

REBOOT AND RECOVER: NAVIGATING REMOTE INSTRUCTION FOR POST-COVID-19 SECONDARY TEACHERS

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The COVID-19 pandemic had a tremendous impact on K-12 education. In 2020, New York schools were ordered to close, forcing over two million students and two hundred thousand teachers to rapidly shift to remote instruction. Teachers reported feeling unprepared for the pace and magnitude of this change, partly due to their varied technical backgrounds and limited exposure to remote instruction. While the field has begun to define core practices of quality remote instruction, little is known about what professional experiences might lead in-service teachers to embrace these core practices. Many districts in New York remained partially remote through the 2020–21 school year and beyond, so improving the quality of remote instruction available to secondary students in grades 7–12 is paramount. A mixed methods research study addressed the preparedness and professional development needs of in-service teachers during the pandemic. Over the last decade, several teacher preparation programs have begun to include remote instruction as a key pedagogical practice. The pandemic created a unique opportunity to study how in-service teachers experienced the shift to remote instruction. The results of this study may be instrumental in developing education modules in remote instruction for preservice teachers in secondary education preparation programs.

KEY WORDS: remote instruction, online instruction, blended learning, hybrid learning, distance education

1. INTRODUCTION

The COVID-19 pandemic has brought about a significant transformation in K-12 education across the United States of America (USA) and has accelerated the trend toward online schooling and remote instruction, which was already underway (Miller & Ribble, 2010). As early as 2015 there were indications that remote instruction, or a variation of it such as blended learning, was predicted to become a more permanent fixture in K-12 education. A survey conducted by Blackboard in 2013 revealed that 43% of administrators reported offering various online courses to cater to diverse student requirements. Moreover, 60% of in-service teachers participating in “flipped” learning programs, those that introduce students to new concepts via asynchronous video rather than in-class instruction, believe that remote instruction stimulates students more effectively than traditional, face-to-face instruction. Additionally, a majority of parents expressed their desire for their children to attend schools that permit the use of mobile devices (Stedrak & Rose, 2015).

Blended learning combines face-to-face instruction with computer-mediated instruction (Graham, 2006, p. 41). To evaluate the impact of blended learning on students' academic achievement, Deschacht and Goeman (2015) analyzed two groups of students who took identical courses and tests but received instruction in different ways: blended learning and face-to-face instruction. The results demonstrated that academic performance was enhanced through blended learning, contrary to the findings of Coccoli et al. (2014), who argued that knowledge of technology alone is insufficient for learning success and emphasized the importance of students and teachers possessing the necessary abilities and attitudes. Hodges et al. (2020) further emphasized the need for a systematic design and development strategy to create effective online learning, involving meticulous planning and design in the educational process. Weintraub (2021) concluded that the future of face-to-face instruction is uncertain, suggesting that teachers are likely to be asked to continue using or resume distance learning in the future (Svrcek et al., 2022). Furthermore, remote instruction offers benefits such as digital literacy, enabling the use and distribution of information in diverse ways from a wide range of sources accessed through computer devices (Ministry of Education and Culture, 2017). These skills can assist individuals in navigating new technology and employing digital platforms professionally across various contexts (Haleem et al., 2022). By incorporating technology into remote instruction, the teaching-learning process can become more student-centered, innovative, and flexible (Dhawan, 2020, p. 7).

However, despite the advantages, preservice teacher preparation programs in the USA seldom prioritize remote instruction as a key pedagogical practice, presenting an ongoing challenge in effectively bridging the gap between traditional face-to-face instructional approaches (Kennedy & Ferdig, 2018; Kennedy & Archambault, 2012). Even prior to the COVID-19 pandemic in 2019, many in-service teachers had limited or no professional development and technology support from their schools or districts for remote instruction (Beschorner & Woodward, 2019). This poses a problem, as evidence suggests that remote instruction is a distinct discipline that differs from face-to-face instruction, necessitating specialized learning environments for preservice teachers to prepare for remote teaching (Flores & Gago, 2020). Many educators

continue to grapple with the complexities of engaging with students, their families and caregivers, and colleagues remotely, as well as finding effective ways to facilitate meaningful learning experiences from a distance.

1.1 Preparedness for Remote Instruction

Preservice teachers' preparedness for the transition to emergency remote teaching varied significantly. Many teachers faced challenges in determining the best practices for implementing remote platforms (Koehler & Mishra, 2005; Trust & Whalen, 2020; Albert & Scott, 2023). A study by Code et al. (2020) involving 42 secondary technology education teachers highlighted that the sudden shift to remote instruction compromised equity and equal access to learning for students. It also presented difficulties for unmotivated learners and increased concerns among in-service teachers regarding the long-term viability and quality of their instruction. In Aditya's (2021) study, approximately 82% of the 62 Indonesian K-12 instructors felt they had insufficient time to complete their remote lesson plans. However, Code et al. (2020) found similar challenges in their study, emphasizing the impact on equity, access, and teacher worries about the quality of remote instruction. Gurung (2021) reported challenges such as internet connectivity, student motivation, tracking progress, technical knowledge, course preparation time, teaching numerical subjects, and maintaining discipline. Despite efforts made, only a limited number of individuals found the transition to be easy, and overall, teachers did not achieve the level of success they had hoped for (Jandrić et al., 2021).

