Teacher Preparation

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K-12 Education

Introduction

In the 2020s, several factors led to changes in the field of teacher education in the United States. These factors include widespread teacher shortages, renewed attention to preparing teachers to address equity and diversity, research evidence related to cooperating teachers (CTs) and field placement schools, and different approaches to teacher education accountability. In response, university-based preparation programs and nonuniversity providers have expanded their offerings to include residency programs, apprenticeship programs, Grow Your Own teacher programs, and other alternative licensure programs (all states require teacher licensing, but the specific requirements vary from state to state). Despite the innovations that have occurred in the field, most U.S. teachers continue to be trained in university-based teacher education programs. The overall structure of these programs—such as content courses, methods courses, foundations courses, and clinical experiences including student teaching—tends to be more similar than different across institutions and pathways.[1]

Regarding methods courses, elementary teacher candidates generally complete content-specific methods courses in reading/language arts, mathematics, science, and social studies, while secondary candidates complete at least one to two methods courses in their content areas. With regard to clinical experiences, most candidates complete student teaching assignments that last from approximately 10 to 15 weeks, and most candidates are supported by a triad model that includes a CT and a university supervisor. In the triad model, candidates work closely with their CTs while assuming teaching responsibilities in field placement schools, and they receive feedback on their instruction from university-based supervisors. This structure has remained consistent over time, but in recent years, much has been learned about the aspects of coursework and clinical work that matter most for preparing quality novice teachers.

There is strong evidence that teacher quality is a key contributor to student achievement,[2] which makes it imperative to identify the features of teacher education that predict teacher quality. There is ample evidence that clinical placements with certain features (described below) are associated with the instructional effectiveness of preservice student teachers (PSTs) and beginning teachers. There is also initial evidence that coursework in general teaching methods and classroom management is associated with novice teacher instructional quality and effects on student learning. However, there is no consistent evidence that content courses or content-specific methods courses are associated with beginning teacher effectiveness. As the field of teacher education continues to innovate, it is imperative that program leaders and policymakers take account of what is known about how certain types of CTs, field placement schools, and courses can help beginning teachers become instructionally effective.

Key findings

Cooperating teachers

Key finding #1: *PSTs are more instructionally effective when they learn to teach with more instructionally effective CTs*. Recent evidence confirms that this relationship reflects a causal effect—instructionally effective CTs cause PSTs to be more instructionally effective.

Key finding #2: *CT coaching quality and frequency are positively associated with PSTs' self-perceived and observed teaching effectiveness*. Professional development (PD) is a promising way to improve CT coaching and, in turn, the teaching effectiveness of PSTs; however, coaching PD for CTs is uncommon.

Field placement schools

Key finding #3: *PSTs are more instructionally effective and have better retention when they learn to teach in field placement schools with measures correlated with stronger professional learning environments.*

Key finding #4: *The association between PSTs' instructional effectiveness or retention and the average sociodemographic characteristics of students in their field placement schools is somewhat unclear. However, PSTs are more instructionally effective when their early career (in-service) placements more closely match their (preservice) field placements in terms of student demographics, the grade-level subject area, and the specific school/district.*

Teacher education coursework

Key finding #5: *The association between content courses in mathematics and in English language arts (ELA) and beginning teacher effectiveness is somewhat unclear. There is some evidence that opportunities to learn about general methods of instruction in courses and field placements are associated with beginning elementary teachers' effectiveness and instructional quality.*

Evidence

Graduates of teacher certification programs have long valued student teaching as the most influential part of their preparation experiences.[3] Reviews of more recent evidence, including studies that link preparation features to graduate retention and instructional effectiveness, have similarly found student teaching to be the strongest programmatic predictor of both self-reported and observable outcomes.[4] Hence, we begin our review of the evidence by focusing on two aspects of student teaching—CT and field placement school characteristics. We end with a section on coursework—a dimension of preparation that, the research suggests, is also related to graduate outcomes, although the evidence is more mixed.

