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"I have been pushed outside of my comfort zone and have grown as a result": Teacher professional learning and innovation during the pandemic

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Abstract

This study examines opportunities for teacher professional growth and innovation during the COVID-19 pandemic. Survey data, including responses to both closed and open-ended questions, were collected from 276 elementary-school teachers who taught online in two school districts in California. Quantitative and qualitative analyses document the extent to which teachers experienced opportunities for professional growth and innovation, how they described these opportunities, and what factors explained variability in teachers' responses. Contrary to some extant research produced in the last few years, teachers overwhelmingly agreed that the transition to online instruction provided opportunities to be innovative and to learn to teach with new technologies. Specifically, they reported new approaches for connecting with students and their families as well as integrating technology into classroom practice beyond the period of remote learning. Consistent with prior theory related to teacher learning, factors that predicted perceived opportunities included their overall satisfaction with the support provided by their school/district, collaboration with colleagues, and their self-efficacy for using technology to teach specific concepts and curriculum. Findings suggest implications for how to leverage this period of professional growth beyond the pandemic.

Keywords Teacher learning · Technology · Elementary education · Pandemic · Innovation

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Introduction

COVID-19 forced many educators to transition from in-person instruction to online platforms overnight. In the wake of these abrupt and sweeping changes, mainstream media and emerging scholarship documented the hardships teachers experienced while striving to deliver remote instruction and remain connected to students with limited support or resources (Brackett & Cipriano, 2020; Educators for Excellence, 2020). According to a number of national surveys, teachers in the United States reported feeling anxious, overwhelmed, and burned out (Hamilton et al., 2020; Herold & Kurtz, 2020). Teachers in the U.S. have faced several hardships typical of the pandemic (e.g., separation from family or close friends, increase in workload), but those who have experienced more stressors reported greater struggles in mental health and have found it much more challenging to teach (Baker et al., 2021). The challenges teachers have faced during the pandemic may also have long-term impacts on teacher shortages in the coming years (Carver-Thomas et al., 2021).

While acknowledging the cost of the pandemic on the professional lives of teachers, this study examines another dimension of the teacher experience that has received limited attention—opportunities for teacher professional growth and innovation since the advent of COVID-19. It also explores the factors that might explain variation in teachers' perceived opportunities for learning. This focus is important because it allows us to document teacher learning and aspirations even amid the challenges of the pandemic, while highlighting how schools and districts might support teacher learning in the future. Drawing on survey data from 276 teachers from two school districts in California, this paper answers the following questions: (1) To what extent did teachers experience opportunities for professional growth and innovation during the pandemic? (2) How did teachers describe these opportunities for professional growth and innovation? (3) Which factors (e.g., hours of PD, self-efficacy with technology, years of experience) explain variability in teachers' perceived opportunities for professional growth and innovation? While this study focuses on teachers within the United States, the findings may carry important implications for educational systems in other contexts where the work of teachers has shifted substantially since the pandemic.

Since collecting our data, other research has sought to document the impact of remote learning and the pandemic overall on student outcomes. These analyses have shown that remote education led to significant declines in achievement in reading and math and a widening of pre-existing achievement gaps (The Center for Research on Education Outcomes Stanford University, 2020; Fahle et al., 2022; Goldhaber et al., 2022; NAEP, 2022). While examining student outcomes is outside the scope of our study, we hope that the lessons we highlight in this paper may help the field leverage any gains in teacher learning to better serve students now and long after the pandemic.

Related literature: teacher experiences during the COVID-19 pandemic

Prior to the pandemic, teachers reported high levels of job satisfaction both internationally and in the United States. In the 2018 Teaching and Learning International Survey, for example, 90% of teachers reported that they were satisfied with their jobs (even while 36% reported that society values the teaching profession) (TALIS, 2018). These data lie in contrast to the experiences teachers reported after the emergence of COVID-19. Based on a cross-sectional survey conducted in the U.S., slightly more than 40% of teachers reported they were thinking about leaving the profession or retiring more so than recalled prior to the COVID-19 pandemic (Gillani et al., 2022). A similar survey of teachers in Germany showed that teachers on average were only "somewhat satisfied" with their job in 2020 (Stang-Rabrig et al., 2022). A survey administered by RAND in 2021 showed that a little more than half of U.S. teachers were satisfied with their jobs, and that nearly one-quarter of teachers indicated a desire to leave their jobs at the end of the school year, compared with an average national turnover rate of 16% pre-pandemic (Steiner & Woo, 2021).

Given the changes in overall satisfaction, a number of scholars and research organizations have examined teacher work to understand how their professional lives have changed, identify common challenges and sources of support, and explore potential ways to support teachers now and in the future. While K-12 teachers struggled with many of the same concerns and anxieties as the general public (e.g., physical health, lack of childcare, mental health and wellbeing), recent scholarship has identified sources of stress specific to teaching during the pandemic. Here, we focus specifically on studies conducted in the U.S. Large-scale teacher surveys have documented the nature and severity of hardships associated with the abrupt transition to remote learning, especially for teachers unfamiliar with teaching online (Baker et al., 2021; Brackett & Cipriano, 2020; Hamilton et al., 2020). Trust and Whalen (2020) show how the forced shift to remote learning exposed a significant gap in teachers' familiarity and comfort with utilizing basic technologies and integrating technology and instruction. Teachers have also struggled with high levels of student attrition or low levels of student engagement (especially among marginalized communities) often caused by technological problems and an inability to connect online (Educators for Excellence, 2020; Herold & Kurtz, 2020). These conditions have made it particularly difficult to serve and support students with special needs and English learners (Smith, 2020; Uro et al., 2020).

While some research has documented the lack of administrative support or appropriate professional development in the transition to remote learning (Pressley, 2021), teachers who have received support from their colleagues have been able to better cope with the stresses of this uniquely challenging period (Baker et al., 2021; Sokal et al., 2020; Trust & Whalen, 2020). In line with these findings, Darling-Hammond and Hyler (2020) recommend that supporting teachers in the pandemic (and the future) will require not only strategic professional learning opportunities, but also ample time for educators to collaborate with one another.

