

**How COVID-19 influenced collaboration within work and school settings: A qualitative
interview study**

Emily L. Gyongyosi^{1*+}, Anneliese Moon^{1*}, Kevin Berstler^{1*}, Lisa M. Williams^{1*}, Courtney
Donovan¹

¹School of Education and Human Development, University of Colorado Denver, Denver, CO.

* Denotes equal contributions.

Author Note

Emily Gyongyosi  <https://orcid.org/0009-0006-5997-9657>

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Correspondence concerning this article should be addressed to Emily L. Gyongyosi,
University of Colorado Denver, 1890 N Revere Ct, Aurora, CO 80045 Room: P12-5136. Email:
emily.gyongyosi@cuanschutz.edu

Abstract

The COVID-19 pandemic dramatically altered traditional work and academic environments, forcing many to shift to remote collaboration and telework. This study investigates how the pandemic has influenced collaboration in work and school settings, focusing on attitudes toward remote collaboration pre-, during, and post-pandemic. A qualitative approach was employed, with interviews conducted among five graduate students working in various sectors. Deductive coding of the transcripts revealed emergent themes surrounding attitudes toward collaboration, including perceived challenges, positive experiences, and shifts in collaboration norms. Prior to the pandemic, interviewees described in-person collaboration as convenient but logistically challenging. During the height of the pandemic, technological and psychological barriers, including feelings of isolation and frustrations with adapting to new platforms, negatively impacted collaboration experiences. However, participants also noted positive outcomes, such as geographic flexibility and time efficiency. Post-pandemic, remote collaboration became normalized, with participants expressing greater ease and work-life balance, but also feelings of needing to be "always on." This research highlights the complexities of adapting to remote collaboration and provides insights into how such practices may continue to evolve. The study calls for further exploration into remote collaboration's long-term effects on productivity and well-being in diverse professional and academic contexts.

Keywords: telework, post-pandemic collaboration, workplace adaptation

How COVID-19 influenced collaboration within work and school settings:

A qualitative interview study

Coronavirus disease 2019 (COVID-19) is a highly contagious respiratory illness first identified near the end of 2019 in Wuhan, China. The illness rapidly spread, leading to a global pandemic declared by the World Health Organization (WHO) in March 2020 (World Health Organization, 2020). The pandemic forced many academic and workplace settings to suddenly enforce strict social distancing and remote working policies to reduce the spread of illness (Hodder, 2020). The study at present seeks to investigate how this sudden change in workplace and academic operations affected collaboration. For this study, remote collaboration is defined as using electronic technologies to engage in collaborative work outside an office or workplace environment. Similarly, remote work or telework is defined as engaging in work or academic duties using electronic technologies outside the physical workplace or academic environments.

Mann & Holdsworth (2003) examined teleworks emotional and physical benefits and problems as technologies allowing for remote collaboration and remote work began growing in popularity and convenience. Emotional benefits of telework were defined as a better balance of home and work life, increased flexibility, reduced commuting, reduced overheads for the employer, increased employee skill base, and increased productivity (Mann & Holdsworth, 2003). The problems of telework were listed as social isolation, presenteeism, lack of support, career progression, and blurring of boundaries (Mann & Holdsworth, 2003). Additional research on productivity changes and employment during the height of the pandemic supports Mann and Holdsworth's findings that the sudden shift to remote work resulted in stress, loneliness, and frustration due to life disruptions, new technologies, isolation, online work surveillance, pressure from employers to perform, and worry about the pandemic and the safety of employees' families

(Hodder, 2020; Mitchell, 2021; Smite, 2021). However, there is a dearth of research exploring the impacts of the COVID-19 pandemic on both remote collaboration in work and academic settings several years post-pandemic. The current study seeks to answer the following research question: How has the COVID-19 pandemic influenced collaboration within work and school settings?

Methods

Participants

The study used convenience sampling, where participants were also the researchers for this study. The sample consisted of five graduate students at an urban public research university in the United States. Two students identify as male, and three students identify as female. Four students reside in Colorado, and one student resides in Ohio. The current ages of the students range from early twenties to late thirties ($M = 29.4$). Two of the interviewees were not actively enrolled in higher education during the height of the pandemic. However, all participants were in professional roles within education, government, and private settings. Current participant professional roles are high school teacher, childcare professional/research assistant, policy analyst, logistics specialist, and clinical research coordinator. All students are now enrolled in either a master's or Ph.D. education program.