Cooperating teachers

CTs are charged with the responsibility of guiding PSTs' development in their P-12 classrooms while ensuring student learning. Concerns abound that creating spaces for inexperienced student teachers to practice teaching will somehow diminish the learning opportunities for students or damage teachers' evaluation metrics. Recent research assures us, however, that serving as a CT does not negatively affect

student test scores or teacher evaluation scores;[5] in fact, one study finds that teacher observation ratings are stronger.[6]

Given the substantial amount of time that PSTs spend in student teaching, numerous studies have explored the various ways that CTs likely influence their development. In this section, we highlight large-scale evidence suggesting that PSTs benefit from learning to teach with CTs who are instructionally effective teachers of P–12 students (key finding #1) and that the quality of coaching offered by CTs matters (key finding #2).

Key finding #1: *PSTs are more instructionally effective when they learn to teach with more instructionally effective CTs.*

Multiple studies have presented findings relating the instructional effectiveness of CTs to that of the PSTs whom they mentored.[7] Although situated within varied contexts and relying on a variety of analytic strategies and measures for instructional effectiveness, these studies offer remarkably consistent results.

In Chicago, researchers showed that PSTs who rated their CTs higher on a measure of "cooperating teacher quality" reported feeling better prepared to teach, having stronger teaching efficacy, and planning longer teaching careers in Chicago.[8] Researchers then disentangled the effects of CT quality into effective teaching and effective coaching.[9] Based on CT and PST surveys, the team found that both matter. PSTs felt better prepared to teach when CTs modeled more effective instruction and when CTs had stronger district observation ratings of classroom management.

More recent studies have focused on observed measures of instructional effectiveness rather than self-reported feelings of preparedness. Some found positive associations between CTs' observation ratings and graduates' observation ratings.[10] Others found graduates' early-career value-added measures (VAMs) to be positively linked with CTs' VAMs.[11] However, when using multiple measures, these studies found no correlation between graduates' VAM scores and their CTs' observational ratings; likewise, graduates' observation ratings were unrelated to their CTs' VAM scores.[12]

Scholars have also extended prior research by employing randomized controlled trial (RCT) designs to demonstrate *causality* between CT and PST instructional effectiveness. In one study, PSTs were randomly assigned to placements based on CT observation ratings, VAMs, and experience, as well as the field placement school stay-ratio and school-level VAMs. These variables were previously shown to predict better graduate outcomes and were therefore used as signals for more "promising" placements. PSTs working in "promising" placements felt better prepared to teach and reported that CTs modeled better-quality instruction and provided better-quality feedback.[13] A related study demonstrated that PSTs randomly assigned to more "promising" placements received better student teaching observation ratings.[14]

In another RCT study, local districts were randomly selected to receive lists that identified the most instructionally effective and experienced teachers in various subjects/grade levels, hence increasing their capacity to recruit instructionally effective CTs. PSTs in districts that used these lists of recommended teachers to recruit their CTs reported feeling significantly better prepared to teach on post-student-teaching surveys[15] and, in a follow-up study, also had stronger observation ratings during student teaching.[16]

Key finding #2: *CT coaching quality and frequency are positively associated with PSTs' self-perceived and observed teaching effectiveness.*

Several correlational studies have suggested that coaching provided by CTs is positively associated with PSTs' self-perceived readiness to teach and observed teaching effectiveness. Based on survey data derived from PSTs while student teaching in Chicago and from their CTs, one study found that PSTs reported feeling better prepared to teach when they also reported that their CTs provided more frequent feedback, instructional support, a balance of autonomy and encouragement, collaborative coaching, and job-search support.[17] In a related follow-up study, researchers investigated the relationship between CTs' coaching and their survey-based perceptions of their PSTs' readiness to teach, as well as the latter's subsequent observation ratings as first-year teachers in Chicago. Consistent with prior findings, the authors found that PSTs who reported receiving more and better-quality coaching from CTs felt better prepared to teach; they were also rated by their CTs as being better prepared to teach.[18] Although CTs' perceptions of their own coaching were unrelated to PSTs' self-perceived preparedness, they positively predicted CTs' perceptions of their PSTs' readiness to teach and PSTs' first-year observation ratings.

