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Teacher preparation and the COVID-19 disruption: Understanding the impact and implications for novice teachers

Janet VanLone\textsuperscript{a,\textsuperscript{*,b},} Chelsea Pansé-Barone\textsuperscript{b,\textsuperscript{c},} Kaelyn Long\textsuperscript{a}

\textsuperscript{a} Education Department, Bucknell University
\textsuperscript{b} Department of Human Development and Family Sciences, Mississippi State University

\textbf{A R T I C L E   I N F O}

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\textbf{A B S T R A C T}

The COVID-19 pandemic required many school districts and teacher preparation programs to make major changes to student teaching placements. Preservice students who completed student teaching during the academic year 2019-2020 are now employed as first year teachers, yet the impact these changes had on teachers’ self-efficacy is not clear. First-year teachers (N=162) responded to a survey which included items from the teachers’ sense of self-efficacy scale (TSES) to understand how teacher self-efficacy differed based on disruptions to student teaching placements and current teaching modality (hybrid, virtual, in-person). Participant responses to quantitative survey items were analyzed using a two-way MANOVA, while a qualitative survey item was analyzed using thematic analysis. Results from the two-way MANOVA show a significant interaction at the p<.05 level between current teaching modality and change in student teaching placement on overall teacher self-efficacy (p=.003), student engagement (p=.005), and instructional strategies (p=.001). Thematic analysis resulted in 11 themes sorted into positive, neutral, or negative impact categories with the greatest number of themes in the negative impact category. Overall, the results add to the knowledge base about the importance of student teaching to teacher self-efficacy. Implications for higher education faculty, policymakers, and school leaders are discussed.

1. Introduction

COVID-19 caused significant disruption to life as we once knew it. In March 2020, businesses, parks, and government offices closed around the world in an effort to mitigate the spread of coronavirus and “flatten the curve”. As schools began to close, policymakers, school leaders, and teachers were tasked with continuing to educate students in a new, online learning environment. This disruption created numerous challenges for districts, and it undoubtedly has impacted student academic, social, and emotional growth (Phelps & Sperry, 2020).

Schools of education, who are responsible for preparing future teachers, faced their own set of challenges in the immediate wake of COVID-19 (Darling-Hammond & Hyler, 2020). The closure of university and college campuses had a unique impact on teacher preparation programs. Traditionally, pre-service teachers develop theoretical and pedagogical knowledge through coursework, and have numerous opportunities to practice teaching through field-based experiences in K-12 partner schools. When campuses and K-12 schools moved to remote teaching and learning, many pre-service teachers were unable to continue traditional field experiences. As a result, many state departments of education waived field-based requirements and teacher education faculty scrambled to develop alternatives that would support the continued growth of their pre-service teachers (American Association of Colleges for Teacher Education [AACTE], 2020).

Albert Bandura hypothesized that learning and development occur through observation, direct experience, and performance feedback, and research provides support for this theory (Bandura, 1977; Sitzman & Yeo, 2013). School-based field experiences are a critical component of pre-service teacher preparation because they provide an opportunity for pre-service teachers to observe effective teaching models, gain practical experience, and receive feedback from experienced teacher mentors and university supervisors (Darling-Hammond, 2014; Dunst et al., 2020). Due to COVID-19, many pre-service teachers were unable to complete field experiences and, based on university and school district reopening data, disruptions continued throughout the 2020-2021 school year (Sparks, 2020; The College Crisis Initiative, 2020). While adjustments were made to field-based hour requirements for obtaining certification (Seanz-Armstrong, 2020), the reduced time in the field meant less practice hours with fewer opportunities to receive guidance and feedback from a mentor. Given the importance of field experiences and high-quality teacher preparation on retaining early career teachers, it is important for policymakers, school of education faculty, and K-12 school...
leaders to understand and provide appropriate support to address the impact of this disruption on the overall preparedness and teaching efficacy of new teachers.

1.1. Theoretical framework

This research is based in social learning theory which emphasizes the importance of observation, modeling, and reinforcement on learning. Bandura (1977) theorized that learning and skill development occur through direct experience and observation of exemplary models. While behavior is learned through observation before it is performed, retaining what has been learned requires informative feedback and reinforcement. Self-efficacy is a concept that is grounded in social learning theory. As defined by Bandura (1995), self-efficacy is “the belief in one’s capabilities to organize and execute the courses of action required to manage prospective situations” (p.2). Research has shown that self-efficacy influences one’s thoughts, feelings, motivation, and behavior (Bandura, 1995; Thrulings et al., 2015).

