EVALUATING AND IMPROVING TEACHER PREPARATION PROGRAMS

CONSENSUS REPORT

NATIONAL ACADEMY *of* EDUCATION

EVALUATING AND IMPROVING TEACHER PREPARATION PROGRAMS

Committee on Evaluating and Improving Teacher Preparation Programs

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Dedication

To Stafford L. Hood, whose work not only significantly contributed to the development of this consensus report but also influenced generations of educators and researchers. Thank you, Stafford, for a lifelong career committed to advancing the field of culturally responsive evaluation and bringing equity into program evaluation practices.

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Contents

Preface

With generous support from the Bill & Melinda Gates Foundation, the National Academy of Education (NAEd) undertook this consensus report on the evaluation and improvement of teacher preparation programs (TPPs). Specifically, this consensus report aims to (1) identify and disseminate best practices for evaluating and improving TPPs to promote teacher effectiveness and student achievement; (2) provide recommendations for the development of new models for evaluating and improving TPPs; (3) develop consistent evaluation strategies for TPPs, taking into consideration varied foci and settings; and (4) improve awareness, accessibility, and utilization of the research and recommendations assembled in this report by key stakeholders.

This peer-reviewed consensus report builds on the 2013 NAEd report *Evaluation of Teacher Preparation Programs: Purposes, Methods, and Policy Options*, which took initial steps toward providing stakeholders with an assortment of tools and methods for evaluating TPPs (Feuer et al., 2013). The 2013 NAEd report proposed three purposes for TPP evaluation: (1) supporting program improvement; (2) holding TPPs accountable; and (3) providing consumer information to prospective students of the TPP and their future employers. The 2013 report argues that any evaluation system must identify a primary purpose, acknowledging that other purposes may be worthwhile, but should be secondary. In addition to outlining evaluation purposes, the 2013 report proposed seven core principles of TPP evaluation that remain salient for this report (see Box 1-1 in Chapter 1) and discussed the entities responsible for conducting TPP evaluations:

(1) the federal government, (2) national non-governmental accrediting bodies, (3) state governments, (4) media outlets and other independent organizations, and (5) TPPs themselves. The 2013 report also identified common input and output measures used by these entities and weighed the strengths and limitations of each measure. This consensus report uses and updates the information from the 2013 report as a starting point for its recommendations.

This consensus report operated under the auspices of an interdisciplinary steering committee of scholars, researchers, and practitioners in teacher education, led by co-chairs Linda-Darling Hammond (Stanford University and Learning Policy Institute) and Kenneth Zeichner (University of Washington) and comprised Shari Albright (Charles Butt Foundation), Eva Baker (University of California, Los Angeles), Deborah Loewenberg Ball (University of Michigan), Eric Brown (National Education Association), Robert Floden (Michigan State University), Gloria Ladson-Billings (University of Wisconsin–Madison), John Papay (Brown University), Mary Vixie Sandy (California Commission on Teacher Credentialing), and Marla Ucelli-Kashyap (American Federation of Teachers). The steering committee guided the overarching project and its deliverables, conducted an extensive review of relevant materials, and ultimately reached a consensus on this report and its recommendations.

As its first action, this project re-published the 2013 NAEd report as a website that provides research-driven tools and information for stakeholders interested in evaluating and improving TPPs.[1] The website also highlights key information for the entities responsible for conducting TPP evaluations.

The steering committee commissioned a series of eight papers to inform its deliberations on key aspects of high-quality teacher preparation and evaluation methods that also support continuous improvement of the TPPs themselves. Table P-1 summarizes the eight areas examined by the commissioned paper series.[2]

Based on the commissioned paper series and an extensive review of the relevant literature, this report documents the consensus of the steering committee on the information provided as critical background (Chapters 1–8) to support its evidence-based recommendations (Chapter 9). This report provides recommendations not only on TPP evaluations and improvements but also on systemic changes required to improve teacher education as a profession. The committee intends this report

[1] The website is available at https://naeducation.org/2013-naed-report-evaluation-of-teacher-preparation-programs.

[2] The steering committee thanks the commissioned paper authors for their thorough, thoughtful, and insightful papers and contributions to this project. The commissioned paper series can be viewed and downloaded at https://naeducation.org/evaluating-and-improving-teacher-preparation-programs.