To address these problems, professional bodies have published frameworks and standards to provide in-service teachers with effective resources for developing and evaluating remote instruction (Kennedy & Ferdig, 2018; Kennedy & Archambault, 2012). There is a growing need to emphasize the use of technology and digital tools in schools, as evidenced by the rapid shift to emergency remote instruction (Onyema et al., 2020). Some preservice teacher preparation programs have started integrating remote instruction as a pedagogical practice, helping preservice teachers overcome concerns and misconceptions about virtual schooling (Compton et al., 2009). However, research on the effectiveness of preservice teacher preparation programs for K-12 remote learning is limited in this area.

1.2 Statement of the Problem

The impact of COVID-19 has highlighted the importance of preparing New York preservice teachers for remote instruction. As the field looks to leverage this moment in history, it is important to understand existing New York in-service teachers' experiences with remote instruction during COVID-19. Therefore, we posed three research questions for this study: (1) To what extent were in-service teachers in New York prepared for remote instruction amid the COVID-19 pandemic? (2) What professional experiences did in-service teachers in New York have before and during the COVID-19 pandemic that helped them to undertake remote instruction? and (3) What professional experiences did in-service teachers in New York need to improve their remote instruction?

2. RESEARCH DESIGN AND METHODOLOGY

The goal of this research was to explore in-service teachers' preparedness for rapidly switching to remote instruction amid the COVID-19 pandemic. We were also interested in learning about the professional experiences in-service teachers had before the pandemic, for example, their secondary education preparation programs and in-service professional development. Lastly, we wanted to know what professional experiences these teachers felt they still needed to become more effective in remote instruction.

We decided to contact alumni of a secondary education teacher preparation program at an anonymous university in New York State (from now on referred to as "the university"). The email addresses of alumni of the university's secondary education teacher preparation program were obtained from the university listserv, and the in-service teachers were invited to participate in the study via email. In-service teachers had the option to participate in either or both data collection methods described below.

Two data collection methods were employed for this study. The first of these was an online questionnaire distributed using Google forms, a survey administration software. The second was a 30-minute individual semistructured interview conducted using Zoom, a communications platform with video and audio capabilities. The questionnaire asked in-service teachers for their demographic information, including years of teaching experience, secondary grade levels and subject areas taught, and the modality for teaching during the COVID-19 pandemic. The questionnaire also asked in-service teachers' for their perceptions of the following topics during the COVID-19 pandemic: preparedness for teaching using remote modalities, teaching effectiveness compared to previous years, overall teaching experience, experiences that helped with remote instruction such as professional development or support from administrators, and the things teachers need to be successful with remote instruction. Please see Appendix A for a copy of the questionnaire. During the interview we asked the teacher open-ended questions, e.g., "Take me back to the beginning of your COVID-19 transition to remote instruction. What was that experience like for you?" Please see Appendix B for the interview schedule. After each interview, we transcribed the audio recording provided by Zoom using intelligent verbatim transcription.

Given the personal nature of teacher experiences, we decided on a mixed methods study design. A mixed methods study enables researchers to blend quantitative measures such as questionnaires with qualitative measures such as interviews. Blending quantitative and qualitative measures allows researchers to access the benefits of both: a larger number of respondents in the case of questionnaires and greater depth of individual experiences in the case of interviews (Creswell & Plano Clark, 2018). One objective of this mixed methods study was to present the individual experiences of the in-service teachers with minimal researcher interpretation (Elliott & Timulak, 2005). We sought to minimize our interpretation by asking open-ended questions throughout the interview and conducting member checks approximately one month after the interviews were complete. To conduct member checks, we sent all interviewees a copy of the interview audio file and intelligent verbatim transcript to verify we captured their words accurately and to invite them to add additional comments. This is

considered an ethical practice and an important step in establishing trustworthiness in qualitative research (Lincoln & Guba, 1985). In addition, we used the demographic data collected to help us contextualize the online teaching experience for the in-service teachers who participated in this study.

The data were analyzed using coding and thematic analysis (Braun & Clarke, 2006). At first, responses to the questionnaire were coded separately from the interviews. We applied codes to represent themes identified in the existing research literature as well as those that emerged from the data itself (Boyatzis, 1998). The data were reviewed in context to acknowledge the larger circumstances in which each in-service teacher experienced the COVID-19 pandemic. Finally, we looked for themes across the codes applied to the questionnaires and interviews. In doing so, we introduced our own interpretations of the data and incorporated cross-participant perspectives as appropriate. To guard against bias and improve the trustworthiness of our results, we followed the recommendations of Lincoln and Guba (1985) by (1) familiarizing ourselves with the data over a prolonged period, (2) keeping notes of our impressions of the data and emerging codes and themes, (3) meeting as a research team to debrief codes and themes, and (4) developing consensus on themes by iteratively returning to the raw data and seeking triangulation.