Given the importance of teacher self-efficacy in facing challenges and changing practice (Klassen & Tze, 2014), a critical dimension of examining teacher work during the pandemic is understanding how the transition to remote learning influenced levels of self-efficacy (and vice versa). In a survey of 361 teachers from across the United States who completed the Teacher Sense of Efficacy Scale, Pressley and Ha (2021) found that those who were teaching virtually had the lowest efficacy scores compared to those teaching in a hybrid or all in-person model. A survey of 366 European teachers similarly found that self-efficacy decreased when teachers faced more difficulty with distance learning (Rabaglietti et al., 2021). Interestingly, the results suggested no difference in efficacy score based on years of teaching experience, teacher location, previous accolades, or instruction level. In a study of Canadian teachers, however, Dolighan and Owen (2021), found that teachers with prior training in online teaching reported higher levels of self-efficacy. In turn, self-efficacy can act as a partial mediator between teacher stress and difficulty with remote learning (Pellerone, 2021; Rabaglietti et al., 2021). Moreover, the development of technical skills, coupled with collegial sharing, can increase teachers' sense of agency and their willingness to embrace change (McQuirter, 2020).

Finally, while a preponderance of the research on teachers during the pandemic has justifiably focused on their numerous hardships, a small number of studies have also documented opportunities for growth afforded by the transition to online learning. In a nationally representative survey of teachers in the U.S. administered by Educators for Excellence (2020), teachers reported some benefits to distance learning. Specifically, 67% reported that they learned ways to integrate technology into their teaching that they plan to use after the pandemic; 54% reported student access and familiarity with technology improved; and 52% reported virtual meetings have made meetings with parents and administrators easier. In a study of math teachers in Spain, Marpa (2021) found that teachers felt positively towards learning mathematics with technology, believed that it helped improve their confidence in the teaching of the subject, and that using technology in mathematics teaching improves mathematics teaching and learning. They also believed that students would be motivated to learn more and participate during class discussions and activities through technology. In a descriptive and explanatory case study set in Alaska, Kaden (2020) examined the COVID-19 school closure-related changes to a secondary teacher's instructional practices and workload. The results of this study show that the forced move to online learning may have served as a catalyst to designing an effective hybrid model of learning to be used in the future.

This paper contributes to the growing body of work on teachers' experiences during the pandemic, while adding a less understood aspect of teachers' experiences: their opportunities for professional growth and innovation. We use the term growth rather than learning because it is a broader term that encompasses more than just the process of acquiring new knowledge and skills. It also points to the development of teachers as professionals whose experiences during the pandemic have provided opportunities for them to reconsider ways students learn, the importance of connections with families, and the agency they can exercise to improve their practices in response to challenges and in collaboration with colleagues. We also think growth conveys nicely learning that is sustained through one's career. We define growth and

innovation along two main dimensions. The first relates to learning about new technologies for teaching to respond to the needs emerging from remote instruction, but also to improve and innovate teaching practices beyond the time of the pandemic. The second relates to improving teaching by engaging with others, including colleagues and families in ways that prompts long-lasting innovation and improved practice. In the next sections, we review existing research on teacher change and innovation, and self-efficacy for teaching with technology as these two bodies of work informed the design of our survey.

Theoretical framework

Teacher growth and innovation

To examine teacher growth and innovation during the COVID-19 pandemic, we aimed to employ a set of measures that are grounded in theoretical understandings of how teachers learn and grow. Research on teacher learning highlights types of teacher engagement that are productive for supporting changes in instruction. Reviews and syntheses of studies of teacher professional development conclude that professional development is conducive to instructional change when it is focused on instruction and provides opportunities for teachers to engage actively with teaching artifacts, such as lesson plans, samples of student work, and videoclips of classroom interactions (Darling-Hammond et al., 2017; Garet, et al., 2001). These artifacts ground teacher learning in practice and make the transferring of new knowledge from the professional development setting to the classroom easier, supporting teachers in introducing innovations in their teaching (Kazemi & Hubbard, 2008).

The literature also supports teachers' autonomy and agency as critical to teacher innovation and openness to apply new skills in the classroom (Datnow & Park, 2018; Parsons et al., 2016). Teacher agency and identity is shaped largely by institutional and historical forces, but teachers also negotiate and construct their identity through social practices. Opportunities to interact with school leaders and colleagues may influence whether teachers choose to adopt or resist innovations (Buchanan, 2015). For example, perceived support by school leadership is key in creating an environment in which teachers experiment with new practices (Grissom et al., 2021; Supovitz et al., 2010). Collaboration among teachers is also conducive to change when it focuses on planning instruction, sharing tools and resources, analyzing student work, and engaging in inquiry and reflection on teaching (Lewis & Perry, 2014; Sztajn et al., 2017). Studies of teacher learning to integrate technology in their teaching also highlight the positive impact of social support through peer collaboration and access to resources (Duran et al., 2011; Mouza, 2009).

Building on this literature, we anticipated that opportunities to participate in professional development and to collaborate with colleagues as well as satisfaction with the support received by school and district leadership together would affect teachers' perceived opportunities for growth and innovation. Specifically, we designed the survey to include items that captured time spent in professional development and collaborating with other teachers, the nature of collaboration, and overall satisfaction

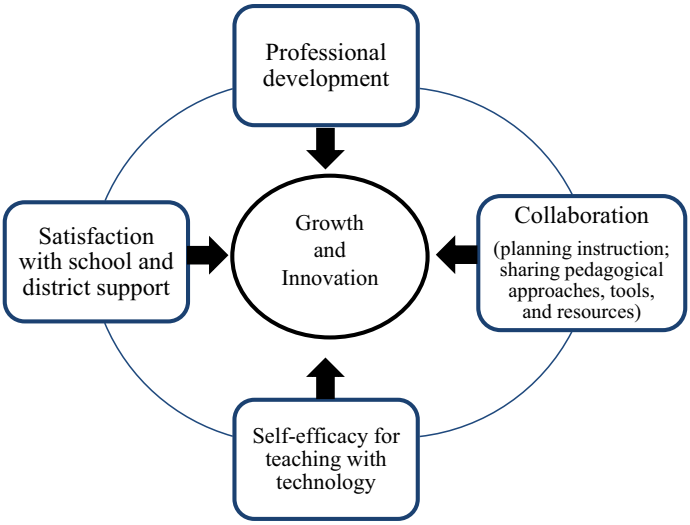

Fig. 1 Potential factors impacting teachers' perceived opportunities for growth and innovation

with received support. This allowed us to examine the impact of each factor and their interaction on teachers' perceptions.

Teacher self-efficacy for teaching with technology

Given the necessity of relying on technology to teach online, we also considered, in the development of our measures, teacher self-efficacy for teaching with technology among the factors that might impact teacher perceptions of opportunities for growth and innovation. Prior research found that teachers who perceive technology integration in their practices as useful for student learning and are confident about using technology are more likely to benefit from professional development focused on technology integration (Ertmer, 2005; Hur et al., 2016).