According to Crabtree and Miller's (2023) guidelines on qualitative research, the team collaboratively developed a structured interview protocol. See Appendix I for the full interview protocol developed. Five fifteen-minute interviews were conducted and recorded using the Zoom Meetings recording and transcription features. The research team then reviewed transcriptions to ensure the accuracy of dialogue in each interview and to "increase the rigor and trustworthiness of the findings" (Leech & Onwuegbuzie, 2007, p. 575).

Coding and Code Calibration

Deductive or *a priori* coding was used, where the research team defined an initial set of predefined codes based on the research question and applied codes to the transcripts for analysis by each researcher (Creswell & Poth, 2016; Elliott, 2018). The research team applied the following initial codes to the data: 1) remote collaboration, 2) pre-pandemic, 3) height-of-pandemic, 4) post-pandemic, 5) technology, 6) facilitators, 7) barriers, 8) change, 9) normalization, 10) school, 11) work, 12) negative experience, and 13) positive experience. These 13 codes were used to code meaningful segments from all five interview transcripts. The codes were entered into Dedoose, a cross-platform program for analyzing mixed methods research and coded by all four research team members. Codes were applied to complete sentence segments within the transcripts to provide context to code application. The research team also coded for the existence of concepts while consistently referencing the predefined definitions of each code and following the process of conceptual analysis (Columbia University Irving Medical Center, 2024). After analyzing and reviewing the codes, the research team triangulated the data using code co-occurrence and code density frequencies.

Figure 1 shows no code absence, gaps, or disconfirming examples, as all interviews included all codes. Figure 2 indicates that all codes were discussed together at least three times. Therefore, the analysis included all code applications.

Figure 3 provided context to the research team for necessary co-occurring codes. Figure 4 references code density broken down by periods of ‘pre-pandemic,’ ‘height-of-pandemic,’ and ‘post-pandemic.’ Reviewing the density by which each code applied to each time frame allowed for additional insight regarding feelings surrounding remote collaboration at each point during the pandemic, as seen in Figure 4. The research team reviewed excerpts and patterns of codes to

identify a “phrase or sentence describing more subtle and tacit processes” into themes that answer the research question: *How has the COVID-19 pandemic influenced collaboration within work and school settings?* (Saldana, 2016, p. 282)

Theme Development and Findings

After finalizing the new code list (Appendix II), the research team categorized the codes. First, ‘pre-pandemic,’ ‘height of pandemic,’ ‘post-pandemic,’ ‘work,’ and ‘school’ were categorized as Setting codes. Second, ‘positive experiences’ and ‘challenges’ were categorized as Feeling codes. Remote collaboration and Change codes were considered their categories.

Upon further discussion of these categories, the research team found that the interviewees described their feelings about remote collaboration in work and school settings differently before, during, and after the pandemic. Consequently, one prominent theme emerged: Attitudes toward Collaboration. The findings from this theme are discussed below.

Attitudes Towards Collaboration

Pre-Pandemic

None of the five interviewees reported engaging in remote collaboration before the COVID-19 pandemic. Instead, they met with their groups in person in their respective school or work environments. Codes for challenges occurred only three times, and codes for positive experiences occurred seven times.

The specific negative attitudes described were frustration with scheduling (such as finding a time and location to meet), outdated equipment, and the struggle to contact respective parties. Interviewee 1, for example, describes their law firm as “about 10 years behind the rest of the world [and] very antiquated.” Interviewee 2, states, “I used to have to call families or leave emails like 10-15 times before the pandemic because it was really hard to get in touch with

families.” These frustrations present the idea that interviewees viewed collaboration before the pandemic as limiting.

The specific positive attitudes related to the ease of in-person collaboration. Interviewee 4 states, “When you're in person, it could be a bit more exciting. And there's just more room to develop the project.” Additionally, Interviewee 5 states, “At my job, we're all just giving out information freely. You were not cautious to, you know, speak over one another.” These positive attitudes portray the idea that collaboration before the pandemic was easier, perhaps due to the social clues and context of being face-to-face with others.

Therefore, the data show a negative attitude toward initiating collaboration, but a positive attitude once initiated.