TABLE P-1 Commissioned Papers and Authors

Paper Topic	Author(s)
Links Among Teacher Preparation, Retention, and Teacher Effectiveness	*Matthew Ronfeldt*, University of Michigan
Landscape of Teacher Preparation Programs and Teacher Candidates	*Suzanne M. Wilson*, University of Connecticut *Shannon L. Kelley*, University of Connecticut
Landscape of Teacher Preparation Program Evaluation Policies and Progress	*Stafford L. Hood*, University of Illinois at Urbana-Champaign *Mary E. Dilworth*, Education Advisor *Constance A. Lindsay*, University of North Carolina at Chapel Hill
"Best Practices" for Evaluating Teacher Preparation Programs	*Marilyn Cochran-Smith*, Boston College *Emilie M. Reagan*, Claremont Graduate University
Evaluation of Clinical Component of Teacher Preparation Programs	*Etta R. Hollins*, University of Missouri–Kansas City *Connor K. Warner*, The University of Utah
Using Teaching Performance Assessments for Program Evaluation and Improvement in Teacher Education	*Charles A. Peck*, University of Washington *Maia Goodman Young*, University of Washington *Wenqi Zhang*, University of Washington
The Evolution of Accreditation as Professional Quality Assurance in Teacher Preparation	*Steven K. Wojcikiewicz*, Learning Policy Institute *Susan Kemper Patrick*, Learning Policy Institute
International Insights on Evaluating Teacher Preparation Programs	*Mistilina Sato*, University of Canterbury *Jane Abbiss*, University of Canterbury

to inform a range of stakeholders, including state and federal agencies, TPPs, practitioners, researchers, communities, and philanthropies. In addition to the extensive discussions, writing, editing, and vetting of this report by the steering committee, this report also underwent a rigorous peer review process overseen by the NAEd Standing Review Committee, who appointed independent reviewers with relevant academic and practical knowledge and expertise to ensure that the report adequately addresses the charge, includes sufficient evidence, and meets the NAEd's standards of publication. The committee thanks Judith Warren Little, Chair of the Standing Review Committee, and the peer reviewers: Michael J. Feuer, The George Washington University; Elham Kazemi, University of Washington; and Sharon Robinson, American Association of Colleges for Teacher Education (retired) for their valuable feedback and insight.

1

Introduction: The Critical Role of Teacher Preparation

Public education is critical to ensuring the democratic values of the United States. It is essential to the individual and collective well-being of the country, the development of an informed and engaged citizenry, and in preparing individuals to be economically self-sufficient. Equitable educational opportunities, which include the perspectives and experiences of all groups that compose society, are the cornerstone for a thriving democracy and economy—and teacher quality is one of the most influential in-school resources for improving student learning (see, e.g., Goldhaber, 2015; Rivkin et al., 2005). Consequently, highly qualified teachers prepared to teach a diverse student body are not only important but are one of the most necessary components for well-functioning public education.

The United States, however, falls short of this goal. Too many students do not have access to a steady succession of qualified, well-prepared teachers across their years of primary and secondary schooling, and too many teachers have not benefited from a high-quality preparation program followed by support for their continued professional growth. Some teachers have had no preparation at all and are entering the field on emergency permits of various kinds, issued where shortages exist; others have experienced inadequate preparation for the tasks they will face.

Furthermore, historically marginalized students have the least access to highly qualified teachers (Cardichon et al., 2020). Students of color, English learner students, and students from low-income families are often segregated in under-resourced schools with higher teacher turnover, more

inexperienced teachers, more individuals teaching on emergency or substandard credentials, and more individuals teaching in areas for which they are not certified than their peers.

