Teachers' Perceptions of Large-Scale Online Teaching as an Epidemic Prevention and Control Strategy in China

Xiaozhe Yang

East China Normal University

The sudden outbreak of the novel coronavirus disease (COVID-19) in China resulted in the sudden closure of schools, interrupting teaching plans. To prevent the virus from spreading across campuses and ensure the safety of teachers and students, China's Ministry of Education (MOE) closed all educational facilities. However, the MOE mandated that schools of all types and at all levels "retain the education program despite the suspension of classes" by adapting solutions to local conditions. Consequently, nearly 170 million Chinese primary and secondary school students have been engaged in a super large-scale online learning program from mid-February. This study explores teachers' responses to and experiences of the online learning initiatives.

To understand the willingness, knowledge, and attitude of primary and secondary school teachers toward online teaching, we conducted a survey using an online questionnaire, with regionally targeted promotion used to attract more respondents. Conducted from February 20 to February 25, 2020, the survey targeted teachers from 23 provinces, municipalities, and regions in China, including Shanghai, Beijing, Hubei, Zhejiang, Henan, Guangdong, and Sichuan. A total of 15,438 valid
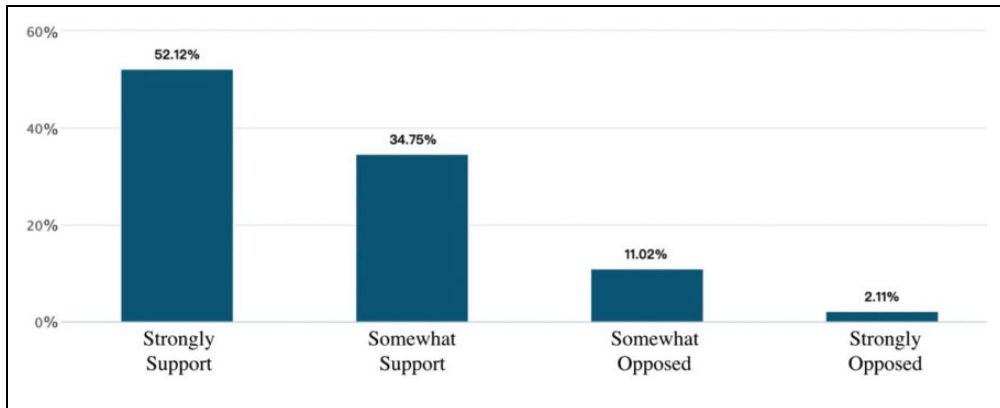
Corresponding author:
Xiaozhe Yang, Faculty of Education, Institute of Curriculum and Instruction, East China Normal University, 3663 North Zhongshan Road, Shanghai, China.
Email: worldetyang@gmail.com

Figure 1. Teachers' support for online teaching.

responses were collected. Regarding participant gender, 9,534 were male (61.76%) and 5,904 were female (38.24%). In terms of teacher type, 2.55% were kindergarten teachers, 12.70% were primary school teachers, 33.13% were junior high school teachers, and 51.62% were senior high school teachers.
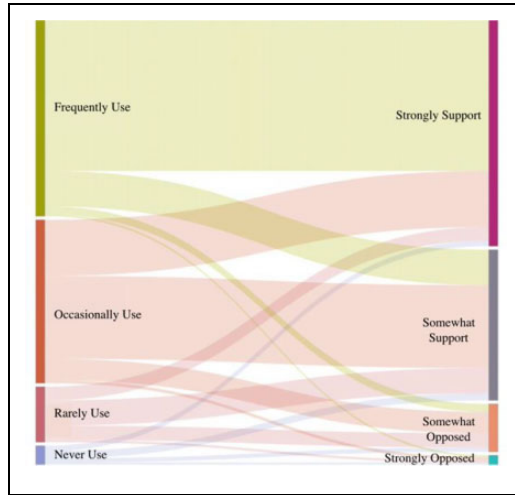
Teachers' willingness to support online learning

This section examines teachers' willingness to support online teaching as a response to epidemic prevention and control. According to survey results, 52.12% of the teachers "strongly support" the initiative, 34.75% "somewhat support" the initiative, 11.02% are "somewhat opposed," and 2.11% are "strongly opposed" (Figure 1). Although online teaching programs were hastily implemented and fairly makeshift, the majority of teachers appear willing to work alongside their students and school administrators in ensuring a systematic online learning environment, including investing the necessary effort in training and overcoming difficulties.

This study also investigated teachers' readiness to deliver online teaching, finding that most teachers already had experience with learning from e-learning platforms. More specifically, 45.22% used online learning platform frequently, while 37.69% used such platforms occasionally. A cross analysis revealed that teachers with "frequent" and "occasional" experience using e-learning platforms were more inclined to support the idea of an online teaching program (Figure 2).

Teacher training

The survey revealed a lack of training in online teaching skills among primary and secondary school teachers prior to the outbreak of COVID-19. It appears that the full adoption of online teaching methods and comprehensive training in online teaching skills was only conducted in response to the control of this epidemic. The questionnaire examined teachers' recent reception of

Figure 2. Relationship between teachers' experience of using e-learning platforms and their willingness to support the program.

online teaching training, finding that 55.31% of the teachers received relevant training. Additionally, 36.07% of respondents reported that they had not yet received training, but that relevant training was scheduled for the coming weeks. Teachers received training through live broadcasts (68.13%), online Q&A sessions (56.80%), TV video (43.84%), and online courses (34.57%). As such, the most common training methods were live broadcasts and online Q&A sessions.