Height of Pandemic

The rapid emergence of the COVID-19 pandemic forced collaboration to quickly shift from in person to remote. One of the student interviewees (Interviewee 5) says, “I remember taking a class at CU Denver in the Spring of 2020, and we went full remote that same semester like halfway through the semester we jumped to using Zoom.” Additionally, Interviewee 3, a high school teacher, describes, “I remember almost the entire school year was taught remotely, and we continued to use Google Classroom and Google Docs and Google Slides for all the classes that I taught.” Therefore, the shift from in person to remote collaboration predominantly entailed using online platforms such as Zoom and Google Suite.

Challenges were coded in the context of the pandemic height 28 times (Figure 3), indicating that the attitude about this shift was negative. Notably, the interviewees in working environments expressed frustrations different from those in school.

Working interviewees expressed frustration accessing reliable internet, providing respective parties with technology, and teaching others how to use technology. Interviewee 1 sums up these frustrations, “It was incredibly difficult. We had to learn how to hold court by Zoom. And how to get everybody on and teach everybody how to be appropriate on Zoom during court, to maintain court decorum.” She goes on to elaborate, “we were working with “a large amount of people who were indigent and couldn't afford devices” which placed extra responsibility on her to provide phones and resources for individuals to attend court. Similarly, interviewee 2 described that if their students did not have access to the technology needed for remote learning, they would have to “print out lesson plans (a home learning curriculum) and then deliver it to the door. I'd have to drive and deliver it to the family at their house.” Consequently, workers were frustrated with their new responsibilities to navigate and fulfill the collaborative aspects of their job.

Student interviewees outlined that their most prevalent challenges with remote collaboration during the pandemic were related to their psychological state. Interviewee 5 states, “It was difficult for me to communicate on Zoom calls. I was very reserved whenever we would schedule Zoom calls either for school or for work, I would not want to speak up during a call.” Additionally, Interviewee 4 sums up their remote learning experience as “very isolating and lonely.” The challenge for students appears to relate to psychological harm of *not* collaborating in a time in their life that is supposed to be filled with social interaction.

Despite these challenges, some interviewees did find positives in the switch to remote collaboration. However, coded only 14 times, the challenges outweighed positive experiences.

Interviewees in professional roles predominantly indicated that switching to remote collaboration allowed them to reach students and coworkers in different locations. Interviewee 2

states, “[Remote collaboration is] helpful when people are in very different geographic locations. I’ve gained a few more skills working with people who are not directly at the site that I’m working at physically.” In other words, remote collaboration offered an extension of their work to other otherwise unreachable employees and parties.

Interviewees in student roles predominantly discussed the comfort of staying home, the ease of scheduling, and the ability to take on more tasks. Interviewee 4 states, “It made life easier at times because of the comfort of just staying in your own home and scheduling everything around your own time. It also gave me the freedom to work another job, another remote.” Similarly, Interviewee 5 states, “It made it much easier for people to get together and you know, we’re not having to drive to an office base or anything of that sort so it’s made it much easier for us.” The emergence of remote collaboration appeared to rectify the challenges of scheduling collaboration before the pandemic.

Therefore, despite remote collaboration bridging geographical barriers, which were exacerbated by the need to stay in place during the lockdown and exposed interviewees to a new world of saving time getting ready, commuting, and finding places and times to meet in person, the data was more negative than positive, indicating a negative attitude toward remote collaboration during the height of the pandemic.

Post-Pandemic

Although remote collaboration shifted from necessary to optional after the pandemic, all interviewees noted that some aspects of remote collaboration, such as hybrid in-office and at-home schedules and virtual meetings, had become normalized in their work or school environment. Interestingly, interviewees reported less challenges (coded only nine times) about collaboration post pandemic (Figure 3). The main challenge participants reported post-pandemic

was feeling pressure to ‘always be on.’ Interviewee 1 describes this feeling, “Even though our team showed that we were much more productive during remote work, there's just like this...I don't know, this fog, that hangs over from leadership of like ‘well, they didn't do anything when they were not here’...but that's not the case.” In other words, even though the interviewees felt they were productive, they questioned whether their bosses would agree since they were no longer in an office.