Access to a well-prepared and diverse teaching faculty is a net good denied to many students. An equitable education system should ensure a socially, racially, and linguistically diverse and qualified faculty in *all* schools, providing learning benefits to *all* children. Teacher preparation programs (TPPs) can play a critical role in recruiting diverse cadres of teachers and preparing them for diverse and complex classrooms. However, there are many contextual and social factors influencing both TPPs specifically and public education generally that undermine achieving these goals. While this report focuses on equity concerns around student access to high-quality teaching, many of these concerns—such as the inequitable financing of education in the United States, inequitable access to resources (e.g., technology, buildings, books, and programming), patterns of segregation by race and class that have shaped school attendance, dynamics in teacher labor markets and teacher working conditions (including subpar salaries and teaching restrictions), and other macro-level factors—have combined to create long-standing systemic inequalities. Without key actors, including federal and state governments, addressing these societal and contextual factors, TPPs cannot fully meet the goal of producing diverse, highly qualified teachers available to all students.

CONCEPTUAL FRAMEWORK AND LOGIC MODEL GUIDING THE REPORT

The challenge at hand is to prepare all teachers to teach a culturally and linguistically diverse community of students—and adapt curriculum and instruction to include and teach *all* students. **A critical educational goal—one in which TPPs play a vital role—is to recruit, prepare, and retain a qualified and diverse teacher workforce, generating a supply of teachers that is responsive to demand to ensure that all students are taught by well-prepared, culturally responsive teachers.**

This report synthesizes evidence and provides recommendations about TPP improvement through a range of evaluative activities, including state program approval, program accreditation, and self-evaluations. As highlighted in the foundational 2013 National Academy of Education report *Evaluation of Teacher Preparation Programs: Purposes, Methods, and Policy Options*, seven core principles of TPP evaluation are incorporated throughout the report (see Box 1-1).

The focus of this report is both on the improvement of TPP evaluation and accreditation processes and how these processes—plus other

BOX 1-1
Principles for TPP Evaluation

Principle 1: The main goal of TPP evaluation is the continuous improvement of teaching quality and student learning.... Although program evaluation is important, it is not sufficient in itself to bring about improvements in teacher preparation, teaching quality, and student learning.

Principle 2: [T]he evaluation of TPPs will always include multiple systems operated by different groups with different purposes and interests.

Principle 3: Validity should be the principal criterion for assessing the quality of program evaluation measures and systems.

Principle 4: Any measure—or, for that matter, any TPP evaluation system that uses multiple measures—has limitations that should be weighed against potential benefits.

Principle 5: [D]ifferential effects of TPP evaluation systems—for diverse populations of prospective teachers and the communities in which they work—matter, and should be incorporated as a component of validity analysis and as a design criterion.

Principle 6: TPP evaluation systems should themselves be held accountable.

Principle 7: TPP evaluation systems should be adaptable to changing educational standards, curricula, assessment, and modes of instruction.

SOURCE: Adapted from Feuer et al. (2013).

actions initiated by colleges, universities, and TPPs themselves—can be employed to improve TPPs. However, the report situates TPPs in a larger social and political context. In doing so, it becomes obvious that TPPs cannot—without other entities, including federal and state governments, addressing factors outside of TPP control—solve the clear equity issue that historically marginalized students often do not have access to highly qualified teachers. Consequently, this report addresses the improvement of TPPs through recommendations focusing on (1) what individual TPPs and the agencies that evaluate them can do, and (2) how the enterprise of teacher education as a field-wide function can be improved by supporting policy development and public and private investments across a state or nation to ensure that all programs offer high-quality preparation and generate a well-prepared, diverse teacher workforce.

This report utilizes a conceptual framework (see Figure 1-1) to illustrate how policy and contextual factors influence both this critical educational goal and the TPPs striving to achieve it. Policy developments and investments at the federal and state levels; institutional support for TPPs; and improvements in compensation, working conditions, teacher