In this respect, we conjectured that teachers with a higher degree of comfort with using technology for teaching might be more likely to find, even in the unsettling time of the pandemic, opportunities to learn. Specifically, we drew on a distinction between various aspects of knowledge for teaching with technology present in the existing literature (Archambault & Crippen, 2009) and included in the survey a self-efficacy scale that measures four knowledge facets: technological knowledge (i.e., troubleshooting technical problems); technological content knowledge (i.e., using technology to deliver curriculum content online); technological pedagogical knowledge (i.e., methods of teaching online and supporting student online interactivity); and technological pedagogical content knowledge (i.e., using technology to assess student learning of particular content and to create effective content representations). Figure 1 summarizes the factors that we conjectured at the outset of this study might impact teacher perceptions of opportunities for growth and innovation.

Methods

Participants and recruitment

Elementary school teachers from two school districts (Districts A and B) in California were invited to participate in an online teacher survey focused on experiences with remote teaching during the pandemic. The districts were chosen to maximize variation in terms of students' race/ethnicity and income levels (District A is predominantly White and Asian American and medium–high income, while District B is large majority Latinx and low-income) and the impact of COVID-19 on the region (by May 2021, 4% of the city population infected in District A and 13% in District B). We targeted elementary-school teachers because we thought online teaching might be particularly challenging with young children given that they are less independent and require more parental or teacher support (Burdina et al., 2019; Lee & Figueroa, 2012). We also thought experiences of teachers at different levels of instruction might vary and wanted to focus on a particular group at a time.

The survey was distributed by email to every elementary school teacher in each district during the month of December 2020, approximately three months into the school year and nine months since the beginning of the pandemic. Teachers were invited to complete the survey if they were teaching either online or on a hybrid schedule. Respondents were offered a $20 gift card to participate. A total of 443 teachers started the survey and 342 teachers completed it. District A teachers taught in either a fully online or hybrid model, while District B delivered all instruction remotely. For the purposes of this paper, we included responses only from teachers who taught online (i.e., 276 teachers or 80% of the teachers with complete data).

Of these teachers, 35.5% taught in District A and 64.5% taught in District B. Teachers taught at 58 different schools. They were evenly distributed through grades K (Kindergarten, 5/6 year-old students) to 6th grade (11/12 year-old students). Seven respondents indicated that they were special education teachers. Across the full sample, teachers identified as 82.2% female, 14.5% male, and 2.2% did not report their gender. Their self-reported racial/ethnic background was 53.3% White, 22.5% Hispanic or Latinx, 7.2% Asian, and the remaining multi-racial or other. Participants varied in teaching experience, but overall the sample included a large majority of teachers (73.9%) with 11 or more years of teaching experience (5 or fewer years of experience: 9.2%; 6–10 years: 17%; 11–20 years: 23.9%; 21 or more years: 50%).

Data Source

Teachers were invited to fill in an online survey that in addition to gathering demographic information, included questions drawing from the theoretical conceptualizations of teacher learning and teacher self-efficacy summarized above

and focused on four constructs: (a) teacher support for online instruction; (b) self-efficacy using technology; (c) concerns regarding the pandemic; and (d) opportunities for professional growth and innovation.

Teacher support for online instruction included questions on hours of professional development centered on online teaching provided by the school or district, frequency and nature of collaboration with colleagues, and overall satisfaction with the support received by the district. Questions about collaboration were adapted from a teacher survey developed by Cobb et al. (2018), while the other items were developed internally for this study. To measure teacher self-efficacy using technology for online teaching, we used a validated scale developed and tested by Archambault and Crippen (2009) that includes 14 items measuring four aspects of teacher self-efficacy: (1) technological knowledge; (2) technological content knowledge; (3) technological pedagogical knowledge; and (4) technological pedagogical content knowledge. To document the extent to which teachers were concerned about the pandemic we developed Likert-type items that centered on health and economic impact on themselves and their families, their students and their families, and added stress due to teaching online and in person. Finally, to document the extent to which teachers perceived opportunities to grow professionally and innovate, we developed Likert-type items that centered on (1) the use and learning of technology; (2) additional opportunities to collaborate with colleagues; and (3) connecting and learning about students and their families. We knew that because of the young age of their students, teachers had to connect with parents to maximize the effectiveness of online instruction, but we were interested in whether teachers perceived the connection with families also as an opportunity to grow and innovate. Internal consistency was satisfactory across all scales (Cronbach α ranged from 0.82 to 0.91). Survey details, including scale reliability, are provided in Table 1.

Finally, we included two open-ended questions on the survey that asked about perceived opportunities for professional growth and innovation. These questions were as follows: (1) Despite the challenges, did the transition to remote learning provide any opportunities for your professional growth? Please provide examples. and (2) Despite the challenging times, did the transition to remote learning provide any opportunities for innovation in your teaching and/or at your school/district? Please provide examples. These questions were designed to elicit more qualitative details about teacher experiences and specific examples of growth and/or innovation in their own practice or that of their schools more broadly. Responses to these questions allowed us to add greater context and richness to the quantitative survey results. Of the 276 teachers whose closed-ended responses we report in this paper, 243 or 88% of the sample completed the open-ended responses.

Analytic procedures

We leveraged both quantitative and qualitative approaches to answer our research questions. To examine the extent to which teachers perceived opportunities for professional growth and innovation, we computed descriptive statistics for the seven items that comprised our scale.

Table 1 Survey constructs, items, and scales

Construct	Items	Scale
Support for online instruction		
Professional development	Hours of professional development received since beginning of the pandemic	None; 1–5; 6–10; 11–20; > 20
Teacher collaboration (adapted from Cobb et al., 2018)	Hours/week for collaboration 6 items (α = 0.82)—Frequency of collaboration on: Administrative tasks related to online teaching Pedagogical approaches to support online learning Educational technology that supports online teaching Jointly planning for instruction Sharing materials related to online instruction Visiting each other's classes online	1–4 h Frequency (Never; 1–2 times; monthly; weekly)
Satisfaction	Extent of satisfaction with support provided by district/school	5-point Likert-type scale (1 = Very dissatisfied, 5 = Very satisfied)
Self-efficacy using technology (Archambault & Crippen, 2009)	14 items—Self-reported knowledge and comfort in: Technological Knowledge (troubleshooting technical problems; 3 items, α = 0.91) Technological content knowledge (using technology to deliver curriculum content online; 3 items, α = 0.85) Technological Pedagogical Knowledge (methods of teaching online and supporting student online interactivity; 4 items, α = 0.86) Technological Pedagogical Content Knowledge (using technology to assess student learning of particular content and to create effective content representations; 5 items, α = 0.91)	5-point Likert-type scale (1 = Poor, 5 = Excellent)