3. RESULTS

Seventeen in-service teachers completed the questionnaire and four in-service teachers participated in a semistructured interview. Since the teachers' responses to the questionnaire were anonymous, we were unable to determine whether any of the teachers who completed the questionnaire also completed the interview. Figure 1 summarizes all in-service teachers' years of teaching experience. Figure 2 summarizes the secondary grades the teachers taught. Figure 3 shows what subject areas the teachers taught. Figure 4 shows what teaching modality each teacher followed. Hybrid teaching was the most common modality among all in-service teachers. Figure 5 shows the responses from in-service teachers who completed the questionnaire and their levels of agreement with preparedness for remote instruction during

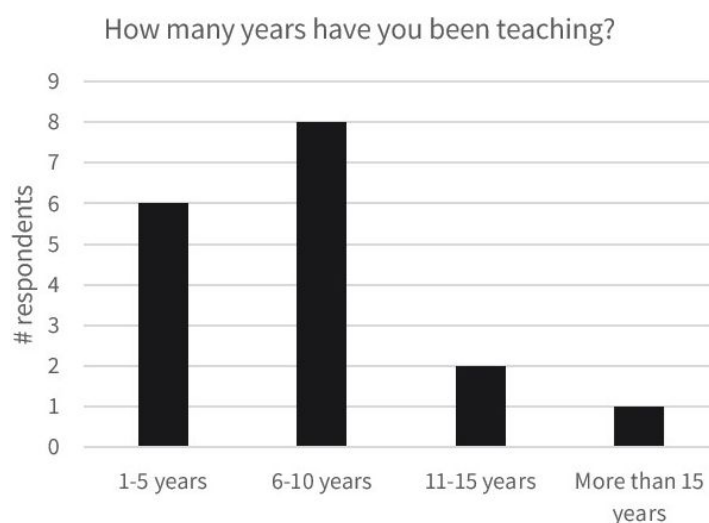


FIG. 1: In-service teachers' responses to the question, "How many years have you been teaching?"

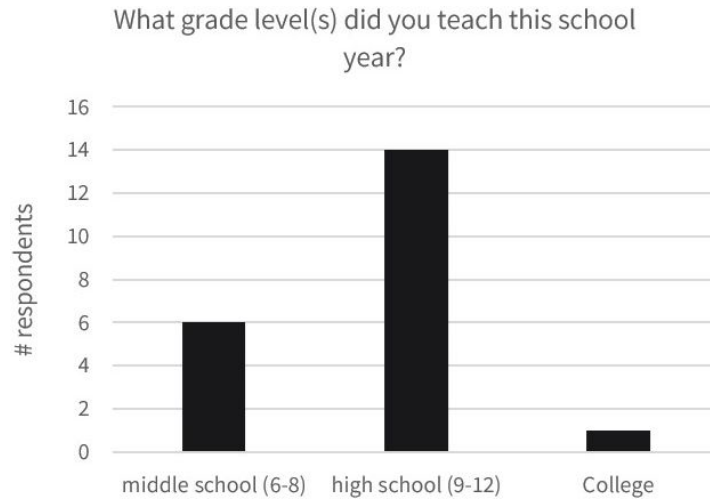


FIG. 2: In-service teachers' responses to the question, "What grade level(s) did you teach this school year?"

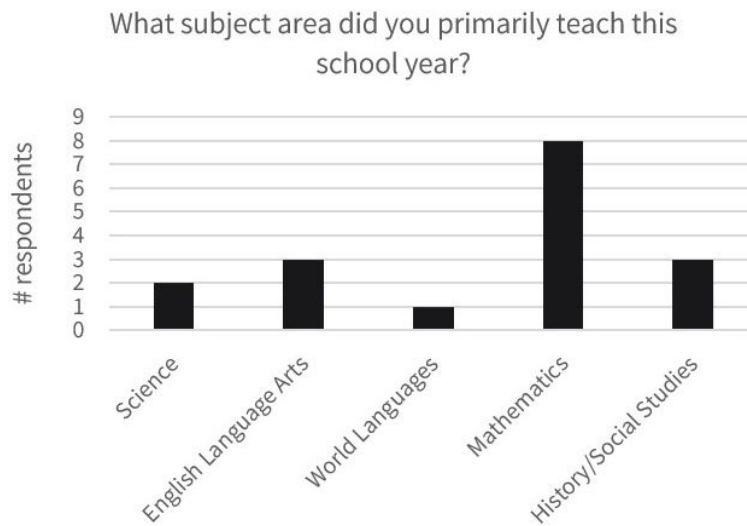


FIG. 3: In-service teachers' responses to the question, "What subject area did you primarily teach this school year?"