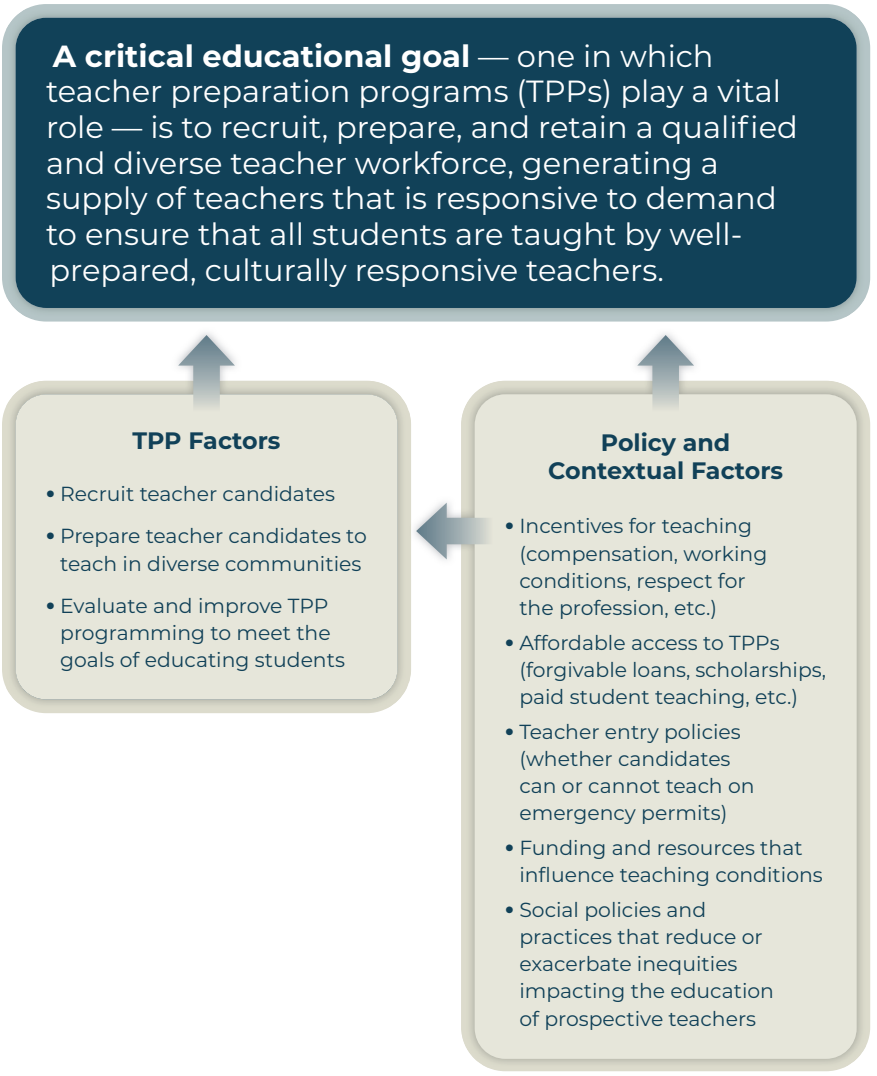

FIGURE 1-1 Conceptual framework: Policy, contextual, and teacher preparation program factors supporting the critical goal of education.