Table 1 (continued)

Construct	Items	Scale
Concerns regarding the pandemic (developed in house)	7 items (α = 0.71)—Extent of concern regarding: The health and wellbeing of family/loved ones Socio-economic consequences for my family/loved ones Added stress of having to teach and take care of my children at the same time Health and wellbeing of students and their families Socio-economic consequences for my students and their families Added stress due to teaching online Added stress due to teaching in person during the pandemic	5-point Likert-type scale (1 = Not at all concerned, 5 = Very concerned)
Opportunities for professional learning and innovation (developed in house)	7 items (α = 0.86)—Extent of agreement that COVID-19 pandemic created opportunities to: Try out new technologies in teaching Discover new ways of teaching with technology that can continue to be implemented once the emergency is over Be creative and innovative in instruction Look forward to this school year because it will provide opportunities to learn something new about teaching Collaborate with peers Connect with students and their families Learn something valuable about students and families that will help to be a better teacher this year and in the future	5-point Likert-type scale (1 = Strongly disagree, 5 = Strongly agree)

Based on our interest in understanding the *nature* of these opportunities, we also analyzed the open-ended questions, taking both a deductive and inductive approach to coding the responses. While most respondents answered the two open-ended questions separately, we coded these responses in tandem because many teachers responded similarly across both questions (often expanding on the first response in the next field) and a small number of teachers responded to only one. First, we created seven parent codes to align with each of the elements of the survey construct focused on opportunities for professional learning and innovation: *technology, technology future, innovative instruction, collaboration, student connection, family connection*. We also used in vivo coding to capture the frequently used terms among teacher responses (e.g., *out of my comfort zone*) as well as emotion coding to code the data as positive, negative, or neutral/mixed, which further helped contextualize teacher responses. Finally, we drew on inductive coding to capture common themes or categories not represented by our deductive codes. We coded in Microsoft Excel, calculated frequencies across codes, and created descriptive summaries about each code. A secondary analysis of these summaries helped produce the findings presented here.

Finally, to investigate which factors explain variability in teachers' perceived opportunities for professional learning and innovation, we examined several potential predictors: teacher demographic information, hours of professional development, hours of teacher collaboration, satisfaction with received support, technological self-efficacy, and concerns related to the pandemic. We conducted zero-order correlations between all study variables, followed by OLS regression analyses. Because of the nested nature of our data, we first ran analyses using multilevel (hierarchical linear) modeling with teacher responses at level 1, school at level 2, and district at level 3. We tested a null model with no level 2 or 3 predictors to test for effects at the school and district level on teachers' perceived opportunities. The intraclass correlation coefficient (ICC) for the outcome at the district level was 0.05, indicating that only 5% of variance could be attributed to the district, a proportion that was not significant ($p = 0.53$). The ICC at the school level was negligible ($< 1\%$). Thus, we ran analyses using OLS regression.

Findings

Our data provided a number of insights about whether and how teachers experienced growth and innovation during this difficult period. Teachers not only reported employing new technologies, practices, and adaptations, but they did so in ways they believed improved their teaching overall and their capacity to connect with students and families. Our analyses of the survey's open-ended questions provide richer detail about *how* these areas of growth and innovation were applied in their classrooms, particularly in the areas of student engagement and family outreach. Finally, our examination of predictors revealed that collaboration and support were critical to promoting teacher growth and innovation, while hours of professional development were less so.

Table 2 Descriptive statistics for opportunities for professional growth and innovation items

Survey items	Mean (SD)
Try out new technologies in teaching	4.42 (.77)
Discover new ways of teaching with technology that can continue to be implemented once the emergency is over	4.32 (.73)
Be creative and innovative in instruction	4.27 (.79)
Look forward to this school year because it will provide opportunities to learn something new about teaching	3.71 (1.16)
Collaborate with peers	3.40 (1.27)
Connect with students and their families	4.05 (.98)
Learn something valuable about students and families that will help to be a better teacher this year and in the future	4.13 (.87)

N = 276. Likert-scale: 1 = Strongly disagree; 5 = Strongly agree

Opportunities for professional growth and innovation (RQ1)

To answer the first research question, we examined teacher responses to close-ended items about opportunities they experienced for professional growth and innovation. Responses indicate that teachers overwhelmingly agreed that the transition to online instruction provided opportunities for them to be innovative (M = 4.27/5.00), try out new technologies (M = 4.42/5.00) and to teach with new technologies in ways that can be carried on after the pandemic (M = 4.32/5.00). Teachers also agreed that the pandemic offered opportunities to connect with students and their families (M = 4.05/5.00) and learn something valuable about them that will make them better teachers (M = 4.13/5.00). On average, teachers agreed less with the statement that they looked forward to the school year as an opportunity to learn (M = 3.71/5.00) and that the pandemic provided opportunities for them to collaborate with their peers (M = 3.40/5.00). Table 2 below reports mean ratings and standard deviations for each item.

Teachers' overall positive responses to these items indicate that despite the difficulties presented by the pandemic, teachers were able to engage with new technologies and adopt new practices to adapt to remote instruction. They also recognized that remote instruction created opportunities by necessity to connect with students and their families in ways they found valuable. The phrasing of the fourth item (i.e., look forward to this school year) may have negatively skewed teacher responses as most likely fewer teachers looked forward to another year of remote schooling despite having acquired new learnings and practices. As indicated by the large standard deviation, the responses related to opportunities to collaborate showed more variation, indicating perhaps different levels of support for teacher collaboration at different schools. Given this variation, we will examine below the nature and role of collaboration and its relationship with perceived opportunities to grow and innovate.

How teachers described growth and innovation (RQ2)

To answer our second research question (and shed light on the close-ended responses above), we analyzed the open-ended responses on the teacher survey to capture how teachers described their opportunities for growth and innovation.[1] These detailed, often colorful, descriptions allow us to better understand how these opportunities influenced teachers' experiences and instruction during the pandemic. In particular, we found that a large majority of teachers had (unsurprisingly) learned how to utilize a number of new forms of educational technology. More importantly, however, teachers described the opportunities these tools and platforms had created to better connect with students and families. They also reported experiencing greater levels of collaboration to improve instructional quality.