Bandura (1995) suggests that self-efficacy develops by interpreting input from several sources. First, one’s previous performance contributes to a perception of competence. Bandura referred to this as “mastery experiences” and determined that this was the most influential input. As a result, when we perceive previous performances to be successful, our sense of self-efficacy increases (Sitzman & Yeo, 2013). Additionally, input from “vicarious experiences” refers to opportunities one has to observe the performance of a model. The observer’s self-efficacy increases when the model performs a task or skill proficiently. Bandura also identified “social persuasion” as a contributor to self-efficacy, which can be described as performance feedback. Positive performance feedback from a credible source can contribute to success, resilience, and can build confidence. Finally, “emotional and physiological states” influencing perceived self-efficacy because emotions can influence confidence in abilities.

1.2. Literature review

1.2.1. Pre-service teachers and self-efficacy

Research regarding self-efficacy development in pre-service teachers corroborates what social learning theory posits about practice opportunities and performance feedback. Studies have demonstrated that field-based experiences such as practicum and student teaching are a critical component of any teacher preparation program. Time spent in K-12 partner schools provides pre-service teachers with a unique opportunity to observe mentors, to practice teaching, and to build essential skills (Clark et al., 2015; Darling- Hammond, 2014). Across certification areas, research has shown that pre-service teachers improve their teaching through guided practice and feedback (Rock et al., 2016). Although field experiences vary depending on state requirements and programs, all states require that pre-service teachers enrolled in accredited teacher preparation programs spend time observing and teaching in K-12 schools with a cooperating teacher while under the supervision of university faculty (Council for the Accreditation of Educator Preparation, 2013). Commonly, there is a culminating, semester-long “student teaching” experience when pre-service teachers have the opportunity to assume all teaching responsibilities in their host classroom, including unit and lesson planning, classroom and behavior management, differentiation, and collaboration with school personnel and families.

Teacher self-efficacy refers to a teacher’s belief in their own ability to affect student achievement (Hattie, 2008). Experiences throughout pre-service teacher preparation, including student teaching, contribute to the development of teacher self-efficacy. Student teaching provides ample opportunities for pre-service teachers to build self-efficacy through observation (vicarious experiences), practice opportunities to improve skills (mastery experiences), and positive performance feedback from a mentor (social persuasion) (Hoy, 2005). Research has shown that novice teachers who have high self-efficacy rate the quality of their teacher preparation program higher than novices who have lower teacher self-efficacy (Hall et al. 1992). Additionally, student teachers with higher teacher self-efficacy receive more positive scores on practicum evaluations (Saklofske et al. 1988). Finally, researchers found that student teachers scored significantly higher on measures of teacher self-efficacy at the end of their experience compared to pre-placement scores and perceived opportunities to observe experienced teachers and practice their own teaching as important factors in their skill development (Brown et al., 2015).

1.2.2. In-service teachers and self-efficacy

Novice teachers who have had positive vicarious and mastery learning experiences through observation, practice, and performance feedback during student teaching will likely begin their careers with higher levels of self-efficacy (Bandura, 1997). Entering the field with high teacher self-efficacy is critically important because teacher self-efficacy is associated with numerous impactful outcomes for teachers and students, and it is somewhat resistant to change (Hoy, 2005). Teachers who have a strong belief in their abilities are more resilient when faced with challenges, are more willing to try new strategies to help students succeed, and consistently put forth effort (Farr, 2010; Pendergast et al., 2011). Success during the early career leads to increased teaching efficacy, and is also associated with improved job satisfaction, decreased burnout, and increased teacher retention (Klassen & Chiu, 2010; Vagi, Pivovarova, & Miedel Barnard, 2019).

1.2.3. Teacher shortages and the COVID-19 pandemic

Many nations around the world are struggling with teacher shortages. The U.S, for example, is currently experiencing teacher shortages, which are in part due to high rates of novice teacher turnover. Research has found that up to 44% of teachers leave the field prior to their fifth year of teaching and 10% leave before the end of their first year (Taperoll et al., 2014, 2018). The rates are even higher in schools that serve already marginalized populations (e.g. students in poverty, students of color, students with disabilities) and high teacher turnover is costly and has lasting negative outcomes on student achievement (Carver-Thomas & Darling-Hammond, 2017; Sorensen & Ladd, 2020). Due to current trends in increasing teacher shortages, developing a high sense of teacher self-efficacy during student teaching may leave novice teachers less vulnerable to burnout and leaving the career, which can contribute significantly to positive outcomes for students.