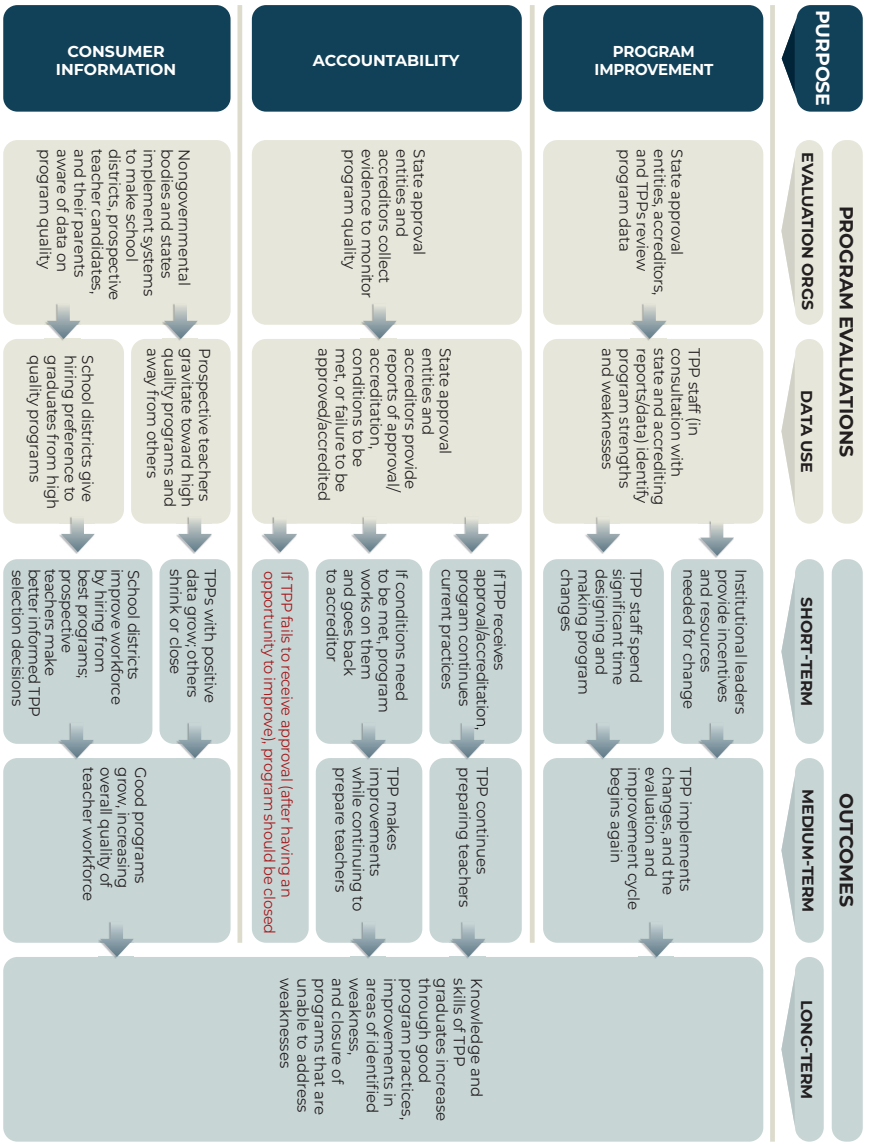

FIGURE 1-2 Logic model for evaluating and improving TPPs.

recruitment, and teacher retention all bear on the proximal and distal outcomes that evaluation is intended to influence.

This report is premised on the conviction that improvements in program evaluation will contribute to strengthened TPPs, which, in tandem with additional social policies ensuring an adequate supply of teachers who can access such programs, will improve equity outcomes for students and teachers. Equity in this context refers both to outcomes associated with a diverse, well-prepared, and stable teacher workforce and their capacities to teach in expert and culturally responsive ways. Indicators of progress toward these outcomes include all teacher candidates having access to high-quality preparation focused on the needs of schools and student populations; a diverse teacher workforce; recruitment and retention of qualified teachers in all communities; and ultimately, a future in which all students are taught by well-prepared teachers.

This report's primary focus is how TPP evaluation can lead to improvement, ensuring an adequate supply of well-qualified and diverse teachers—with the caveat that much of this work is dependent on factors outside of the control of TPPs or institutions of higher education (IHEs). Figure 1-2 provides a logic model, developed by the steering committee, for evaluating and improving TPPs. The model begins with the three purposes for TPP evaluation: program improvement, accountability, and consumer information (these three purposes of TPP evaluation are more fully outlined in Chapter 2). It then traces potential outcomes when each purpose is the subject of evaluation. The model then identifies the organizations that should conduct the evaluation, the data used (further expanded in Chapters 4 and 7), and evaluation outcomes. While the logic model differentiates the three purposes of TPP evaluations, these evaluation functions are interrelated. Evaluations that are used primarily for one purpose may also prove influential for other purposes.

AUDIENCE FOR THE REPORT

This report treats teaching as a public service of vital national importance. Similar to public service workers in fields like health care, public safety, and public administration, how teachers are recruited, selected, trained, and compensated is critical to the nation's well-being. Furthermore, as inequities in American education persist, the preparation and provision of qualified teachers for schools serving children living in poverty and from minoritized backgrounds must be a national priority. While the main concern for this report is the improvement of TPP evaluation, such improvement rests within a range of supportive federal and state policies and other initiatives that will improve teachers' access to

high-quality preparation and the ability of schools to hire qualified teachers. The audience for this report thus includes leaders engaged in the work of program improvement at TPPs (including program faculty and administration, state approval entities, and accreditation entities) as well as the larger education, philanthropic, and policy communities, including federal and state governments, that are critical to the improvement of teacher quality and availability.