Teachers' emotive responses

As displayed in Table 3, our emotion coding showed that nearly 90% of the responses about growth were positive in nature, while a little over 80% of the responses about innovation were positive. This is, in part, due to the nature of the questions themselves, which prompted teachers to describe opportunities for and examples of growth and innovation. However, the qualitative examples of their responses provide considerable richness to how teachers characterized their growth as professionals in the face of difficult circumstances. To describe these opportunities, teachers used language, such as being *stretched* or getting out of one's *comfort zone*, while describing outcomes of this newfound learning with terms, such as *flexibility, resilience,* and *confidence*. To answer the question "*Did the transition to remote learning provide any opportunities for professional growth in your teaching*," one teacher said, "Yes, I have been pushed far outside of my comfort zone and have grown as a result. My young students are capable of so much more than I would have ever thought possible." To a similar question regarding innovation, another shared, "Yes! I feel very innovative and that my students are learning despite these challenging times. I'm stretching myself as a teacher every day."

The emotive quality of these statements was also striking. Teachers responded with a level of enthusiasm that is not typically reported in other teacher accounts of the pandemic. One teacher wrote, "Oh my, it's been phenomenal!" Another described, "Everything was a new adventure!" Surely, many teachers (even perhaps these) struggled during the transition to remote teaching and several teacher responses fairly accounted for the difficulties they faced during this time (e.g., "The first month was the hardest I've ever had to work"). At the same time (and sometimes in the same sentence), they expressed a newfound confidence in their skills and ability to innovate (e.g., "The freedom to figure it out on our own has been invigorating"). One teacher said, "Despite the challenges, I do feel that the forced remote learning also provided the opportunity for the most professional growth I've

[1] Of the 276 respondents, 87% responded to the question about opportunities for professional growth and 87% responded to the question about opportunities for innovation in your teaching.

Table 3 Emotion coding and sample responses

Valence of responses	Sample response	Frequency	Percentage of respondents (%)
Opportunities for professional growth			
Positive	Gave me an opportunity to tap into a way of teaching I would have never had the confidence to try	213	88.0
Negative	I suppose I have grown, but because I was forced to otherwise I wouldn't be able to do my job at all. I have been put through far more than I ever should have been as a teacher	21	8.7
Neutral or mixed	I was using a lot of this before covid so it was smooth for me	12	5.0
Opportunities for innovation in teaching or at school/district			
Positive	It provided innovation in presenting lessons. I know there can be more interactive teaching with Nearpod. I get immediate feedback and can see which students are engaged	178	82.4
Negative	Of course, teachers were largely left in the dark all summer, so it took (and is still taking) an incredible amount of innovation to figure out what to do, what works, and what doesn't	32	14.8
Neutral or mixed	I am using more videos to teach the students than I ever did before. I think it is good, but not the ideal way to deliver instruction	12	5.6

had in such a short period of time." Another described this sense of growth and accomplishment not just as an individual achievement but as one of her entire staff: "I am very proud of all of us. Despite the criticism, despite the put-downs, despite the negativity, we have all risen above and beyond what anyone expected!".

Applying new technologies

As reported on the opportunity survey items above, a primary element of teacher growth was acquiring technological skills and utilizing educational technology previously unfamiliar to teachers. Of those teachers who responded to the open-ended questions, 78% referred to growth in this area in particular. Teachers listed dozens of new platforms and tools upon which they had either gained some comfort and familiarity with or mastery and expertise, including well-known platforms, such as Zoom and Google classrooms, but also Seesaw, Kahoot, Flipgrid, Nearpod, Edpuzzle, Class Dojo, Parent Square, Flocabulary, Readworks, etc. A few teachers across different schools also managed to attain new education technology certification during the pandemic. Beyond learning how to use these tools out of necessity, however, teachers described more specifically how the transition to remote learning had influenced their practices in ways that would outlast the pandemic. One teacher reported, for example, that her school will continue to use recorded videos to provide more

academic and non-academic resources for students, tools like Nearpod to make instruction more interactive and student-focused, and digital communication platforms to build upon their home-school connection. As this teacher describes:

> I feel that I have grown a lot throughout this time in my pedagogy and will take a number of the tools and practices developed this year back to teaching in a physical classroom. I am even more encouraged than ever before by the potential for independence I can give young students with what I've learned.

This teacher's comments illustrate that while acquiring new technologies during the pandemic was a necessity, it also represents an important area of professional growth that may continue to serve teachers, students, and families in the future.

Improving student engagement

Beyond simply learning new technology, 25% of the teachers who responded to the open-ended questions described how their own professional learning during this time centered on improving student engagement and learning. Teachers not only illustrated new uses of technology, but expressed ways they could continue to use technology or other innovative approaches to better serve students even after the return to in-person schooling. Newfound strategies included flipped classrooms to increase active student engagement, administering online quizzes for immediate feedback in class, utilizing speech to text devices for students struggling to read or spell, and incorporating more small groups into general instruction to encourage independence and collaboration among students (mirroring the breakout rooms employed in Zoom). For many teachers, the limited time with students and mode of communication also helped teachers reexamine and reprioritize their curriculum to focus on critical standards versus "covering" previously used material. One teacher described:

> I think my colleagues and I would agree that distance learning has solidified our command of our own curriculum and thrust us into prioritizing what is most important to cover, due to limited instructional time, as well as how well our particular age/grade level will best respond to a certain instructional strategy.

In other words, teachers emphasized that the transition to remote learning had pushed them to rethink and refocus on what really matters for student learning. One teacher described:

> Yes, learning to teach online has forced me to evaluate what the most important learning goals are and to focus on the teaching methods with the biggest impact on student learning. As this experience is also new for students, I'm also learning how to teach them to be digital learners, not just how to learn the third-grade standards. I believe these new skills will carry on into future grades and continue to have a positive impact on their learning for years to come.

These statements illustrate a shift in pedagogical decision making and new opportunities for students themselves to become digital learners or as one teacher put it to "leap into the twenty-first century." Similarly, another teacher shared, "I teach kindergarten, and remote learning has pushed me to discover how to deliver instruction effectively. Prior to this, I didn't focus on technology because I assumed my students were too young." She and many others came away with a new appreciation for their own capacity and that of their students to use technology.

Connecting with families

Though less widespread in our data, the shift to remote learning also presented opportunities to connect with families in ways that had not occurred to these teachers prior to the pandemic. Nearly 15% of the respondents related their own growth in technology to conducting outreach and building relationships with families. Merely shifting meetings or conferences with parents from in school to online resulted in more frequent opportunities to talk to families and allowed teachers to be more responsive to informal requests to talk about their children. One teacher described: "It has been great doing parent conferences on Google Meet. My attendance is better than ever because it is so convenient." Other teachers reported that the use of digital platforms allowed teachers to provide more real-time feedback to parents (and students), while creating asynchronous video-recorded lessons has helped families better support their children. Being able to provide what one teacher called a "one-stop-shop" for families to access classrooms materials, lessons, and resources via videos and other digital platforms they could easily access on their phone was another positive outcome that emerged from teachers' growing capacities during this time, and one that could be sustained even after the pandemic.