The classrooms teachers entered in Fall 2020 were very different from the norm and recent research suggests that the pandemic had a negative impact on in-service teacher self-efficacy (Pressley & Ha, 2021). Many teachers did not return to in-person teaching, instead instructing students virtually. Others returned to a hybrid model, providing both virtual and in-person instruction. Even for teachers who went back to in-person teaching, classrooms were different due to masking and social distancing safety precautions (Dibner, 2020). No matter the modality, novice teachers experienced a year unlike any other in recent history and we do not know how adequately prepared they were given disruptions to their student teaching experiences and changes to current classroom and teaching modalities. Taken together, research has demonstrated positive effects of pre-service and novice teacher self-efficacy on teacher retention, and student outcomes; however, the impact COVID-19 has had on the field experiences and resulting self-efficacy in this unique cohort of teacher graduates is unknown. Fig. 1 depicts a logic model showing the connection between teacher preparation, teacher self-efficacy, and outcomes; additionally, it shows the potential impact of the COVID-19 disruption at each stage.

1.3. Purpose and research questions

We hypothesize that pre-service teachers who were not able to complete student teaching may have lower self-efficacy. As they move into their early career, they potentially will need additional support to be
successful. Given recent increases in teacher attrition and shortages and the challenges first year teachers faced with various new teaching modalities throughout the 2020-2021 academic year, understanding the impact of this disruption is critically important as we begin the post-COVID-19 recovery.

The purpose of this research project is to develop an understanding of how the COVID-19 disruption has impacted the preparedness of preservice and novice teachers. The study intends to answer the following central research question:

1 How has the COVID-19 disruption impacted pre-service teachers’ sense of efficacy? Specifically, when controlling for prior K-12 experience, how do changes to student teaching placements and current teaching modality impact teacher self-efficacy?

This information will help government education agencies, schools of education, and K-12 school leaders to make informed decisions regarding needed support for the continued development and retention of all early career teachers, not only those whose preparation was impacted by COVID-19.

2. Method

This study was conducted in the U.S. using survey research. Participants responded to closed and open-ended survey questions via Qualtrics in November and December of 2020. Participants surveyed included first year teachers who completed a teacher certification program in the academic year 2019-2020.

2.1. Participants

We used a stratified sampling procedure to recruit participants through teacher certification programs from across the United States. To accomplish this task, we clustered university-based teacher preparation programs into strata (size and location), and then randomly selected a proportionate number of teacher preparation programs from each cluster. We contacted program leadership (e.g. School of Education Deans, Department Chairs, Directors of Teacher Certification) to request that they distribute a link to the Qualtrics survey to their recent 2020 program graduates. Additionally, the survey was shared on social media.
Table 1
Participant Demographics (N=162)

| Item                                     | n   | %   |
|------------------------------------------|-----|-----|
| Gender Identity                          |     |     |
| Female                                   | 142 | 87.6|
| Male                                     | 18  | 11.1|
| Non-Binary                               | 2   | 1.2 |
| Race                                     |     |     |
| White                                    | 146 | 90.1|
| Hispanic/Latino                          | 8   | 4.9 |
| Black/African American                   | 5   | 3.1 |
| Asian/Pacific Island                     | 2   | 1.2 |
| Multiracial                              | 1   | .62 |
| Highest Degree Earned                    |     |     |
| Associate Degree                         | 2   | 1.2 |
| Bachelor’s Degree                        | 132 | 81.5|
| Master’s Degree                          | 27  | 16.7|
| Doctorate                                | 1   | .6 |
| Program Type                             |     |     |
| Traditional, Undergraduate               | 126 | 77.8|
| Traditional, Graduate                    | 29  | 17.9|
| Alternative                              | 7   | 4.3 |
| Teaching Certification                   |     |     |
| Early Childhood and/or Elementary        | 89  | 54.9|
| K-12 Related Arts or World Language      | 12  | 7.4 |
| Secondary Content Area                   | 32  | 19.8|
| Special Education                        | 14  | 8.6 |
| Dual                                     | 15  | 9.3 |
| School Type                              |     |     |
| Public                                   | 133 | 82.1|
| Private                                  | 16  | 9.9 |
| Charter                                  | 13  | 8.0 |
| School Socioeconomic Status (SES)        |     |     |
| High SES                                 | 11  | 6.8 |
| Middle SES                               | 67  | 41.4|
| Low SES                                  | 84  | 51.9|