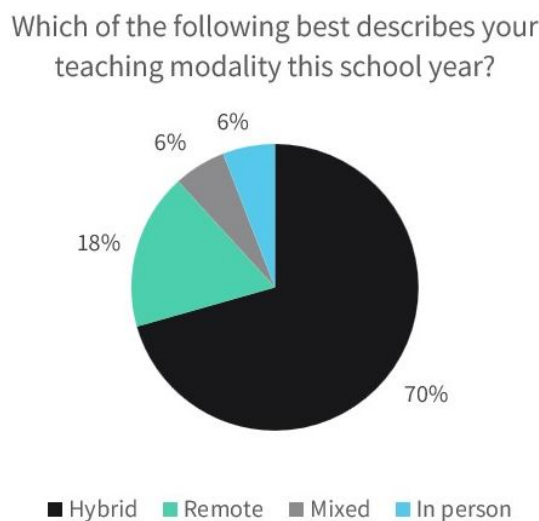


FIG. 4: In-service teachers' responses to the question, "Which of the following best describes your teaching modality this school year?"

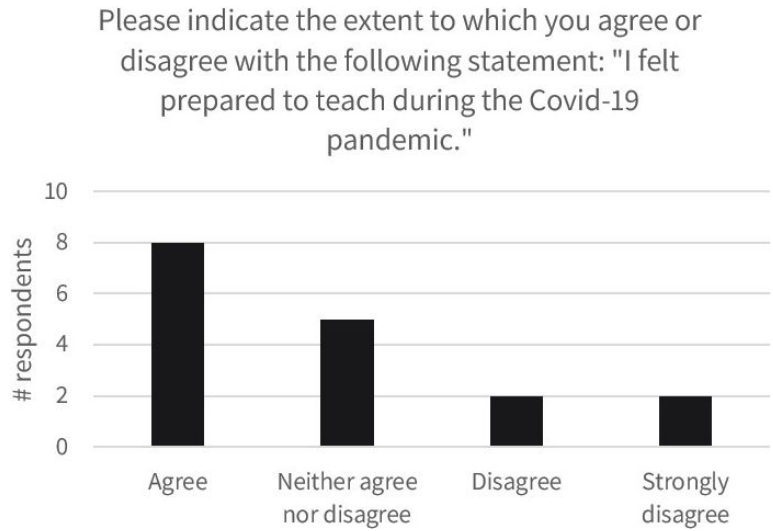


FIG. 5: In-service teachers' responses to the prompt, "Compared to previous years, I would say I was a(n) _____ effective teacher this year."

the COVID-19 pandemic. Figure 6 shows the responses from in-service teachers who completed the questionnaire for question six: *Compared to previous years, I would say I was a(n) _____ effective teacher this year.* Half of the teachers reported they were less effective during the COVID-19 pandemic compared to previous years.

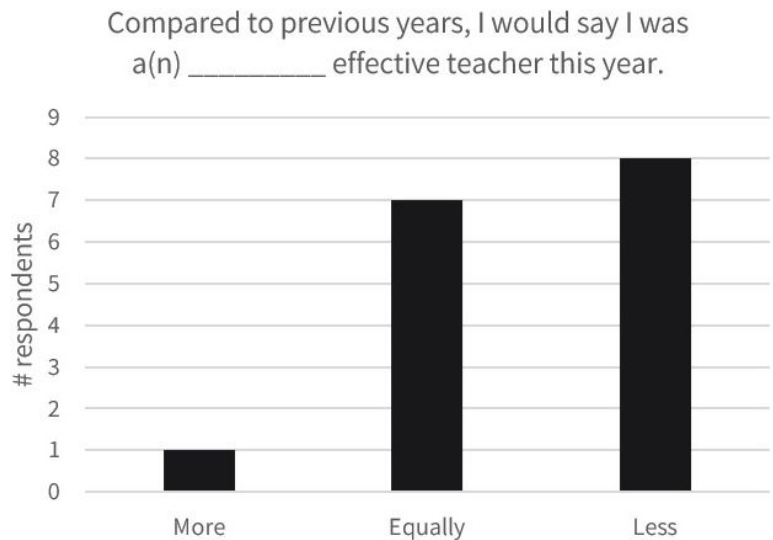


FIG. 6: In-service teachers' responses to the prompt, "Please indicate the extent to which you agree or disagree with the following statement: 'I felt prepared to teach during the COVID-19 pandemic.'"

The analysis indicated that eight in-service teachers (47%) from the questionnaire and three in-service teachers (75%) from the semistructured interview felt prepared to teach during the COVID-19 pandemic. However, all teachers in the study, including those that indicated they felt prepared, also reported experiencing specific challenges, suggesting that their level of preparedness may not have been fully sufficient (Research Question 1). The analysis suggested four themes: secondary student engagement, in-service teacher collaboration,

knowledge of technology and tools, and time management. Each theme is discussed below with attention to what professional experiences teachers had before and during the pandemic (Research Question 2) and what professional experiences the teachers felt they still needed in order to better meet the challenges (Research Question 3). The results suggest areas teachers might need additional professional experiences or training to enhance their remote instruction skills.