Positive experiences were coded 19 times, outweighing negative (Figure 3). Interviewees reported that as time passed since the COVID-19 pandemic, navigating the complexities of remote collaboration became easier. More so, the normalization of remote work provided a better work-life balance. Interviewee 4 highlights this, “I have time to work at home and to get stuff done, [but if] I have a question on something, I can shoot my manager a message and tell her I need to hop on a Zoom.” Interviewee 2 explains that in her case, she feels others are more accessible, “And more like everyone works together rather than like going through a hierarchical grapevine.” In other words, the normalization of meeting remotely grants some of the interviewee’s confidence initiating and sustaining direct communication with others in higher positions of power.

Therefore, the general attitude towards collaboration as of present is more positive than negative. Although it can be difficult to navigate ideologies that remote work is less productive than in person work, our interviewees feel it has become normalized and offers them opportunities to succeed.

Discussion

Undoubtedly, COVID-19 has impacted both the workplace and schools across the world. Companies and schools either strategically or haphazardly shifted towards remote collaboration

to work around the challenges exacerbated by the pandemic. Based on the setting and community members' experience with and access to technological facilitators, remote collaboration was executed on a spectrum between efficiently fluid and stressfully hectic. The researchers of this paper discussed the changes as well as the positive/negative experiences individuals experienced in work and school settings because of the COVID-19 pandemic and societies' subsequent responses.

The data showed that challenges were prevalent among all interviewees, but some participants experienced challenges more significantly than others. Two of the participants who were students during the height of the pandemic experienced isolation and challenges in expressing themselves. By following state-ordered mandates to stay inside and away from people, including peers and professors, these participants shared that despite having access to and the expectation of participating in remote collaboration, they felt disconnected and separated from their communities. The researchers also noted that two other participants were working during the height of the pandemic. They expressed that a significant challenge was obtaining access to technology and appropriate resources to complete the tasks of their jobs. Unfamiliarity with specific technological resources such as Zoom or Microsoft Teams could have positively impacted their employment of remote collaboration. The negative experiences were partly caused by access to a reliable internet connection, whether on their end or by the parties with whom they engaged during remote collaboration.

Some of the main positive experiences with remote collaboration since the height of the pandemic, as reported by the participants, include flexibility and balance in and out of work and school settings. Participants also shared that their experiences with technology used for remote collaboration has helped them express more effectively their ideas while collaborating with peers

in both work and school settings. Since the height of the pandemic, the participants shared that access to and within technology used for remote collaboration has improved and allowed them to engage more authentically and actively. However, it is also essential to note the challenges of remote collaboration, as reported by the participants.

Recognizing and understanding the lived experiences of individuals collaborating remotely, whether in work or school settings, through a pandemic offers us a chance to learn from their challenges. Hearing from colleagues and students who shared that remote collaboration during the height of the pandemic caused them to feel isolated and unable to effectively express themselves should point us to areas of necessary growth and improvement. In order to collaborate remotely in a way that does not separate or debilitate our community members, our focus should be on diverse and meaningful ways in which colleagues and students can establish and nourish a sense of community as well as empower each other to express themselves in a space that is both welcoming and receptive.

The participants' experiences may resonate with many different people's own experiences; however, they are not universally representative. Further research that focuses on specific careers might indicate more appropriate responses to understanding how COVID-19 influenced remote collaboration within the work and school settings. For example, Rannastu-Avalos and Siiman (2020) interviewed middle school science teachers in Estonia to understand how they changed their teaching strategies and utilized their resources to continue teaching despite living through the height of a global pandemic. Marshall, Shannon, and Love (2020) surveyed hundreds of teachers across the US during the height of the COVID-19 pandemic to gather data on their experiences during this emergency remote collaboration. Both studies serve to remind us that this research is globally interesting and impacting. They also reveal the power

of using qualitative research to share the perceptions of individuals who experienced the COVID-19 pandemic from a work or school setting.

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Figure 1*Code Presence*

Media	Codes								
	Challenges	Change	Height of Pandemic	Positive Feelings	Post-Pandemic	Pre-Pandemic	Remote Collaboration	Work	school
Interviewee 1	1	1	1	1	1	1	1	1	1
Interviewee 2	1	1	1	1	1	1	1	1	1
Interviewee 3	1	1	1	1	1	1	1	1	1
Interviewee 4	1	1	1	1	1	1	1	1	1
Interviewee 5	1	1	1	1	1	1	1	1	1