Collaborating with colleagues

While only 10% of participants referred to collaboration in the open-ended questions, their descriptions illustrate the powerful role of collaboration in teacher growth and innovation. In other words, while collaboration itself was not mentioned by teachers as an innovation, it was described as a strategy that allowed for growth and innovation. Specifically, teachers described how the remote environment necessitated and facilitated deeper collaboration with their own colleagues as well as teachers from other schools. At a district level, one of the districts created a Nearpod library that teachers from different schools could share and access classroom materials organized by grade and subject—a resource that several teachers were happy to keep post-pandemic. Another teacher described that in her school, teams of grade-level teachers were co-developing lessons within curricular units. What began as a strategy of "divide and conquer," she explained, became a mechanism by which to learn from each other and ultimately better serve children who were benefiting from the expertise of four teachers instead of one. We understand that most teachers were engaged in some form of collaboration with their colleagues prior to the pandemic, but the survey responses revealed how teachers' newfound familiarity and comfort

with multiple digital platforms had created new opportunities to collaborate with teachers from other schools. One teacher described:

> I think most teachers would agree that the use of video conferencing (Zoom, Meet, etc.) has opened up opportunities to further collaborate as a staff, and even include otherwise difficult collaboration time with other school sites. Other opportunities for parent engagement, especially for working parents, as well as teaming classes up with other classes (even across counties) can also be done through video conferencing. Use of Google platforms such as Slides and Sheets have opened up ways that teachers can work collaboratively to plan instruction, execute lessons (through use of self-correcting Slides features and plugging in multimedia presentations), and make material accessible to both students and parents.

Even if some of this cross-school collaboration is reduced after the return to in-person schooling, teachers like this one have experienced the potential benefits of collaborating with and learning from other teachers, especially when distance is less of a barrier.

Pandemic costs

The largely positive descriptions of the opportunities for growth and innovation should not minimize the heavy toll the pandemic took on teachers' professional and personal lives. While only 10% of teachers responded to the open-ended questions with a negative statement, the intensity of their statements are telling. One teacher described it as a "sink or swim situation" and while he was "proud that [he] was able to swim," he admitted to working 10-h days and several hours on the weekend. Another teacher similarly described being "on survival mode" and "way over our heads," arguing: "It is difficult to grow when you are just trying to keep your head above water." A few of these teachers acknowledge that they had indeed experienced growth but raised questions about the cost or relative tradeoffs of such intense changes all at once. This teacher sharply explains:

> Being put in a new environment, teaching from new curricula, teaching with a new PLC [Professional Learning Community] from various schools and using a new platform to teach forced me to learn various programs and ways of delivering content that I would not have otherwise. I feel like I experienced a vast amount of unplanned professional growth by being taken out of my comfort zone. However, it's been done at the cost of my mental health and time with my family and children since I am working all hours of the day, seven days a week like most of my colleagues.

Our illustrations of teacher growth during this unprecedented time is not intended to contradict this type of observation or experience, but to ask if given a different set of circumstances—one in which teachers are not burdened with many additional hours and sacrificing their mental health—teachers can continue to apply what many described as tremendous professional growth and learning.

Factors that explain variability in perceived opportunities for growth and innovation (RQ3)

To examine which factors explained variability in teachers' perceived opportunities, we first computed a sum score of average ratings across the seven items that measured perceived opportunities for professional growth and innovation. From a minimum score of 7 to a maximum score of 35, the average rating was 28.27 ($SD = 4.94$).

We then computed zero-order correlations between all study variables (Table 4) and ran three regression models to examine factors that might predict teachers' perceived opportunities for growth and innovation. First, we examined hours of professional development, hours of teacher collaboration, and satisfaction with received support as predictors of perceived opportunities. Hours of teacher collaboration (model 1, $\beta = 0.14$, $p = 0.019$) and satisfaction with support for online instruction received by school/district (model 1, $\beta = 0.29$, $p < 0.001$) positively predicted perceived opportunities for professional growth and innovation. The coefficient of hours of professional development was also positive, although the statistical significance was tenuous (model 1, $\beta = 0.49$, $p = 0.087$). The results for hours of professional development, hours of teacher collaboration, and satisfaction with received support were consistent across all three regression models. The results of OLS regression models are presented in Table 5.

Next, we added four variables for self-efficacy teaching with technology (technological knowledge, technological content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge). The outcome of perceived opportunities for professional growth and innovation was negatively related to self-efficacy for technological knowledge (model 2, $\beta = -0.16$, $p = 0.024$) and positively related to self-efficacy for technological content knowledge (model 2, $\beta = 0.30$, $p = 0.001$). Neither self-efficacy for technological pedagogical knowledge nor self-efficacy for technological pedagogical content knowledge were statistically significant predictors. Model 2 accounted for 22% of the variance in perceived opportunities for professional learning and innovation, a statistically significant improvement in fit over the previous model ($\Delta F = 7.84$, $p < 0.001$).

Lastly, we added the measure of concerns regarding the pandemic health and economic impact and added stress related to teaching as the sum of average ratings across the scale's 7 items. The indicator was not statistically significant (model 3, $\beta = -0.03$, $p = 0.691$) and the fit of the model was not statistically improved over Model 2 ($\Delta F = 0.16$, $p = 0.691$).

In sum, several factors might explain variation in teachers' perceived opportunities for professional growth and innovation. These include their overall satisfaction with the support provided by their school/district, the opportunity to collaborate with other teachers, and their self-efficacy for using technology to teach specific concepts and curriculum. While collaboration did not emerge as the most salient example of growth and innovation in the close-ended responses (see Table 2) or in the open-ended responses, it did emerge as a statistically significant predictor of growth and innovation. It may have been that teachers did not identify collaboration as an example of innovation if they were already working with peers prior to the pandemic, but collaboration seems to have been a mechanism by which teachers could innovate