Moving beyond descriptive studies, four studies have developed, implemented, and studied coaching PD programs for CTs. Using experimental designs, they indicate positive, causal impacts of CT coaching on PSTs' instructional effectiveness.[19] These studies all found that PD programs resulted in intended changes in CTs' coaching practices that, in turn, yielded better instructional outcomes for PSTs. However, none of these studies examined instructional outcomes for beginning teachers of record.

In one such study, 28 CTs from two programs were randomly assigned to either PD based on the *Praxis III/Pathwise* framework or business-as-usual supports.[20] Trained, external evaluators rated the instruction of candidates paired with CTs assigned to the treatment PD as being significantly stronger than those who did not receive this PD. In another study, coaches were randomly assigned to receive PD on how to provide choice-based, focused coaching in an alternative preparation program.[21] Compared with the candidates of coaches who were assigned to the business-as-usual condition, the candidates of coaches assigned to the PD reported better-quality coaching and received better observation ratings. In another study, researchers randomly assigned 130 CTs to one of three coaching PD groups or the control group.[22] The CTs who participated in the PD changed their coaching practice in ways that aligned with the offered training; their PSTs reported better-quality coaching and were evaluated as being more successful at addressing disruptive classroom behavior. In Tennessee, researchers sought to improve CTs' feedback practices for their PSTs as well as classroom practice. Working with data from nearly 400 CTs from multiple programs over three years, they found that CTs who had been randomly assigned the PD reported providing more frequent coaching and receiving stronger ratings on their classroom practices than their peers.[23] PSTs who were mentored by the CTs receiving the PD also reported being somewhat more satisfied and were employed at significantly greater rates. In the latter two studies, substantial noncompliance among participants may threaten causal interpretations.

Field placement schools

The prior section focuses on CTs. In this section, we address the selection of certain kinds of field placement *schools*. In particular, research indicates that student teachers are more instructionally effective and more likely to persist in teaching when they learn to teach in field placements with stronger professional learning environments (key finding #3) and in placements that match the schools in which student teachers are subsequently employed in terms of student demographics and the school/grade level (key finding #4).

Key finding #3: *PSTs are more instructionally effective and have better retention when they learn to teach in field placement schools with measures correlated with stronger professional learning environments.*

Field placements that have strong professional learning environments that promote student teacher effectiveness and retention are the placements where there is strong collaboration among teachers, where teachers are, on average, highly instructionally effective, and, to a lesser degree, where teachers are more likely to be retained from year to year. The two studies that have examined self-reported collaboration quality among faculty in field placement schools found that it is positively related to graduate instructional effectiveness. A study in one large Southern district[24] found that recent graduates who student taught in field placement schools with better average collaboration quality had better early-career VAM scores. Another study in North Carolina[25] not only reproduced this finding but also found collaboration quality to positively predict recent graduates' observation ratings.

The results above suggest that collaboration quality is a means by which student teachers learn how to be instructionally effective from school faculty in their placement schools; common sense suggests that the benefits would be stronger when learning from highly effective colleagues. Consistent with this intuition, studies show that student teachers are more instructionally effective when they learn to teach in field placement schools with teacher colleagues who are, on average, instructionally effective. Two studies[26] in three different states found that early career teachers had stronger VAMs when they had learned to teach in field placements with stronger school-level VAMs. These results are consistent with evidence from a study demonstrating that in-service teachers have better VAMs when their grade-level peers also have better VAMs.[27] Moreover, student teachers with lower grade point averages benefitted most from being placed in schools with stronger school-level VAMs and collaboration quality, suggesting that these features do indeed promote professional learning. [28]

These findings on the importance of being placed for student teaching in schools with highly effective teacher colleagues are consistent with the above results on the value of being placed for student teaching in classrooms with highly effective CTs.