3.1 Secondary Student Engagement

A primary theme that emerged from the research was secondary student engagement. Twelve teachers from the questionnaire (70%) and four teachers from the interview (100%) reported a decline in student engagement compared to previous years, citing difficulties with technology and screen sharing, which are crucial for effective remote instruction, as students perceive being able to share the teacher's screen as the most effective strategy (Sidpra et al., 2020). The teachers also shared difficulties with providing feedback to students remotely, assessing participation levels without seeing them on camera, hearing their voices (often relating to students ineffectively using muting options), and taking attendance of students who did not join the synchronous lessons. Furthermore, teachers expressed that their secondary students appeared to be more easily distracted in a fully remote setting compared to a hybrid setting. Problems with student engagement also appeared to be most prevalent among mathematics teachers, as seven of the eight (87.5%) mathematics teachers who participated in the questionnaire reported problems in this area, compared to only five of the nine (55.6%) teachers of other content areas.

Overall, the challenges reported by the teachers suggested that the remote instruction modalities may have negatively impacted learning due to low student engagement and limitations beyond the in-service teachers' control that would not have been problematic in an in-person classroom setting.

I find that engagement and student–teacher relationships have fallen flat. I do not know what most of my “remote” students look like. – Teacher 1 (from questionnaire)

It was like trying to climb up a mountain and you just couldn't do it because you kept getting smacked in the face with rocks! – Teacher 2 (from interview)

According to five in-service teachers, these challenges prompted teachers to independently seek out solutions, such as additional training, mentorship, and collaboration; however, the frequency of these was unknown. Two in-service teachers reported that they met daily with their colleagues to discuss students and share new technologies to improve secondary student engagement.

The overall experience has been frustrating and disheartening due to the initial limitations regarding tech and connection to our students, and ongoing issues with participation and student–teacher trust. The experience has also been enlightening and energizing, since our school has used this as an opportunity to reconsider every aspect of our organizing principles and dogmas. – Teacher 1 (from questionnaire)

Related to Research Question 2, the teachers reported several professional experiences that helped them to improve student engagement. The professional experiences they reported

included (1) real-time interaction, (2) student-to-student interaction, (3) gamifying instruction, and (4) simulating the in-class experience.

To enhance student engagement, the teachers built in opportunities for real-time interaction. For example, they reported using polls, breakout rooms, and student response platforms like Pear Deck and Nearpod. One teacher implemented a flipped classroom model and reported this allowed for more engaging and individualized instruction during the synchronous class time. Another teacher found making time for informal class chit chats at the beginning of each remote class meeting helped to build class community and foster student engagement.

Nearpod and Pear Deck have been lifesavers in terms of student engagement and interaction. – Teacher 3 (from questionnaire)

Nearpod and all of these platforms ... made engagement in a pandemic possible. – Teacher 4 (from interview)

The teachers also cited the importance of encouraging student-to-student interaction. For example, one teacher tasked students with leading remote class discussions with as little teacher interjection as possible. Another teacher asked students to set up study groups with one another using messaging websites such as CircleIn and Slack. Another teacher asked students to create videos on Flipgrid and then respond to their peers' creations.

According to the teachers' reports, student engagement was also increased when the teachers looked for ways to gamify their instruction. The teachers used gaming platforms such as Blooket, Gimkit, Kahoot!, and Quizizz to add a competitive element to their remote instruction. The use of such platforms also served the dual purpose of enhancing student-to-student interaction.

Lastly, the teachers reported improved student engagement whenever they used tools that enabled them to better simulate the in-person class environment. For example, the teachers reported the usefulness of programs like Kami that allowed their students to annotate pdf documents as well as other file types, similar to a handwritten worksheet. The students would then submit their annotated work to Google Classroom for feedback.

Even with these useful professional experiences, the teachers believed more professional development was necessary to improve student engagement. The teachers expressed a need for more support responding to the needs of diverse students with varied home lives. In addition, they expressed a need for more professional development on communicating with students' families.

3.2 In-Service Teacher Collaboration in Remote Instruction

This study found a range of in-service teacher collaboration experiences. Some teachers expressed views that suggested satisfaction with the opportunities to discuss ideas and obtain support. However, many teachers reported that collaboration with peers was harder during the pandemic. This was partly due to poor support from school administration but was also a result of an underdeveloped sense of team in the period before the pandemic. Without a preexisting "solid team" (Teacher 1) the transition to remote instruction made collaboration problematic.

It's not happening. For the most part, it's not happening unless ... here's the reality. If you had a solid team, teacher team, that they were on the same page, and they were collaborating and they were communicating and networking regularly prior to the pandemic, the flow into the pandemic was much easier for them, much more willing to collaborate, much more willing to give to each other, much more willing to contribute to one another. – Teacher 2 (from interview)

Teachers who reported few or no opportunities for in-service teacher collaboration discussed the absence of common planning time in the schedule, poor communication about the lessons that teachers within the same department were teaching, and a decrease in collaboration due to the inability to gather in shared spaces. On the contrary, those in-service teachers who reported more positive collaboration experiences during the COVID-19 pandemic reported opportunities for collaboration within asynchronous environments, which led to more time for coplanning and opportunities to visit other classrooms within a hybrid model with a modified schedule.