DEFINITIONS OF TERMS

This report recognizes that the definitions of certain terms vary across TPPs and states. Therefore, to clarify some of these frequently used terms, this report defines them as follows:

- **Program faculty:** *Program faculty* includes all course instructors (tenured, non-tenured, adjunct, etc.), mentor teachers, program-based supervisors, and any others who provide instruction and support to teaching candidates.
- **Clinical experiences:** The term *clinical experiences* has different names across states and programs. In this report, *clinical experiences* refers to any opportunities in schools or communities for teacher candidates to observe and engage in the practice of teaching students and reflect on their impact on student learning. Within this broad term, there are different types of experiences, including early field experiences, practicums, community experiences, and final clinical experiences like student teaching, internships, and residencies.
- **Community partnerships** and **community-based programs:** *Community partnerships* are generally initiated by programs based in IHEs, districts, or nonprofits, whereas *community-based programs* are often initiated by and based in communities. In *community-based programs*, the conceptualization and development of the program are done with the full participation of community members.
- **Mentor teachers:** While the terms *mentor teachers* and *cooperating teachers* vary in use and meaning across TPPs, this report uses *mentor teachers* to refer to teachers supporting the work of teacher candidates in clinical experiences. *Mentor teachers* can model best practices and provide coaching to teacher candidates. Additionally, when a study or reference cited within this consensus report refers to mentor or cooperating teachers, the report remains faithful to the language used in the original reference.

- **Program-based supervisors:** *Program-based supervisors* refers to program-based faculty who work with teacher candidates during clinical experiences but are not teachers in schools. *Program-based supervisors* are also often called *university supervisors* or *coaches*. This report uses the broader term of *program-based* to include supervisors in non-university-based programs who are not teachers in schools.

ROADMAP FOR THE REPORT

Drawing on extensive evidence, this consensus report provides important information concerning the evaluation and improvement of TPPs (Chapters 1–8). The committee relied on these critical data and trends to provide its recommendations (Chapter 9) addressing the improvement of TPP approval and accreditation processes, the enhancement of TPP self-study, and system supports for TPP evaluation and teaching and teacher preparation as a whole.

Chapter 1, "Introduction: The Critical Role of Teacher Preparation," explains the crucial role of teacher preparation in the context of the U.S. education system and provides the conceptual framework and logic model that guide this report. Chapter 1 outlines that a critical educational goal—one in which TPPs play a vital role—is to recruit, prepare, and retain a qualified and diverse teacher workforce, generating a supply of teachers that is responsive to demand to ensure that all students are taught by well-prepared, culturally responsive teachers. This goal, however, cannot be accomplished by TPPs alone and requires policy and contextual support (e.g., incentives for teaching, affordable access to TPPs, and improved teaching conditions) from federal and state governments.

Chapter 2, "Purposes of Teacher Preparation Evaluation," outlines the three primary purposes for TPP evaluation: (1) supporting program improvement; (2) holding programs accountable to various constituencies; and (3) providing consumer information for multiple constituencies, including prospective TPP candidates, potential future employers from K–12 school districts hiring graduates, and policymakers as they seek to understand teacher supply and make investments in TPPs. This chapter examines the complexity, nuances, and interrelated nature of these three purposes.

Chapter 3, "Context and Characteristics of Teacher Preparation Programs," provides a description of the current teaching workforce in the United States, the complex set of programs that have emerged to prepare teachers, and enrollment trends across these programs. In the United States, teacher preparation is a highly variable enterprise—it is managed

by more than 50 states and territories and many models of TPPs are in use today. Chapter 3 highlights the differences across TPPs (i.e., traditional programs based in IHEs, alternative routes based in IHEs, and alternative routes not based in IHEs) and within these categories. This chapter further examines barriers in recruiting and retaining BIPOC[1] teachers who are significantly underrepresented in the profession and discusses the academic, social-emotional, and behavioral benefits that a racially diverse teacher workforce provides to all students.

Chapter 4, "How Teacher Education Is Currently Evaluated," describes the set of institutions and organizations involved in TPP evaluation, including the roles of state governments, national professional accreditation organizations, regional accrediting agencies, TPPs themselves, the federal government, and media outlets. Chapter 4 examines the complex interactions among these levels of governance, professional and regulatory bodies, TPPs, and communities that structure the field of TPP evaluation. Given the multiple evaluation objectives and goals of these entities, Chapter 4 also discusses strategies to lessen the burden of data collection on TPPs while ensuring the effective use of data to support program improvement.