One would expect schools that promote teacher learning and growth to be places where teachers want to stay; if so, then having little teacher turnover might signal schools with stronger professional learning environments. Linking survey data from student teachers across New York City (NYC) to school administrative data, one study[29] confirmed this to be the case – individuals who student taught in lower-turnover field placement schools reported experiencing stronger faculty collegiality and administrative support, observing excellent teachers/role models more frequently, being observed more regularly, having more opportunities to try out coursework-endorsed strategies, and receiving more useful feedback. Moreover, early career teachers who had student taught in lower-turnover settings were more likely to persist as teachers in NYC and had better VAMs. Although this positive association between VAMs and student teaching in high stay-ratio placements was replicated in a subsequent study,[30] two other studies[31] found no relationship.

Key finding #4: *The association between PSTs' instructional effectiveness or retention and the average sociodemographic characteristics of students in their field placement schools is somewhat unclear. However, PSTs are more instructionally effective when their early career (in-service) placements more closely match their (preservice) field placements in terms of student demographics, the grade-level subject area, and the specific school/district.*

A number of large-scale quantitative studies have examined whether the average sociodemographic characteristics (e.g., race/ethnicity, income status, linguistic background, special education status) of students in field placement schools and classrooms predict graduate instructional effectiveness and retention. Three of these studies[32] found no relationships between graduates' instructional effectiveness and any of the sociodemographic characteristics that were considered. Three other studies[33] found no relationships among most sociodemographic characteristics but some evidence that

student teaching with more marginalized students (i.e., students of color and lower-income students) predicted better graduate VAMs. Additionally, four studies[34] examined whether early-career teacher retention or career plans were related to the average student sociodemographic characteristics of their field placement schools, finding no relationships.

Although average student sociodemographic characteristics are mostly unrelated to graduate instructional effectiveness and retention, there is evidence that a closer sociodemographic match between one's field placement (preservice) and employment (in-service) schools predicts stronger VAMs. The effects on retention, however, are mixed. One study[35] found that early career teachers had better math VAMs when the proportion of marginalized students in their current (in-service) schools more closely matched the proportion of marginalized students in their (preservice) field placement schools. This finding caused the authors to wonder whether field placements with more marginalized students may provide student teachers with population-specific human capital (skills and knowledge) that better prepares them to succeed with similar populations later on. A subsequent study[36] not only reproduced these results but also found that the student demographic match effects at the classroom level are even stronger than those at the school level. This finding further supports a human capital explanation, as we would expect the human capital of student teachers to be more directly impacted by students in their own classrooms than by other students in their schools. Two studies examined the relationship between teacher retention and the sociodemographic match between field placement and employment schools, one finding no relationship[37] and the other finding a positive relationship.[38]

Beyond sociodemographic match effects, other studies have examined whether early career teachers are more instructionally effective or more likely to persist as teachers when they are employed in the same grade/school level (e.g., elementary) or in the same school/district as their field placements. Three studies[39] found positive grade-level match effects on early career teachers' VAMs, while two studies found positive school-level match effects.[40] Three studies examined whether being employed in the same schools as in field placements predicted instructional effectiveness, with two studies[41] identifying positive relationships and one study[42] finding no relationship. Only one study[43] examined whether these kinds of matches predicted graduate retention, finding the school type/level to positively predict retention but grade and district matches to be unrelated.

Teacher education coursework

Key finding #5: *The association between content courses in mathematics and in ELA and beginning teacher effectiveness is somewhat unclear. There is some evidence that opportunities to learn about general methods of instruction in courses and field placements are associated with beginning elementary teachers' effectiveness and instructional quality.*

Several studies have examined the associations between teacher education courses and beginning teacher effectiveness. These studies provide initial evidence that courses in general teaching methods and classroom management are associated with novice teachers' instructional quality and effectiveness. However, they do not provide consistent evidence that content courses or content-specific methods courses are associated with beginning teachers' effects on student learning. Many of these studies suffer from research design challenges associated with sample selection and potentially confounding variables.