Table 2
MANOVA main effects

| Variable                                  | F ratio | df  | p     | \(\eta^2\) |
|-------------------------------------------|---------|-----|-------|------------|
| Change in student teaching                | 3.67    | 8,300 | .000* | .09        |
| Modality                                  | 1.71    | 8,300 | .095  | .04        |
| Change in student teaching ’ modality     | 1.93    | 16,459 | .017* | .05        |

Note: Wilks’ Lambda, ‘p<.05

three subscales: instructional strategies, classroom management, and student engagement (Nie et al., 2012; Tschannen-Moran & Hoy, 2001).

Previous researchers have used the TSES to learn about the relationship between self-efficacy inputs (i.e. mastery experiences, verbal persuasion) and teacher self-efficacy, and have found that measure of teacher self-efficacy can be a good indicator of how much and what type of interventions and supports a teacher may need to be successful (Tschannen-Moran & Hoy, 2007).

2.3. Data analysis

Data were analyzed as follows: (a) a t-test to measure for differences between prior K-12 experience groups, a potential contributor to teacher self-efficacy; (b) assumptions testing (c) a two-way multivariate analysis of variance (MANOVA) on participant responses with overall TSES and three subscales as outcome measures and change in student teaching placement and current teaching modality as independent variables; and (d) a qualitative analysis using open and axial coding techniques for the open-ended survey item.

3. Results

3.1. Data screening

All survey responses were screened to remove incomplete responses as well as to identify any non-human or suspicious survey responses. Qualtrics data showed that the majority of responses (90.5%) were submitted through the email link that was sent to first year teachers by university faculty. Only a small number of responses were gathered through private Facebook groups (9.5%). During data screening the results were scanned to identify fraudulent responses, such as duplicate responses or answers to open-ended items that did not make sense and none were identified. A total of eight incomplete responses were removed, leaving a total of N=162 complete survey responses for analysis.

3.2. Prior K-12 experience and assumptions testing

Participants with and without prior K-12 work experience showed no significant differences at the p<.05 level on overall teacher self-efficacy (p=.916) or within any three subscales including student engagement (p=.521), instructional strategies (p=.709), and classroom management (p=.785). Therefore, we were able to move forward with analysis without concern that prior K-12 experience was a confounding variable. Assumptions testing confirmed the data did not violate any assumptions, including independence of observations, normal distribution of outcome variables, and homogeneity of variances required for a valid two-way MANOVA. This decreases the risk of Type I and Type II errors.

3.3. Two-way MANOVA

Results from the MANOVA main effects (Table 2) and between subject effects (Table 3) indicate that there were significant differences at the p<.05 level on overall teaching self-efficacy (p=.000) and across the student engagement (p=.001), instructional strategies (p=.001), and classroom management (p=.000) subscales; however, no significant differences were found at the p<.05 level between participants’ current...
Table 3

| Variable                          | $F$ ratio | $df$  | $p$     | $\eta^2$ |
|-----------------------------------|-----------|-------|---------|-----------|
| Change in student teaching        | 12.52     | 2, 153| .000*   | .14       |
| Overall TSE                       | 7.95      | 2, 153| .001*   | .09       |
| Instructional strategies          | 10.07     | 2, 153| .000*   | .12       |
| Classroom management              | 11.53     | 2, 153| .000*   | .13       |
| Change in student teaching        | 4.15      | 4, 153| .003    | .10       |
| Overall TSE                       | 3.88      | 4, 153| .005    | .09       |
| Instructional strategies          | 4.98      | 4, 153| .001*   | .12       |
| Classroom management              | 1.80      | 4, 153| .131    | .05       |

Note. $p<.05$

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Fig. 2. Marginal Means in Overall TSE for change in student teaching placement * modality

Fig. 3. Marginal means in student engagement for change in student teaching placement * modality

Fig. 4. Marginal means in instructional strategies for change in student teaching placement * modality

Fig. 5. Marginal means in classroom management for change in student teaching placement * modality

Teaching modality ($p=.095$). There was a statistically significant interaction at the $p<.05$ level between changes to student teaching placement and current modality for overall teacher self-efficacy ($p=.003$) and the student engagement ($p=.005$) and instructional strategies subscales ($p=.001$).