And my school does this really cool thing where every Thursday is PD [professional development] day, but it's voluntary and the teachers are the ones that give it. So I've given PDs on Thursdays on things that I know, but then I'll go and I'll learn a new website that I didn't know before. – Teacher 2 (from interview)

I speak with my colleagues on a daily basis about different technologies to see what they use and how they structure their lessons to reach both in-person and online students. – Teacher 5 (from questionnaire)

3.3 Knowledge of Technology and Tools

Nine teachers from the questionnaire and four teachers from the interview reported feeling confident about technology generally; however, they saw deficiencies in their knowledge of technology and tools specifically necessary for effective remote instruction. The data showed that in-service teachers felt they benefitted from training in the available technology and how to properly use technology in the classroom from a technical and pedagogical standpoint.

I was very confident in my ability to use technology to engage my students. Administration supported this by providing professional development, and our math department also shared ideas and supported each other. – Teacher 6 (from questionnaire)

We had a lot of training using a new learning management system (Canvas), and lots of online interactive tools were purchased for our use. We were also given a laptop to use for teaching from home. – Teacher 7 (from questionnaire)

A few teachers spoke specifically about helpful courses and professors from their teacher preparation programs (Research Question 2).

A grad course at [the University] ... went through all the online resources we can use and that really helped for this year. We talked about Desmos, Quizizz, DeltaMath, Edpuzzle, etc., so I was familiar with all these and comfortable with them to use them in my class. – Teacher 5 (from questionnaire)

When I was at [the University], I had Professor Smith [anonymized] as my teacher for like everything. I love her. She's the best. ... she made us learn the SMART Board. She made us go through the programming and use it to its fullest ability. ... I think her forcing us how to figure that one out and forcing us to use other tech in our lessons way before it was a thing was very beneficial, because that gave us transferable skills of being able to figure stuff out. – Teacher 8 (from interview)

Notably, nine teachers from the questionnaire and four teachers from the interview reported a desire for more professional development with specific technology tools, not only to learn the tool itself but to attain greater flexibility and confidence with technology in general (Research Question 3). Teachers appreciated and expressed a desire for professional development that demonstrated how specific tools can be used in specific content areas.

Knowing how to do basic video editing. Honestly, I feel like that could have been very beneficial. I spent a lot of time on YouTube and iMovie, trying to make ... magic happen, because I'd never edited a video in my life before then. ... Maybe incorporating projects that include voiceovers or practicing more with common apps, like Padlet or Nearpod or Screencastify or Edpuzzle, and just getting a taste of all of that tech in undergrad before you have to bring it in. – Teacher 8 (from interview)

How and when to use tech — it is NOT the answer to everything, no matter what the tech company wants you to believe! The less invasive the tech, the better the lesson! - Teacher 1 (from questionnaire)

They also expressed a desire for more support troubleshooting technical issues that teachers or students may experience, as well as finding ways to provide training to students on technology use. As several in-service teachers explained:

They [teachers] need a lot of tech professional development. How to create formative assessments for each lesson, student engagement, parent engagement online, establishing routines online, how to create tests, projects, quizzes online that are skills based (since content is widely available). If with a co-teacher, how to do breakout rooms. – Teacher 9 (from questionnaire)

Practice with Zoom, including how to involve a co-teacher for ICT classes, how to use breakout rooms, how to structure lessons and share resources with remote students in the most efficient way (teacher websites to post PDFs via Google Sites have been useful, in addition to allowing students to work in small groups by having one group member share their screen with the other students). – Teacher 1 (from questionnaire)

3.4 Time Management

In-service teachers frequently referenced topics relating to time management within the data. They discussed the advantages and time constraints of remote instruction, as well as the necessity for quick adaptation, lesson revision, troubleshooting, meeting student requirements, and articulating with staff with and without advance notice. The significance of setting aside enough time for studying, finishing homework, and investigating new technologies was underlined. It was noted however, that without commute time, in-service teachers could

collaborate or attend training sessions more easily without leaving their homes. Others shared having limited time to meet the demands of remote instruction.

Training in use of technology tools (Google suite, document scanners, video recording, and editing tools, pdf editor, etc.) Also, extra time is necessary to learn how to use these tools, and time is needed to implement them in the distance learning setting. It can be difficult to find the time to learn a new tool, especially when instruction is divided between in-person and distance learning. – Teacher 10 (from questionnaire)

A subtheme, time management for learning, emerged from the study. It was suggested that more time was needed for secondary students to complete all assignments and to conduct trial-and-error sessions for new technologies and differentiated instruction.

It's not their fault. They just never get enough time for tasks. Like, for example, if you want to implement, like you want to start using Padlet, you want to start using Padlet in your classroom, you need to tinker with it. You need to have time with it. You need to try it in different modalities. You need to try different prompts. You need to see what works in different ways with different kids, try it with all your classes. – Teacher 11 (from interview)

Overall, the study's findings shed light on the degree to which teachers were ready for remote instruction given their background knowledge and the professional experiences they required to improve their abilities in remote instruction.