One study investigated 174 traditionally certified and alternatively certified elementary teachers.[44] It reported no significant associations between the nature or amount of coursework completed and beginning teacher effectiveness in mathematics or reading/language arts. A second study utilized four years of data from a university that prepared more than 300 elementary teachers annually.[45] It found

that the number of mathematics content courses completed was associated with novice teacher effectiveness in mathematics but that the number of mathematics pedagogy courses was negatively associated with this outcome.

A third study drew on four years of data from middle school mathematics and ELA teachers in their first five years of teaching.[46] It found a negative association between the amount of mathematics coursework completed and beginning teacher effectiveness in mathematics and no association between the amount of ELA courses taken and ELA effectiveness. A fourth study utilized five years of data on elementary and secondary teachers of all experience levels.[47] It reported no associations between the number of college courses taken in any area and teacher effectiveness, with the exception of classroom management courses completed by high school ELA teachers.

Other studies have examined how teacher candidates' experiences in both coursework and clinical placements are associated with effectiveness and other key beginning teacher outcomes. One study explored elementary candidates' experiences in 31 teacher preparation programs/pathways.[48] It found that completing mathematics and ELA content courses was associated with beginning teacher effectiveness in both subjects in the second year of teaching but not in the first. Additionally, opportunities to learn about the elementary mathematics curriculum and general methods of instruction (during courses and/or clinical placements) were associated with first-year teacher effectiveness in mathematics.

A second study used data from two waves of the Schools and Staffing Survey (SASS), a nationally representative survey conducted by the National Center for Education Statistics and now known as the National Teacher and Principal Survey, to investigate how preparation experiences were associated with elementary and secondary teachers' perceptions of preparedness and their retention levels.[49] The study reported that teachers who completed more methods-related coursework and more student teaching felt much better prepared in their first year of teaching than other teachers. A third study used survey and classroom observation data from 83 first-year elementary teachers who graduated from 5 preparation programs in 3 states.[50] The study found that opportunities to learn about general methods of teaching in courses and student teaching were significantly associated with beginning teachers' instructional quality in mathematics and reading. Additionally, opportunities to learn, try out, and receive feedback on mathematics instructional strategies during student teaching predicted the quality of first-year teachers' mathematics instruction.

Conclusion

Our review of the evidence strongly indicates that PSTs have better outcomes when they student teach (1) with CTs who are instructionally effective and have effective coaching skills; (2) with CTs who have completed PD on how to coach PSTs; (3) in school placements that have strong professional learning environments; and (4) in classrooms/schools that more closely match the classrooms/schools in which they are eventually employed in terms of the grade/school level and average student sociodemographics. Additionally, (5) completing courses in general teaching methods and classroom management predicts graduates' instructional effectiveness.

Key findings #1, #2, and #3 support state/district policies that set minimum requirements for which teachers can serve as CTs and which schools can be used for student teaching placements. For example, several states have adopted minimum instructional effectiveness thresholds for which teachers are able to serve as CTs. Additionally, some states, such as Louisiana, now require teachers to complete coaching PD as a prerequisite to becoming CTs. We are not aware of any states/districts that possess minimum requirements for which schools can be used as placements; policymakers may want to consider this

possibility. For instance, based on these findings, states could consider minimum thresholds for schools in terms of the average instructional effectiveness of teachers (e.g., school-average observation ratings among faculty). The cost of implementing policies such as these is likely to be low, at least in contexts that already have sufficient data infrastructure.

Regarding key finding #4, we do not believe that any states or districts currently have policies or practices that focus on matching field placements with employment schools in terms of student sociodemographics. Given that prospective teachers often use student teaching experiences to determine the kinds of schools and grade/school levels that are a good fit, it seems that the most promising policies and practices in this area would be those that inform/target employer hiring (i.e., school and district leaders). For instance, employers could utilize information on the schools in which job candidates completed their student teaching experiences to determine which schools and classrooms might be closer matches in terms of student sociodemographics and grade/school levels.