We used descriptive statistics and estimates of marginal means to further analyze significant findings. Descriptive statistics, including teacher self-efficacy mean scores and standard deviations for change in student teaching and modality across each dependent variable are reported in Table 4. Participants who reported no change to their student teaching placement had the highest mean scores on all four dependent variables, while those reporting a move from in person teaching to no teaching had the lowest mean scores. Figs. 2-5 show the marginal means for the interaction effect. Participants reporting no change have the highest mean scores when the current teaching modality is hybrid or in person. However, the mean is lowest for the no change group when compared to the in person to no teaching and in person to virtual when the current teaching modality is virtual. Participants who had experience teaching virtually during student teaching had the highest means across all four dependent variables when their current teaching modality was virtual. Overall, participants who reported that their student teaching placement moved from in person to no teaching had the lowest means when compared to the other groups across all four dependent variables when their current modality was hybrid or in person.

3.4. Qualitative analysis of open-ended item

Using an open coding technique, we identified 11 distinct codes through the qualitative analysis of the open-ended response item. Next, we used axial coding to categorize codes as having a positive impact, neutral, or negative impact. Table 5 provides frequencies for each theme across the categories. Participants reported that the pandemic negatively impacted their preparedness for their first year of teaching, with the most frequent responses focusing on feeling unprepared to teach in a virtual environment, feeling unprepared due to a missed placement, and feeling unprepared to provide adequate instruction and manage the classroom. Participants did report some benefits, such as having the opportunity to practice virtual teaching during student teaching, and learning how to be flexible and adapt to challenging circumstances. Participant answers to the open-ended question support these findings, with the highest number of responses reporting a negative impact due to missed time in the placement. For example, one participant reported that “Due to the pandemic, my student teaching experience was cut
short. Since I was a special education major, I only got to complete one of my two placements. As a result, I have no experience teaching high school”. Another participant echoed feeling unprepared due to time cut short during student teaching, sharing that, “I had little experience with classroom management and taking on instructional responsibilities”. Another common theme in open-ended responses was preparedness for virtual teaching. One participant shared that “I was not prepared in any way to teach virtually”, and another shared that “I was not prepared to become a technology specialist or a therapist to families with home lives not suitable for virtual learning.” Some responses regarding virtual teaching were positive. For example, “I believe student teaching prepared me for the unknown. I was able to learn from my cooperating teachers both in person and then how they tackled virtual instruction. This helped me to be prepared for both in person and virtual teaching.”

4. Discussion

When we retain well-prepared, well-supported novice teachers, there are benefits to K-12 students, such as improved academic, social, and emotional growth (Boyd et al., 2006; Clotfelter et al., 2007; Ingersoll & Strong, 2011). Understanding how the COVID-19 disruption impacted pre-service teacher preparedness, specifically teacher self-efficacy, will help policymakers and school leaders to effectively target early career support and increase novice teacher retention. Grounded in Bandura’s social learning theory, the purpose of this research was to investigate the impact of the COVID-19 pandemic on first year teacher preparedness. Specifically, we looked at how disruptions to student teaching placements and current teaching modality affected teacher self-efficacy. We hypothesized that disruptions to student teaching placements affected teacher self-efficacy due to reduced access to the four inputs important for developing self-efficacy, including mastery and vicarious experiences, social persuasion, and emotional states. We were able to make comparisons between student teachers who did not experience any disruptions to their placement, those who moved to virtual student teaching, and student teachers who were not able to teach at all due to COVID-19 school closures.