4. DISCUSSION AND IMPLICATIONS

This research aimed to investigate how well prepared teachers were in New York for remote instruction amid the COVID-19 pandemic, the professional experiences that in-service teachers in New York had before and during the COVID-19 pandemic that helped them to undertake their remote instruction, and the professional experiences that in-service teachers in New York believed they needed in the future to improve their remote instruction. Below, we first discuss our findings in relation to previous research, as well as put forward suggestions for incorporation into preservice teacher preparation programs.

4.1 Remote Instruction Provides Opportunities for Learning

This study provides evidence that in-service teachers can effectively utilize technology and online teaching methodologies as viable alternatives to face-to-face instruction, thereby enhancing learning opportunities and promoting deeper engagement with the content (Lent, 2014). Building upon the findings of Johnson et al. (2022), remote instruction offers the advantage of flexible learning schedules, empowering students to pursue self-paced learning and personalized study plans. Furthermore, remote instruction extends the boundaries of the traditional classroom by granting access to a wealth of educational resources and materials. Students' navigation of online platforms, participation in virtual collaboration spaces, and development of digital communication skills contribute to their digital literacy and technological proficiency. Remote instruction also fosters independent learning and self-regulation among students. By allowing teachers to tailor materials and assignments to meet individual student needs, remote instruction supports differentiated instruction, leading to heightened student engagement and a deeper understanding of the subject matter. In the context of blended

learning, Phillips et al. (2016) found that while designing a blended learning course required additional planning compared to a traditional classroom setting, it also allowed instructors to focus on facilitating more advanced levels of learning.

Moreover, this study suggests that remote instruction presents valuable professional development opportunities for in-service teachers. Online platforms, webinars, and virtual conferences serve as accessible channels for teachers to access diverse learning materials, participate in workshops, and engage in networking activities (Lee et al., 2023). This continuous engagement with professional development resources enables teachers to enhance their own skills and stay updated with emerging educational practices. Overall, these findings highlight the multifaceted benefits of remote instruction for both students and teachers, emphasizing the potential for increased learning opportunities, personalized instruction, and professional growth.

4.2 Appropriate Training, Resources, and Collaboration Are Necessary for Remote Instruction

As highlighted in this study, the findings suggest that in-service teachers could have been more successful in their remote instruction if they had received prior training before the COVID-19 pandemic. In-service teachers who received comprehensive training on remote teaching strategies, technological tools, and online pedagogy reported higher levels of confidence and competence in delivering instruction remotely. They were able to effectively design and facilitate engaging learning experiences that met the needs of their students (Smith et al., 2021). Therefore this research can inform future plans for professional development to include training on blending learning and remote instruction models. To facilitate significant changes in their teaching practice, in-service teachers require multiple opportunities to learn new information, comprehend it, and apply it effectively (Timperley, 2008). Darling-Hammond (1998) states that teachers learn by studying, doing, reflecting, collaborating with peers, closely examining student work, and sharing their observations. In light of these considerations, it becomes imperative for schools and preservice teacher preparation programs to incorporate instruction on creating effective blended learning environments. This will better equip preservice teachers to embrace technology in their classrooms, while schools can provide targeted professional development training tailored to specific content areas at the secondary level to address the unique needs of secondary students in a remote setting (Timperley, 2008).

Additionally, research into successful pedagogical strategies and instructional options for remote instruction and its related professional development remains essential (Bailey & Card, 2009). The creation and training of current and competent remote teachers is crucial (Salmon, 2013; Stavredes, 2011; Wilson & Stacey, 2003; Wolf, 2006). Teacher preparation programs can, if they do not already, incorporate blended learning training for both graduate and undergraduate students, preparing them for the field, and develop accessible blended learning professional development models for in-service teachers. Further, these programs should consider the diversity of students, as Enders and Kostewicz (2023) emphasize the importance

of progress monitoring for students with special needs during remote instruction and the need for comprehensive in-service teacher training.

4.3 Blended Learning May be Used for Professional Development Opportunities

Blended learning can effectively address the time constraints and technological demands faced by in-service teachers, according to this study. Traditional on-site professional development, limited by time and location, may not adequately address teachers' pedagogical challenges. To meet individual professional development needs, blended learning provides flexibility in time and place (Azukas, 2019).

Research studies have demonstrated that flexible professional learning models in blended or virtual settings promote teacher-led activities, active participation in decision-making, reflective practices, collaboration, and integration of real-world experiences (Darling-Hammond et al., 2017; Guskey & Yoon, 2009). Blended learning offers a range of interactive and engaging activities, such as discussion forums, online communities, and collaborative projects, enabling peer-to-peer interactions where teachers can share ideas, experiences, and best practices (Chen & Jones, 2023).

The feedback obtained from this study can be used to develop personalized blended learning models for preservice teachers within school communities. It can also guide the refinement of academic and professional development programs with input from teachers. Teacher preparation program leaders and instructors can leverage the research findings to design teaching methodology and educational technology courses that adequately prepare teachers for diverse teaching modalities. These courses should focus on promoting secondary student engagement, facilitating in-service teacher collaboration, establishing professional learning communities, providing technological knowledge training and resources, and enhancing time management skills.