Many states and districts now have administrative data systems that can be used to guide policymakers and practitioners in identifying placements with desired/required CT and placement school characteristics. As described above, one study used historical administrative information on teachers' instructional effectiveness (observation ratings and VAM scores) and years of experience to recommend to recruiters who should serve as CTs in needed grades, subjects, and districts. Data system administrators could, for example, create similar algorithms to identify the teachers who meet minimum instructional effectiveness requirements to serve as CTs or, even more ambitiously, to identify those who are in the top quartile in these areas. For states/districts with existing data infrastructure, doing so would be a relatively low-cost effort and investment for significant gains for aspiring teachers.

Regarding key finding #5, teacher preparation programs and pathways should provide opportunities across content areas for prospective teachers to learn to plan lessons and units, teach and model skills and strategies, provide feedback to students, build productive classroom learning environments, and manage student behavior. When beginning teachers have such opportunities, they are more likely to implement high-quality instruction and impact student learning. The findings imply that states should consider requiring preparation providers to offer courses to teacher candidates in general methods of instruction and classroom management.

In summary, there is a preponderance of evidence about the importance of high-quality preservice clinical placements with CTs who are exceptional teachers and coaches and in schools with strong professional learning environments. A number of preparation providers are experimenting with nontraditional models of preparation to make entry into teaching more viable and more affordable, in the hope of increasing the supply of teachers in general and the supply of individuals who are not well represented in the profession in particular. Early-entry alternative certification programs, such as Teach for America and Teaching Fellows, have had some success attracting a more diverse candidate pool.[51] However, there is some evidence that the fast-track nature of these preparation pathways has yielded clinical experiences that fall short of what the evidence suggests to be high quality.[52]

As today's providers experiment with new preparation models, such as Grow Your Own teacher programs and apprenticeships, it is critical for policymakers and teacher educators to consider new models of preparation that are affordable and attract more diverse prospective teachers while also ensuring that they receive evidence-based clinical experiences. Residency programs, with a foundation in extensive and intensive clinical preparation in teaching schools that offer the potential to provide such classroom-based learning opportunities with high-quality mentors, are one such model to consider. These programs typically have partnerships with local districts and agreements that offset certification program costs to residents as long as the program participants commit to teach in partner districts for

a certain number of years. Additionally, there is growing evidence that residents are more racially and gender diverse and that they have better outcomes (instructional effectiveness, retention), which is perhaps unsurprising since this model is grounded in the kinds of clinical preparation that research promotes.[53]

Despite promising evidence on residency programs, we do not presently have causal studies about this preparation model. In fact, this critique regarding a lack of causal evidence holds true for the vast majority of research on teacher education models and features, with some important exceptions. Another understudied topic is Grow Your Own teacher programs, which are rapidly proliferating across the U.S. There is emerging evidence that the "Grow Your Own" label is actually an umbrella term for a wide variety of different models,[54] so it will be important for future studies to better specify how these varieties differ and whether different varieties promote better outcomes for graduates. The initial evidence seems to suggest that Grow Your Own teacher programs tend to be successful at attracting a more diverse pool of candidates, many of whom persist in teaching over time.[55] However, there has been less research on instructional effectiveness among graduates. Finally, although there is strong evidence that instructionally effective CTs cause PSTs to become more instructionally effective, how or why is less clear. Although a likely explanation is that these CTs are able to better model high-quality instruction for PSTs to emulate, it is also quite possible that more instructionally effective teachers of K-12 students are able to leverage these same skills to be better mentors to adult learners (i.e., teacher candidates).

As preparation providers continue to innovate around ways to prepare the next generation of teachers, the evidence is clear on the need for quality clinical placements and the quality mentoring by CTs that occurs within them. For additional details, please see the footnoted research reviews.[56]

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