Chapter 5, "Knowledge, Skills, and Dispositions Educators Need to Support Student Learning and Development," provides a research-informed framework to support engagement in whole child development, and thus high-quality teaching. High-quality teaching draws on three knowledge areas: (1) learners and learning, including human development which is embedded in sociocultural contexts, (2) subject matter and curriculum, and (3) critical aspects of teaching. These knowledge areas must then be combined with specific skills that teachers employ in their work, including (1) adaptive expertise; (2) reflection and diagnosis; (3) curriculum design and instruction; and (4) inquiry-oriented skills including observation, listening, questioning, and analysis. Finally, Chapter 5 identifies how teaching involves not only knowledge and skill but dispositions that inform relationships with students, including (1) empathy, (2) social-emotional capacities, (3) cultural competence, (4) commitment to equity, and (5) a teacher's sense of efficacy in their ability to successfully reach and teach all students.

Chapter 6, "Teacher Preparation Program Features Associated with Teacher and Teaching Quality," identifies the TPP characteristics associated with high-quality preparation based on the knowledge, skills, and dispositions necessary for effective teaching described in Chapter 5. Specifically, Chapter 6 examines the critical components of TPPs that serve

[1] For the purposes of this report, Black, Indigenous, and people of color (BIPOC) includes Black, Indigenous, Asian, Pacific Islander, and Latiné individuals.

as targets for evaluation, including (1) program coherence and alignment; (2) curriculum content; (3) instructional methods; (4) clinical experiences; (5) teacher candidate recruitment, selection, and support; and (6) faculty recruitment, selection, and support.

Chapter 7, "Using Evidence for the Evaluation of Teacher Preparation Programs," explores the key evidence and methods used to measure the components described in Chapter 6. For each component, in addition to examining the potential measures, Chapter 7 also provides guidance for collecting information useful for program improvement. Chapter 7 also highlights commonly used measures of three categories of program outcomes: (1) mastery of knowledge, skills, and dispositions; (2) teacher performance and practices in classrooms; and (3) labor market outcomes. In particular, Chapter 7 examines the use of knowledge-based licensure exams; teacher performance assessments; teacher candidate, completer, and employer surveys; value-added models; and classroom observations.

Chapter 8, "International Examples of the Evaluation of Teacher Preparation Programs," provides case studies from several countries where TPPs and systems of evaluation, together with supportive conditions, yield a qualified teacher workforce distributed equitably across national school systems. Chapter 8 highlights standards and models developed when teaching is a highly regarded profession, often resulting in a strong voice for teachers in the regulation of the profession. Chapter 8 also provides examples of evaluation processes that are treated as a systemic function of providing well-prepared teachers to all students rather than individual, disparate programmatic evaluations.

The report culminates with Chapter 9, "Recommendations for Teacher Preparation Program Evaluation." This report focuses on the improvement of TPPs by gathering useful information through a range of evaluative activities—including state program approval, program accreditation, and self-evaluation—to ultimately ensure that all students are taught by well-prepared, culturally responsive teachers. However, as noted throughout this report, TPPs are situated in a larger sociopolitical context and, as such, the federal and state governments must address contextual and policy factors outside the purview of TPPs to provide all teacher candidates with access to high-quality preparation and all students with access to qualified teachers. Thus, this report includes recommendations for both improving teacher preparation evaluation strategies and for systemic supports to ensure access to improved preparation for all teachers. Consequently, Chapter 9 provides 20 recommendations in the following four groupings to support the improvement of TPP evaluation: (1) improving TPP approval and accreditation; (2) enhancing TPP self-study; (3) system supports for TPP evaluation; and (4) system supports for teaching and teacher preparation.

2

Purposes of Teacher Preparation Evaluation

Teacher preparation program (TPP) evaluations serve different purposes for different audiences. The three primary purposes of TPP evaluation are (1) supporting program improvement; (2) holding programs accountable to various constituencies; and (3) providing consumer information for multiple constituencies, including prospective TPP candidates and their potential future employers. These purposes are at times overlapping—for example, state program approval, which is often categorized as an accountability tool, can lead to program improvement. Data collected to inform potential teacher candidates can also support state program approval. Internal self-study evaluation data can also provide relevant information for potential prospective teachers in choosing among TPP programs and can help future employers with hiring decisions.

