have adopted DingTalk online teaching solutions, which are expected to cover 120 million students across the country. It has changed the traditional teaching model and provided new options for teaching under the COVID-19 pandemic. Even in the process of application, many problems are exposed: insufficient construction of teaching platform, difficult to guarantee teaching effect, etc. In the past, instant messaging system was more of a social medium, but played an important role in the pandemic. Most teachers think teaching online through DingTalk is a unique and effective way.

Researchers believe that timely summarizing the problems that have arisen during the pandemic and improving the shortcomings in the application process can promote DingTalk future reform and development. Accelerate the upgrading and improvement of DingTalk and other instant messaging system. This is of great significance to the future of DingTalk, allowing more high-quality resources and services to enter the classroom of online teaching. Teachers should also make full use of the DingTalk to improve the quality of teaching and perfect the teaching effect. A small step for DingTalk may become a big step for online teaching in China in the future.

Based on the key findings of this study as well, we would suggest future studies on different online platforms can be explored as the online teaching medium. On top of that, since this study employed qualitative research approach, therefore quantitative research method or mixed method can be adopted.

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