Table 4 Correlations between study variables

	1	2	3	4	5	6	7	8	9
1. Perceived opportunities for professional learning and innovation	1								
2. Hours of professional development	0.19**	1							
3. Hours of teacher collaboration	0.16**	0.14*	1						
4. Satisfaction with received support	0.34***	0.34***	0.11*	1					
5. Self-efficacy for TK	0.12*	-0.03	0.16**	0.21***	1				
6. Self-efficacy for TCK	0.35***	0.01	0.11*	0.20***	0.53***	1			
7. Self-efficacy for TPK	0.32***	− 0.003	0.23***	0.24***	0.48***	0.72***	1		
8. Self-efficacy for TPCK	0.27***	− 0.08	0.16**	0.15**	0.47***	0.70***	0.78***	1	
9. Concerns regarding pandemic	− 0.07	0.03	− 0.07	− 0.15*	− 0.02	− 0.04	− 0.05	− 0.01	1
Mean	28.22	2.84	1.21	2.91	3.15	3.98	3.61	3.61	29.25
SD	5.09	1.15	0.90	1.16	1.00	0.76	0.76	0.82	4.53
Min	7	0	0	1	1	1	1	1	13
Max	35	4	100	5	5	5	5	5	35

$N = 249$. TPCK refers to technological, pedagogical, and content knowledge

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 5 OLS regression models predicting perceived opportunities for professional learning and innovation

	Model 1				Model 2				Model 3			
	b	SE	β	*p*	*b*	SE	β	*p*	*b*	SE	β	*p*
Hours of professional development	0.49	0.28	0.11	0.087	0.53	0.27	0.12	0.054	0.54	0.28	0.12	0.051
Hours of teacher collaboration	0.82	0.34	0.14	0.019	0.69	0.34	0.12	0.039	0.69	0.34	0.12	0.041
Satisfaction with received support	1.26	0.28	0.29	< 0.001	1.04	0.27	0.24	< 0.001	1.02	0.28	0.23	< 0.001
Self-efficacy for TK					− 0.79	0.35	− 0.16	0.024	− 0.79	0.35	− 0.16	0.025
Self-efficacy for TCK					1.99	0.60	0.30	0.001	1.99	0.60	0.30	0.001
Self-efficacy for TPK					0.44	0.66	0.07	0.504	0.44	0.66	0.07	0.512
Self-efficacy for TPCK					0.24	0.59	0.04	0.692	0.24	0.59	0.04	0.681
Concerns regarding pandemic									− 0.03	0.06	− 0.02	0.691
Constant	22.18	1.06		< 0.001	14.97	1.75		< 0.001	15.74	2.62		< 0.001

$N = 249$. Standard errors are reported for unstandardized coefficients. TPCK refers to technological, pedagogical, and content knowledge. The adjusted R^2 value for Model 1 was 0.13, $F(3, 304) = 13.48$, $p < .001$. The adjusted R^2 value for Model 2 was 0.22, $F(7, 221) = 10.90$, $p < .001$. The adjusted R^2 value for Model 3 was 0.22, $F(8, 194) = 9.53$, $p < .001$. The ΔR^2 between Model 1 and Model 2 is statistically significant, with $\Delta F = 7.84$, $p < .001$. The ΔR^2 between Model 2 and Model 3 is not statistically significant, with $\Delta F = 0.16$, $p = .691$

and learn together. For example, over 50% of teachers reported collaborating *weekly* on discussing how to fulfill administrative tasks related to online teaching, pedagogical approaches that support online learning, educational technology that support both teaching and learning online as well as sharing materials related to online teaching and jointly planning instruction (see Table 6). (Only 13.9% of respondents reported visiting each other's classrooms online—perhaps unsurprising given time constraints.)

Professional development provided by each district, although positively related to perceived opportunities, was not a significant predictor of perceived opportunities for professional growth and innovation. A few responses to open-ended questions shed light on the challenges districts faced in designing professional development that teachers would find helpful. One teacher commented "Crash course in technology! The PD provided by my district was largely not helpful. I learned mostly by collaborating with peers and experimenting." Another stated "Yes, the opportunities were provided but so time consuming that it became more overwhelming than helpful."

Teacher self-efficacy for troubleshooting hardware and software issues was instead negatively related to perceived opportunity outcomes. This finding will require further exploration. One possible explanation is that those teachers who were more confident using technology did not perceive the pandemic as an opportunity to grow because they thought they could use what they knew about technology to support their online teaching.

Finally, concerns regarding the pandemic, although high on average and negatively correlated to satisfaction with received support for online instruction (see Table 4), did not seem to positively or negatively affect teachers' perceived opportunities for growth and innovation, suggesting that greater stressors did not necessarily prohibit teachers from acquiring a range of new skills.

Limitations

The study sampling was designed to capture a certain variability of school contexts, such as varying levels of socio-economic status and incidence of COVID-19 cases in the surrounding communities; however, the sample is not representative of the larger state or country population. Thus, we caution readers not to generalize findings beyond the scope of this study. Given the lack of variation we observed between the two districts of substantially different student demographics, however, we believe the findings begin to reveal an aspect of how the pandemic changed teacher work across different contexts.

We also acknowledge that the ways districts and schools supported teacher learning to adopt new technologies and collaborate with colleagues prior to the pandemic might have affected teachers' teaching and collaboration practices during the emergency. We did not document such practices as part of the study; thus, we cannot take that into consideration when interpreting our findings. However, as we look into the future, support in experimenting with new technologies and structures for collaboration emerged as important infrastructure elements that districts should invest

Table 6 Frequency of collaboration by type of activity

Items	N	%
Discussed administrative tasks		
Never	19	6.6
1–2 times	57	19.9
Monthly	55	19.2
Weekly	150	52.3
Missing	6	2.1
Discussed pedagogical approaches		
Never	22	7.7
1–2 times	43	15
Monthly	65	22.6
Weekly	150	52.3
Missing	7	2.4
Discussed educational technologies		
Never	7	2.4
1–2 times	41	14.3
Monthly	65	22.6
Weekly	166	57.8
Missing	8	2.8
Jointly planned instruction		
Never	37	12.9
1–2 times	52	18.1
Monthly	43	15
Weekly	148	51.6
Missing	7	2.4
Shared materials for online teaching		
Never	8	2.8
1–2 times	41	14.3
Monthly	55	19.2
Weekly	175	61
Missing	8	2.8
Visited each other's classroom online		
Never	174	60.6
1–2 times	45	15.7
Monthly	21	7.3
Weekly	40	13.9
Missing	7	2.4

in in preparation for unforeseen new emergencies as we discuss in the implications section below. Likewise, we did not document in detail each school's and district's approach to support for online instruction and professional development beyond the questions we asked teachers in the survey. Our findings, however, point to forms of support that teachers found most valuable. In addition, we cannot be certain how

pre-pandemic conditions may have supported or undermined the type of growth we observed in our study. Notably, the districts differed substantially from each other in terms of features typically associated with a district's capacity. District A, for example, reports low levels of leadership and teacher turnover, while District B has been challenged with more frequent superintendent changes. District A is also a much more highly resourced district with a long track record of technology-related initiatives for teachers and students, while District B has historically offered much less because of accessibility issues among the families they serve. Given that our findings were consistent across both districts even though their pre-pandemic conditions differed suggests that the conditions themselves may not have enabled the changes we observed. In other words, the type of growth we described may be true in districts that would be characterized as both "high capacity" and "low capacity."

