

Teacher Preparation Research: Current Knowledge, Gaps, and Recommendations

An Executive Summary of the Research Report

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prepared for the
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by the Center for the Study of Teaching and Policy
in collaboration with Michigan State University

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A full version of the Research Report is available at www.ctp.org

Technical Working Group

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EXECUTIVE SUMMARY

All children in the United States—no matter where they live or who they are—deserve qualified teachers. Yet many do not have them. Why?

There are serious disagreements about what it means for teachers to be well qualified and about what it takes to prepare teachers well. Opinions and exhortations about these questions abound, and decisions about teacher preparation are made on a variety of bases. The purpose of this report is to summarize what rigorous, peer-reviewed research can and does tell us about key issues in teacher preparation. Questions about subject matter and pedagogical preparation, clinical training, policy influences, and alternative certification have been examined through research, and the results can provide directions as we work to improve teacher preparation nationally.

Across the country, teachers are prepared in more than 1,300 large and small, public and private colleges and universities, as well as through alternative programs offered by districts and states. Program designs and teacher preparation vary widely. Although the population of U.S. school-age children is becoming increasingly diverse, our pool of potential teachers is not, furthering the need to prepare teachers to work with students different from themselves. The challenges in improving teacher education programs and practices in the U.S. are enormous, and a qualified teaching force is an unquestionable necessity. Research can help us make these improvements and build such a force.

For this review we examined more than 300 peer-reviewed, published research reports about teacher preparation and found 57 that met our criteria for inclusion.¹ Reducing the complex findings of research studies to simple conclusions is risky business, and our answers to pressing questions are not as complete as we would like. Furthermore, individual studies cannot tell us definitively how to proceed with the improvement of teacher preparation—and only sometimes can the accumulated work in an area give clear direction for future action. Nonetheless, in this review we have found individual studies that identify important areas to be pursued and some collections of work that point toward how we can improve. The knowledge available from research, though uneven in some areas, lays promising groundwork for rigorous research to come.

What Answers Does Research Give To Critical Questions About Teacher Preparation?

This summary is organized around five major questions that address key aspects of teacher preparation. These questions are commonly asked by policymakers, teacher educators, and others who are interested in the quality of the teaching force and how it may be improved.

Overall, the research base concerning teacher preparation is relatively thin. The studies we found, however, suggest that good research can be done, but that it will take the development of more refined databases, measures, and methods, as well as complementary research designs that collect both qualitative and quantitative data.

¹ Research reports were included in the pool that were published in a peer-reviewed journal or source, reporting on empirical research undertaken over the past two decades that focused on teacher preparation in the United States. The pool of studies was further winnowed by retaining only those that met widely accepted standards of rigor established in six different research traditions. For more detail on the selection criteria and process see the full report, *Teacher Preparation Research: Current Knowledge, Gaps, and Recommendations*, available on the website of the Center for the Study of Teaching & Policy (www.ctpweb.org).

Question 1: What kinds of subject matter preparation, and how much of it, do prospective teachers need?

It is no surprise that research shows a positive connection between teachers' preparation in their subject matter and their performance and impact in the classroom. Subject-specific methods courses in education are useful too. But, contrary to the popular belief that more study of subject matter (e.g., through an academic major) is always better, there is some indication from research that teachers do acquire subject matter knowledge from various sources, including subject-specific academic coursework (some kinds of subject-specific methods courses accomplish the goal). There is little definitive research on this question. Much more research needs to be done before strong conclusions can be drawn on the kinds or amount of subject matter preparation that best equip prospective teachers for classroom practice.

Some researchers have found serious problems with the typical subject matter knowledge of preservice teachers, even of those who have completed majors in academic disciplines. In mathematics, for example, while preservice teachers' knowledge of procedures and rules may be sound, their reasoning skills and knowledge of concepts is often weak. Lacking full understanding of fundamental aspects of the subject matter impedes good teaching, especially given the high standards called for in current reforms. Research suggests that changes in teachers' subject matter preparation may be needed, and that the solution is more complicated than simply requiring a major or more subject matter courses.

Question 2: What kinds of pedagogical preparation, and how much of it, do prospective teachers need?

By "pedagogical preparation" we mean the various courses that teachers take in such areas as instructional methods, learning theories, foundations of education, and classroom management. The content and arrangement of such courses in programs of teacher education vary widely. Studies that have looked across several of the pedagogical parts of teacher preparation programs reinforce the view that the pedagogical aspects of teacher preparation matter, both for their effects on teaching practice and for their ultimate impact on student achievement. Some evidence suggests that coursework in content methods matters for teacher effectiveness. But since many studies use a weak proxy for pedagogical preparation—possession of a teaching credential—the results give little insight into which aspects of pedagogical preparation are most critical.

Question 3: What kinds, timing, and amount of clinical training ("student teaching") best equip prospective teachers for classroom practice?

Experienced and newly certified teachers alike see clinical experiences as a powerful—sometimes the single most powerful—element of teacher preparation. Research documents significant shifts in attitude among teacher candidates who work under close supervision in classrooms with children. Whether that power enhances the quality of a teacher's preparation seems to depend on the specific intent and characteristics of the field experience. Field experiences are sometimes intended to show what the job of teaching is like, sometimes to help teachers learn about classroom management, and sometimes to give practical opportunities to apply concepts encountered in university coursework. Some are offered early in the program, others late. Duration, supervision arrangements, and settings vary dramatically.