Teachers who had received relevant training reported that the training improved their skills in various areas, particularly the application of live streaming technologies and available platforms (48.70%), multimedia slide show techniques (44.30%), information search and resource integration skills (41.31%), online teaching strategies and methods (38.13%), as well as lecture recording and production techniques (32.80%). Most teachers experienced a short interval between receiving training and delivering online courses. While this short window is not conducive to the comprehensive absorption of the training content, it does allow for the immediate application of the learned knowledge and skills. Through support of the online training, teachers were able to adequately prepare for the delivery of online courses within the time available.

The perceived difficulties of online teaching

Many teachers (41.26%) found using existing online education platforms "somewhat difficult," 21.80% found it "very difficult," 29.41% believed that they were "not too difficult" to use, while just 7.53% found them "not difficult at all" (Figure 3).

The surveyed teachers identified the following as the main difficulties of online teaching: the inability of students to apply self-study skills (46.48%), relative instability of the Internet
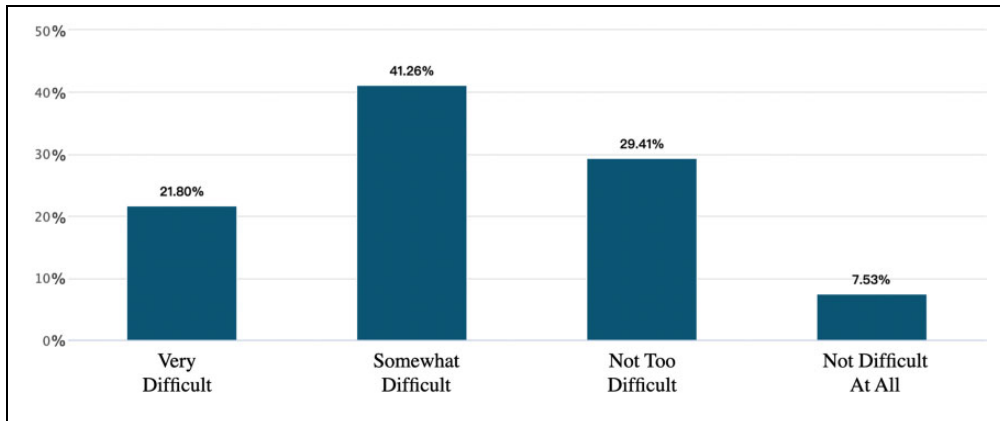
Figure 3. Perceived difficulty of online teaching.

connection and online platforms (43.74%), teachers' unfamiliarity with relevant technology and techniques (41.72%), difficulty controlling the progress of the course (33.30%), as well as the limited interaction with students in class (29.76%).

Online teaching platforms

This section explores the platforms used by the surveyed teachers. Survey results indicate that DingTalk (56.65%) and WeChat groups (52.75%) were the most commonly used platforms. DingTalk and WeChat are the products of the Chinese Internet giants Alibaba and Tencent, respectively. DingTalk provides teachers with more convenient and diversified functions, such as class notifications, homework corrections, group meetings, file storage, personalized accounts, and online live broadcast capability. Most schools used WeChat groups for teaching based on previous habits.

The majority of respondents selected Tencent Class (36.95%), ZOOM (27.72%), Tencent Meeting (26.01%), Chaoxing (13.55%), and CCTalk (8.54%) as their preferred live broadcast platforms. With the exception of ZOOM, all of the aforementioned platforms were developed in China. As such, domestic products performed well in such large-scale online teaching initiatives, with negative feedback from students and teachers during the initial launch period addressed quickly and effectively. The platforms were thus considered suitable for most online teaching applications and able to provide a stable technological approach.

Teachers' expectations

The surveyed teachers were asked what they expected of online teaching, including their concerns (Figure 4). Many teachers were concerned about the learning and teaching anxiety produced by

Figure 4. Teachers' expectations of the effect of online teaching.

online teaching, as well as decreased learning efficiency and study goals. Nonetheless, most respondents believed that the online teaching program was conducive to improving the information literacy of both teachers and students. However, as online education changes the physical learning environment, students faced new challenges such as autonomous learning and self-management; 45.44% of respondents felt that online teaching would promote these abilities in the students.

Moreover, 38.42% of teachers suggested that online teaching would enhance the mutual understanding between teachers and students. For example, many teachers created short self-introduction videos and utilized various methods to help students learn at home. These efforts allowed students to alter their perspectives of their teachers. Online teaching programs also provided teachers with greater opportunities to learn more about their students' family situations, study habits, and lifestyle preferences.

The questionnaire also explored teachers' willingness to incorporate and normalize online teaching in their daily teaching practice once the epidemic is over. In this respect, 38.84% of respondents showed a high willingness, 40.36% showed some willingness, 17.06% were unwilling to do so, and 3.74% were extremely unwilling to do so.

Conclusion

The results of the survey of 15,438 Chinese teachers indicate that the majority of teachers support online teaching programs as an epidemic prevention and control initiative. With the support and organization of various departments, teachers were provided with immediate training in online teaching and platforms. However, certain difficulties remain. The results of this study also show

that domestic platforms support the implementation of large-scale online teaching in China. While the surveyed teachers were generally positive about the effects of online teaching, there were some concerns. Facing an unprecedented situation, the problems and challenges encountered by Chinese teachers in switching to and providing online learning will serve as a reference for other countries as they explore and implement online teaching programs.

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