4.1. Pre-service teachers and self-efficacy

Significant differences in overall teacher self-efficacy and within each subscale (classroom management, instructional strategies, and student engagement) were found between participants who had no changes to their student teaching placements, those who moved from in-person teaching to virtual, and those who moved from in-person teaching to no teaching at all. The highest mean scores reported were for those with no changes to their student teaching placements, and the lowest mean scores reported for those who moved from in-person to no teaching. This finding suggests that a complete student teaching semester leads to improvements in teacher self-efficacy and supports previous research on the value of student teaching as a component of effective teacher preparation (Clark et al., 2015; Darling-Hammond, 2014). Having the opportunity to apply theoretical and research-based knowledge in a supported setting with the support of an expert mentor teacher helps new teachers to improve their practice (Ronfeldt et al., 2018). A complete student teaching semester provides pre-service teachers with opportunities to gain mastery and vicarious experiences through ongoing observation and practice, as well as social persuasion through performance feedback from a trusted mentor. The results from the qualitative analysis provide greater insight into the experiences and perceptions of student teachers impacted by the pandemic who were in their first year of teaching. The majority of participants expressed feeling less prepared for their first year of teaching across a range of areas, including instructional strategies, classroom management, supporting families, meeting the needs of special education students, and alternative teaching modalities due to disruptions to student teaching. Teacher preparation programs should continue to seek high quality student teaching experiences for pre-service teachers.

Student teachers who experienced no changes to their student teaching placements had the highest group means for overall teacher self-efficacy and across the subscales for participants who were currently teaching hybrid or in-person. However, when these participants were teaching virtually full-time, their teacher self-efficacy scores dropped significantly. These results indicate that having some virtual practice prior to the first year of teaching may benefit those who will teach in a virtual classroom. Student teaching placements that effectively model how to integrate technology into instruction may also increase student teachers’ intention to integrate technology and their self-efficacy to do so in their careers (Han et al., 2017). Additionally, teacher education programs might consider more intentionally incorporating instruction and practice in virtual teaching methods into coursework. It is hard to know how the COVID-19 pandemic may change K-12 practices, and schools may now include remote options for students more frequently. Now that schools have access to and have developed comfort with remote learning platforms, virtual learning might be here to stay for quite some time (Breunlin, 2021). For example, schools may provide ways for students to attend school remotely as a way to address bad weather events, address frequent absenteeism, or provide families with increased learning options and flexibility (Singer, 2021). Preparation programs...
could consider the potential benefits of introducing content in education coursework to address strategies for virtual instruction to bolster the self-efficacy of those who will go on to teach using virtual and hybrid modalities.

4.2. In-service teachers and self-efficacy

Although all new teachers benefit from support through induction programs and mentor relationships (Ronfeldt & McQueen, 2017), the results of this study suggest that current novice teachers and soon-to-be graduates of certification programs could benefit from increased support in classroom management, student engagement, and instructional strategies. This is particularly important for those who had incomplete student teaching experiences and reduced hours in the classroom as part of their preparation. These first year teachers were not afforded the opportunity to observe and receive feedback from an experienced mentor teacher, which contributed to a decrease in teacher self-efficacy. Increasing support through early career induction programs that include a coaching and mentoring component could potentially provide novice teachers with necessary experiences and feedback that are essential for increasing teacher self-efficacy.

Recent research has found that in-service teachers - who typically provide mentorship and induction for first year teachers - have also reported a drop in self-efficacy in the areas of instructional strategies and student engagement (Pressley & Ha, 2021). As such, on-the-job training and mentorship for these first year teachers whose student teaching was interrupted and/or different from their current teaching modality might be provided by teachers who report similar levels of low self-efficacy. This points to the need to provide professional development for mentor and veteran teachers to equip them with strategies to mentor and bolster self-efficacy of first year teachers.

4.3. Teacher shortages and COVID-19 pandemic

The findings from this study have important implications for K-12 school leaders and teacher educators. As depicted in the logic model (Fig. 1) and described in the literature review, there is a relationship between the experiences pre-service teachers have as part of a typical student teaching semester and beneficial outcomes, such as increased teacher self-efficacy, teacher retention, and student learning outcomes (Farr, 2010; Pendergast et al., 2011). Prior to COVID-19, school leaders across the U.S. were already dealing with ongoing, widespread, costly teacher shortages. Although we do not yet know how significantly the pandemic has further contributed to shortages, there is evidence of increased turnover due to early retirements (DiNapoli, 2021). This, coupled with decreased enrollment in teacher preparation programs will interfere with students’ access to well-prepared, high quality teachers (Partelow, 2019). School leaders would be wise to invest in their early career teachers, providing them with optimal working conditions for long-term success, including quality professional development.