5. LIMITATIONS AND RECOMMENDATIONS

To ensure a comprehensive analysis, it is important to acknowledge the limitations of this research study. The study did not examine whether in-service teachers who were teaching remotely conducted synchronous classes in real-time or asynchronous classes with chances to access course materials at any time. This study did not investigate the demographics of secondary students in the in-service teachers' classes, and it is unknown if they impacted the overall remote instruction experience. Additionally, this is a small study; there is a need for further research with a more focused exploration of the impact of remote instruction on student achievement after the COVID-19 pandemic and the specific factors that contributed to increased or decreased learning based on measurable academic data. It would be useful to examine student achievement data, as the findings are based solely on the in-service teachers' perceptions of the quality of teaching and learning in their classrooms during this time.

6. CONCLUSION

Based on this research, it is evident that teachers faced challenges when teaching remotely during the COVID-19 pandemic. The findings of this study highlight several key areas in which teachers experienced difficulties, including student engagement, in-service teacher collaboration, knowledge of technology and tools, and time management. However, despite these challenges, most of the teachers expressed a sense of preparedness thanks to the professional experiences they had prior to and during the COVID-19 pandemic.

This study also sheds light on the professional development the teachers believed they still needed to become more effective teachers of remote instruction. One significant aspect that emerged from our research is teachers' desire for additional training in working with diverse students with varied backgrounds. This indicates their recognition of the importance of creating an inclusive and equitable learning environment in the online setting. Furthermore, the need for improved communication with families underscores the significance of fostering strong home–school partnerships to support students' remote learning experiences.

In addition, the teachers expressed a desire for increased opportunities to collaborate with their peers. The teachers reported on the usefulness of peer collaboration and seemed to most value opportunities to learn directly from fellow teachers. Such opportunities for teacher-to-teacher collaboration can enhance the sharing of best practices, lesson ideas, and support networks, possibly improving the quality of remote instruction.

Finally, this research highlights the importance of providing teachers with targeted training in specific technology tools. As online instruction heavily relies on various digital platforms and tools, equipping educators with the necessary technological skills is vital for effective teaching and learning. Related to this, the teachers expressed the need for more time to learn and plan for remote instruction. This desire underscores the complexity and workload associated with online teaching and emphasizes the importance of providing teachers with adequate resources, time, and support to effectively adapt to this instructional approach.

In conclusion, our research shows that teaching remotely can be challenging, and effective professional development for preservice and in-service teachers is essential. Addressing the issues of student engagement, teacher collaboration, knowledge of technology, and time management requires a comprehensive approach. Providing targeted training in working with diverse students, improving communication with families, fostering collaboration among teachers, offering specific technology training, and allocating dedicated time for professional development are crucial steps toward empowering teachers and enhancing the effectiveness of online instruction. By addressing these needs, we can better equip educators to navigate the complexities of remote teaching and ensure optimal learning experiences for all students.

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APPENDIX A: QUESTIONNAIRE FOR TEACHERS

1. How many years have you been teaching?
2. What grade level(s) did you teach this school year?
3. What subject area did you primarily teach this school year?
4. Which of the following best describes your teaching modality this school year?
5. Please indicate the extent to which you agree or disagree with the following statement: "I felt prepared to teach during the COVID-19 pandemic."
6. Compared to previous years, I would say I was a(n) _____ effective teacher this year.
7. Please describe your experience teaching during the pandemic. Give as much detail as possible (topics you may consider discussing can include student learning, student engagement, teacher collaboration, administrative support, etc.).
8. What experiences this year (if any) do you feel helped you improve your online instruction? Please consider any professional development experiences, faculty/departmental training, personal readings, conversations with colleagues, etc.
9. What professional development do you believe teachers need in order to be successful with online instruction?

APPENDIX B: INTERVIEW SCHEDULE

1. Please tell me about yourself. Who are you and what is your teaching background?
If not mentioned by the teacher, ask:
 - How many years have you been teaching?
 - What grade level(s) do you teach?
 - What subject area(s) do you teach?
2. Take me back to the beginning of your COVID-19 transition to remote instruction. What was that experience like for you? Please give me as much detail as possible.
If not mentioned by the teacher, ask:
 - What grade level(s) did you teach this school year?
 - What subject area did you primarily teach this school year?
 - Which of the following best describes your teaching modality this school year?
3. Did you feel prepared to teach during the COVID-19 pandemic?

4. Compared to previous years, how effective would you say your teaching was? Less effective? Equally effective? More effective? Why?
5. What were the greatest challenges you faced?
6. What helped you feel prepared to meet these challenges?
If not mentioned by the teacher, ask:
 - What professional experiences did you have **before** the pandemic that helped you?
 - What professional experiences did you have **during** the pandemic that helped you?
7. If you could go back, knowing what you know now, would you do anything differently?
8. What professional development do you feel you still need to improve your online instruction?
If not mentioned by the teacher, ask:
 - What professional development do you believe teachers in general need to be successful with online instruction?