Finally, the findings highlight a point-in-time snapshot of teacher experiences with online teaching; thus, we cannot draw conclusions on whether what they reported has been sustained in practice over time or whether the lengths of school closure made a difference in teacher experiences.

Discussion

This study seeks to contribute to the growing body of work examining teacher experiences during the COVID-19 pandemic. While most of this work has justifiably documented the tremendous strain that teachers have been under during this unprecedented time (Baker et al., 2021; Educators for Excellence, 2020; Hamilton et al., 2020; Herold & Kurtz, 2020), this paper offers another dimension of the teacher experience by focusing on growth and innovation.

Despite the disruption and concerns related to the pandemic, teachers in this study overwhelmingly reported new opportunities to grow professionally and innovate. Similarly to teachers who participated in the Educators for Excellence (2020) survey in the U.S., in response to the close-ended survey questions (RQ1), teachers in this study reported engaging with new technologies and adopting new practices to adapt to remote instruction. They also reported that they found opportunities to connect more effectively with their students and their families. Teacher responses to the open-ended questions provide additional insight about these areas of professional growth (RQ2). For example, supporting findings from the study involving Spanish math teachers mentioned above (Marpa, 2021), teachers in our study described how they would continue to use many of the new technological skills and tools they had acquired during the transition to remote learning. Teachers also reported how their own professional learning during this time helped improve student engagement and learning, while they were able to connect with families in ways they could continue to employ after the pandemic. While only 10% of participants referred to collaboration when asked about opportunities for growth and innovation, collaboration was characterized as an important driver for change in the qualitative responses. Teachers described leveraging teacher expertise within schools and across multiple schools through online meetings to share technological resources, engage in joint lesson planning, and

overall enhance their online instruction. Together, these findings expand on some emerging work documenting that teachers have acquired an array of new skills and capacities that may continue to be useful after the pandemic (Educators for Excellence, 2020; Kaden, 2020; Marpa, 2021).

This study also aimed to identify the predictors of teachers' perceived opportunities for growth and innovation (RQ3). While collaboration was less salient in RQ1 and 2 (possibly because teachers had engaged in collaboration prior to the pandemic), *hours of collaboration* was a significant predictor of perceived opportunities for growth and innovation. So too was *satisfaction with support for online instruction received by the school/district*. In other words, teachers who were offered ample opportunities to collaborate and were supported by their school or district were more likely to report innovation and learning opportunities. These findings are consistent with emerging scholarship documenting the relationships between support from peers and administrators and a more successful transition to remote learning (Baker et al., 2021; Pressley, 2021; Sokal et al., 2020; Trust & Whalen, 2020).

Hours of teacher professional development played a lesser role in teacher learning, possibly because it centered on introducing new technologies up front with little follow-up or support to experiment with them as teachers reported in open-ended responses. Finally, among significant predictors of perceived opportunities for growth and innovation was teacher self-efficacy for technological content knowledge, indicating that teachers' comfort level with using technology to teach the curriculum online mattered in their response to the pandemic. This finding is aligned with prior research on technology integration (Ertmer, 2005; Hur et al., 2016) and with other studies summarized above that found that teachers with prior training teaching online or higher self-efficacy for teaching with technology reported better experiences teaching during the pandemic (Dolighan & Owen, 2021; Pellerone, 2021; Rabaglietti et al., 2021).

Implications for leadership, policy, and future research

The findings from this research suggest important implications for how to leverage this period of professional growth and innovation. First, our study highlighted the critical role of administrative and school support in promoting teacher growth and innovation. School leaders should create the conditions in which teachers feel safe and empowered to incorporate new technological tools and pedagogical strategies even while they have not yet mastered them, as principal support is critical for innovation (Grissom et al., 2021; Supovitz et al., 2010). Our findings also suggest that rather than utilize external professional development that may only be tangentially related to the everyday work of teachers, district and school leaders should establish routines and resources for teachers to meaningfully collaborate with peers, sharing in the newfound knowledge and capacities acquired during the pandemic. In particular, additional opportunities to collaborate should be directed by teacher inquiry and reflection (Lewis & Perry, 2014; Sztajn et al., 2017). Further, opportunities to build on teachers' new technological

skills should be structured in such a way that is grounded in the daily work in the classrooms to maximize and sustain teacher learning (Kazemi & Hubbard, 2008).

Policymakers concerned about teacher retention and growing dissatisfaction among the teacher workforce (Gillani et al., 2022; Steiner & Woo, 2021) should be wary of mandates that further undermine teacher autonomy and agency, Given their expertise, intensive period of learning new technologies, and the pride with which they described their growth, teachers should be put in a position to make decisions about effective tools and resources utilized during the pandemic and continue employing the pedagogical approaches that seemed to have the most traction with students and families. In our data, these included flipped classrooms, tech supports for struggling students, and online parent conferences to name a few. Allowing teachers to practice greater levels of agency and autonomy over their teaching during this challenging post-pandemic period may help prevent more teachers from leaving the field (Buchanan, R., 2015; Ingersoll et al., 2011). In terms of future research, we hope these findings prompt further examination of whether and how teacher growth and innovation during the outset of the pandemic has continued to shape practice in the return to in-person instruction. This type of inquiry might also help support research that examines how gains in teacher learning might help support closing the gaps in student learning that have only widened since the pandemic.

Conclusion

Much of the current education research around COVID-19 involves documenting ongoing challenges and unfinished learning among students. While this work is important, this paper strives to reach beyond the current moment to ask what might now be possible that was not visible before (Nasir & Bang, 2020). By foregrounding the perspectives and voices of teachers, this study provides a counter narrative to those focused only or primarily on loss and illustrates the opportunities and conditions that support teacher growth and innovation. As schools transition to in-person instruction, leveraging teachers' new knowledge, new experiences with technology, and new ideas for teaching and learning will offer opportunities for innovation that may have implications beyond the pandemic. In addition, understanding what factors supported teachers' perceived professional growth and innovation is important if we consider schools as places for student *and* adult learning. If confronted by a similar emergency in the future, this study's findings might inform how school and district leadership can effectively support teachers.

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