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- *Common problems with clinical training.* Research shows that too often field experiences are disconnected from, or not well coordinated with, the university-based components of teacher education and limited to mechanical aspects of teaching. Finding placements is challenging, and identifying schools that share educational perspectives with teacher education programs can be an issue. The norms of the schools in which prospective teachers are placed are crucial to shaping the experience.
 - *Promising forms of clinical training.* Yet research shows that prospective teachers' conceptions of the teaching and learning in particular subject areas can be transformed through their observations and analysis of what goes on in classrooms. Cooperating teachers have a powerful influence on the nature of the student teaching experience. In field experiences with focused, well-structured activities, significant learning can occur.

Question 4: What policies have been used successfully to improve and sustain the quality of preservice teacher education?

Too few research studies have been conducted to make confident conclusions about the effects of policies on the quality of preservice teacher education. The studies we examined suggest a basis for examining questions about revised certification systems, state approval mechanisms, and national accreditation and their desired effects on the preparation of teachers. In addition, research-based examinations of accountability systems, collaborative partnerships with K-12 schools, involvement of a university's Arts and Sciences faculty as part of program, policy, and school district incentives all might hold promise for the improvement of teacher education program quality.

Question 5: What are the components and characteristics of high-quality alternative certification programs?

Until the early 1990s, most people who wanted to teach in the public schools needed to complete an undergraduate program of teacher preparation. By 1993, 40 states had created postbaccalaureate alternate routes into teaching, as a way of reducing shortages in critical areas such as mathematics and science, attracting non-traditional entrants, and finding staff for urban and rural schools. Recent data suggest that most states now have alternative routes firmly in place, although these differ dramatically in their designs (from relatively quick programs that hasten entry into the classroom to more elaborate, long-term programs).

Research indicates that alternative route programs:

- Have been successful in recruiting a more diverse pool of teachers.
- Have a mixed record in attracting the "best and brightest," challenging one rationale for the existence of alternative routes.
- Vary in ability to prepare teachers for the exigencies of classroom life. The small number of interpretive studies available, for example, suggests that background in subject matter alone is not enough to equip new teachers for their work in classrooms.

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- May resemble more "traditional" programs. Alternative routes that have high standards for entry and require substantial pedagogical training, mentoring, and evaluation may be quite similar to traditional college-based teacher education and tend to be successful in their production of qualified teachers.

Future research will need to include more detailed descriptions of the various alternative route program structures and content before conclusions can be drawn about characteristics that make for high-quality programs. Studies that compare the characteristics and performance of traditionally and alternatively prepared teachers over time will help clarify the complex issues concerning alternative programs.

Where Should Teacher Preparation Research Head?

The research we examined provides a starting point for efforts to better understand what would make for good teacher preparation. Most studies to date have looked at particular programs, courses, and students in single institutions.

We now need to undertake a new generation of studies and research programs that are designed to do the following:

- *Look across institutions, so that more general conclusions can be reached.* As a beginning, studies that describe what goes on in the courses and programs of the more than 1,300 institutions that prepare teachers would be useful.
- *Examine how specific parts of teachers' preparation affect their teaching practice, and ultimately, student achievement.* Studies that compare the relative importance of specific parts of teacher preparation (subject matter, pedagogy, clinical experiences) could be useful to those designing and revising teacher education programs.
- *Feature stronger research designs—for example, by using better measures, more explicit comparisons, and longer time frames.* For one thing, more sensitive measures that describe specific features of program content and quality are needed. Research programs should include comparisons among plausible alternatives. The interplay between research about particular contexts and research that seeks general conclusions across programs needs to be stronger. Teacher preparation research must be explicit about connections to the improvement of student achievement and about the contexts in which graduates of teacher preparation are working. Future research should also include longitudinal studies that examine the impact of teacher preparation over time, as well as the connections between teacher preparation, induction programs, and professional development opportunities.

Several domains for future research appear especially fruitful, given the current state of research understanding in the five areas reviewed:

- *Clarifying what kinds of subject matter preparation support classroom practice*—for example, by examining content, quality, and differences in subject matter preparation across subject areas and grade levels.

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- ***Identifying the role of pedagogical preparation***—especially, by studying the effects of "education methods" and "education foundations" courses on how prospective teachers approach and carry out their work in the classroom.
 - ***Characterizing high-quality clinical experience in K-12 schools***—for example, by investigating the effects of close, long-term connections between K-12 schools and teacher preparation programs, with special attention to implications for sound clinical training (and subsequent induction) of new teachers.
 - ***Figuring out what improvement policies accomplish***—by capturing how policies aimed at improving teacher education actually influence program components and what prospective teachers learn.
 - ***Demonstrating which kinds of alternate routes work, and how***—by studying how contrasting forms of "alternate route" preparation equip new teachers for the classroom and support their continuation in the profession.

Strategic investment in research initiatives might also move us toward answers to the key questions more quickly. In particular, current circumstances make it opportune to:

- ***Connect current examinations of local programs (e.g., through self-study) into multi-site research programs.*** The educational research community has great interest in careful examination of local programs in teacher education institutions and a growing capacity to do this well. Through funding for multi-site research programs, these individual efforts can be assembled into more powerful and crosscutting approaches to understanding teacher education.
- ***Mount several large-scale national studies.*** A small number of coordinated, large-scale studies could help provide a clearer picture of the national situation and increase the potential for linking features of teacher preparation programs with outcome data such as scores on teacher examinations.
- ***Learn from the current "natural laboratory" of accountability systems.*** The current wave of interest and experimentation with federal, state, and professional accountability systems brings many issues regarding teacher preparation into sharp relief. A range of different kinds of studies that help us learn about the conditions under which teacher education accountability systems lead to increases in teacher quality will inform not only policy audiences, but also those engaged in teacher education itself.

The potential is enormous for research to inform and lead attempts to renew and improve teacher education in the United States. By building on what we have done, and by conducting rigorous studies of important questions, the research community can do its part to ensure that a well-qualified teacher is available for every child, in every classroom.

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