Finally, the results of this study have implications for policymakers as well as local, state, and federal leaders. As decisions are being made about how to allocate resources, addressing the teacher shortage should be a top priority requiring a multi-faceted problem solving approach. Retaining early career teachers leads to greater consistency, higher quality instruction, and improved outcomes for students. It is also cost-effective, and an investment in our novice teachers will pay off financially. Policymakers should provide districts with resources to focus on high quality professional development as part of new teacher induction to help teachers transition from pre-service to early career. Specifically, investing in professional development that would support early career teachers to use instructional strategies and student engagement practices across different teaching modalities (virtual, hybrid, and in-person) could help address overall self-efficacy for this population.

4.4. Study strengths and limitations

This study provides a snapshot regarding changes in student teaching placement and first year teacher self-efficacy as a result of the COVID-19 pandemic. The study design and sample include notable strengths. For example, the study design afforded the ability to quickly gather and analyze data using a national sample of first year educators across a variety of teacher preparation programs, grade levels, and content areas. In addition, the sample includes a high number of first year educators teaching in low and middle SES school districts.

However, there are limitations to consider. First, caution is recommended when generalizing the results due to sample characteristics. The sample in this study included predominantly white, early childhood and/or elementary educators from traditional undergraduate programs. Educators from diverse racial and ethnic backgrounds as well as educators who attended alternative preservice programs were underrepresented in the survey. The survey respondents are representative of nationwide teacher demographics regarding gender identity and race/ethnicity, which is predominantly White and female in the United States (Irwin et al., 2021), replicating this study using a larger and more diverse sample size is recommended to address this limitation, particularly since turnover for teachers of color is higher when compared to White teachers (Ingersoll et al., 2019). Second, participant self-report and potential bias are inherent limitations of survey research. Bias could have influenced the results since responses are based on participants’ perceptions. Additionally, there could have been differences between first year teachers who chose to participate in the survey and those who chose not to participate.

There are also limitations to conducting survey research online. While the data were screened to ensure only participants who met study criteria were included in the analysis, it is possible that non-teachers or participants who were outside of the described sample completed the survey, such as bots. Some studies have evaluated methods to deter bots from answering surveys (Griffin et al., 2021; Pratt-Chapman et al., 2021). Measures described in the literature were utilized to reduce this risk. But despite these methods, fraudulent survey responses are a potential risk when surveys are open to eligible participants online. Thus, despite the aforementioned research design and sample strengths, care should be taken when generalizing the survey results.

4.5. Future research

Continued research is needed to better understand how the COVID-19 pandemic affected teacher preparation, the teacher workforce, and student outcomes. In the short-term, this research could help to make more informed decisions to aid in the recovery process. Longitudinal research that follows these novice teachers could provide insight into the long term benefits of student teaching on teacher quality, teacher retention, and student outcomes; as well as the lasting impact of the COVID-19 pandemic could have on self-efficacy over time. Other areas of self-efficacy should also be studied, including self-efficacy to collaborate with families and colleagues virtually and to engage in virtual assessment practices. Lastly, since the need for virtual and hybrid instruction is likely here to stay for the foreseeable future, researchers may want to look into the effectiveness of instructional and classroom management strategies to understand their applicability to different teaching modalities.

5. Conclusions

Prior to the COVID-19 pandemic, significant teacher shortages resulting from rising teacher attrition coupled with a significant decline in enrollment in teacher preparation programs were already at crisis levels in certain geographic locations and certification areas. Inequitable access to well-prepared, high quality teachers is a major obstacle for student achievement. Since COVID-19 disrupted teacher preparation programs
and has inherited with traditional K-12 school-based practice opportunities for pre-service teachers, understanding the impact is essential for moving forward.

This study suggests that student teachers who had incomplete student teaching experiences may need additional support during their novice teaching years. Many current first year teachers missed time in the classroom practicing essential instructional, engagement, and classroom management skills under the supervision of a cooperating teacher and university supervisor. As a result, this group of teachers along with pre-service teachers currently enrolled in teacher preparation programs may be more vulnerable for early career attrition. Teacher educators, school leaders, and policymakers should pay careful attention to the developmental needs of novice teachers and potential shifts in K-12 reliance on virtual instruction. Responding with adequate, targeted support may assist with teacher retention efforts at this critical time and aid in the COVID-19 recovery.

Declaration of Competing Interest
We have no known conflict of interest to disclose.

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