Figure 2*Code Application Chart*

Media	Codes								
	Challenges	Change	Height of Pandemic	Positive Feelings	Post-Pandemic	Pre-Pandemic	Remote Collaboration	Work	school
Interviewee 1	41	58	21	24	24	9	77	66	2
Interviewee 2	39	40	24	32	25	19	69	69	18
Interviewee 3	19	16	21	6	5	21	27	28	17
Interviewee 4	27	23	24	26	9	1	35	12	29
Interviewee 5	6	13	18	8	9	16	43	14	38
Totals	132	150	108	96	72	66	251	189	104

Figure 3*Code Co-Occurrence*

Codes	Challenges	Change	Height of Pandemic	Positive Feelings	Post-Pandemic	Pre-Pandemic	Remote Collaboration	Work	school	Totals
Challenges		32	28	15	9	3	40	33	8	168
Change	32		30	28	29	10	52	48	15	244
Height of Pandemic	28	30		14	8	8	31	33	11	163
Positive Feelings	15	28	14		18	7	40	31	9	162
Post-Pandemic	9	29	8	18		4	31	35	7	141
Pre-Pandemic	3	10	8	7	4		20	13	18	83
Remote Collaboration	40	52	31	40	31	20		59	25	298
Work	33	48	33	31	35	13	59		11	263
school	8	15	11	9	7	18	25	11		104
Totals	168	244	163	162	141	83	298	263	104	

Figure 4*Code Density Periods*

Pre-Pandemic	Height of Pandemic	Post-Pandemic
<ul style="list-style-type: none"> Remote Collaboration: 20 Change: 10 Positive Feelings: 7 Challenges: 3 	<ul style="list-style-type: none"> Remote Collaboration: 31 Change: 30 Positive Feelings: 14 Challenges: 28 	<ul style="list-style-type: none"> Remote Collaboration: 31 Change: 29 Positive Feelings: 18 Challenges: 9

Appendix I

Interview Protocol

Introduction:

The purpose of this interview is to understand the differences in teaching and/or participating in collaborative work in remote and in-person settings, and how these attitudes have changed pre and post-COVID-19 pandemic. It should last about 15 minutes.

- Identifying information
 - What is your name?
 - Current work?
 - Work prior to the COVID-19 pandemic?
 - Work during the COVID-19 pandemic height (2020-2021)?
- Academic Background
 - Where did you go to college?
 - What was your class size?
 - How many people were typically in your class?
 - Was your academic experience mostly virtual, in-person, or hybrid?
 - How often did you do collaborative work?
 - What was the scope of that work?

Transition Questions

- What has your experience been with collaborative work via electronic methods (zoom, video chat, phone, email, text, etc) before the COVID-19 Pandemic?

- During the height of the COVID-19 pandemic? (Spring 2020- Fall 2021)
- After the height of the pandemic?
- Can you tell me a little bit about your access to the technology and programs required to engage in collaborative work remotely? (pre, during, and post pandemic as well)

Key Questions

- How has remote work impacted (facilitated or created barriers) your ability to collaborate with your team?
 - Follow-ups:
 - In what ways?
 - Tell me more about that
- How do you feel about remote collaboration? Why?
 - Do you prefer remote or in-person collaboration?

Closing Questions

- Before we conclude this interview, is there anything else you'd like to share with us regarding your experience with remote collaboration?

Appendix II

Finalized Codes

1. **Pre-Pandemic**—any action, event, or feeling occurring before the onset of the COVID-19 pandemic (March 2020).
2. **Height of Pandemic**—any action, event, or feeling occurring (Spring 2020 - Fall 2021 or during any timeframe where active lockdown was in place).
3. **Post-Pandemic**—any action, event, or feeling occurring (after Fall 2021 or after lockdown requirements lifted).
4. **School**- any reference to academic or educational settings in any personal or professional role (i.e., teacher, student, parent, etc.).
5. **Work**- any reference to professional experiences.
6. **Remote Collaboration**- any reference to utilization of technology to communicate in an academic or work setting with peers or coworkers (i.e. email, telephone, zoom, teams, or other video or messaging platforms, email, and Canvas).
7. **Change**- any action, event, or feeling that is currently different from a previous time point and/or a new found acceptance and/or use of certain technology post-pandemic that were not frequently used pre-pandemic (normalization code merged).
8. **Challenges**-any reference to difficult, uncomfortable, negative outcomes, or any barriers to technology for work or school or transportation, health, etc.

9. **Positive Experiences-** any action, event, feeling, or experience that resulted in a positive collaborative experience.