Some countries and U.S. states have taken on the additional goal of evaluating the enterprise of teacher preparation to shape policy that can make improvements to the entire system, rather than focusing only on individual programs. Chapter 8, "International Examples of the Evaluation of Teacher Preparation Programs," includes a discussion of this holistic approach as well as evaluation focused only on individual programs.

As the practice of teaching has developed, these purposes have become complex, nuanced, and interrelated. This chapter provides a close examination of the three primary purposes for TPP evaluation in the United States.

PROGRAM IMPROVEMENT

TPP evaluation is used for self-improvement. Such evaluation is often initiated by the program itself and yields information about the program's strengths and weaknesses (see this report's logic model [Figure 1-2]), which can then be used by the institution's administration, faculty, and staff to guide innovation and change.

Internal evaluation for program improvement requires robust resources and supports, an organized and incentivized faculty (including representatives from the program's clinical components), and input from local communities to develop an evaluation plan that specifies what type of data to collect and how to analyze it to produce information useful to stakeholders. Ideally, data should be collected from program administration and faculty, program candidates, representatives of the districts and schools where clinical experiences occur and where program graduates often teach, and the communities served by the schools. Then, the data should be analyzed so the results can be used to identify areas of the program in need of improvement. With a better understanding of how teacher candidates are performing in different dimensions of the TPP, program faculty can develop and implement data-driven plans to connect these insights to specific program features and improve program coherence; curriculum content; instructional methods; clinical experiences; candidate recruitment, selection, and supports; and faculty recruitment, selection, and supports (see Chapter 6 for more details about program features). The entire field of education will then reap the benefit of these efforts through improved teaching practices, student learning and development, and responsiveness to student and community needs.

Evaluations for program improvement should map the goals, policies, and practices of the TPP to its desired outcomes. For example, if a TPP goal is to produce a diverse teaching workforce that will meet local school district hiring needs, the TPP should identify these needs and examine the impact of the TPP's recruitment and preparation efforts on achieving the stated goal. Next, the TPP should use the data gleaned from examining its recruitment and preparation efforts to identify areas of need and strategies for improvement. If the TPP determines that it is not meeting the needs of local school districts or the communities they serve, it could form pipeline programs with local high schools and non-profit community organizations to recruit teacher candidates; increase engagement with school districts to identify their hiring needs; ensure that its programming is aligned with the needs of the school districts (e.g., enhancing programming for teachers of English learner students if there is a shortage in the district); and work with local communities to ensure that it is preparing candidates to engage in curriculum and instruction that are culturally responsive to local K–12 students.

Evaluations for program improvement can examine activities within the TPP and see how intentions for teacher preparation curriculum and pedagogy compare with the TPP's current work. Such evaluation, for example, might involve faculty observing each other's instruction and looking at course evaluations or supervisor ratings to see whether and to what degree courses and clinical experiences match the TPP's goals. Program improvement efforts can also examine data or activities beyond the TPP, looking to see how many candidates enter and stay in the teaching profession, how they evaluate their preparedness once they arrive in the classroom, and how they then teach in their classrooms.

ACCOUNTABILITY

Program evaluation is used for accountability purposes. Accountability involves monitoring program quality and providing reliable information to the public and policymakers, hopefully allowing for programs to address identified deficiencies and to improve continuously. This information includes attention to professional standards of practice, as well as other goals like supply needs and workforce diversity. Accountability-driven evaluations also aim to spur program improvement. Consequently, in addition to assessing institutional progress for state program approval and professional accreditation, accountability evaluations should contribute evidence that can be used for program improvement efforts.

TPPs seek to advance high-quality and equitable student learning through effective teaching. Holding TPPs accountable for the teachers they prepare requires addressing both excellence and equity, including both general criteria for effective teaching and specific concerns for candidates' abilities to teach a wide range of diverse learners (Feuer et al., 2013).

This report's logic model (see Figure 1-2) outlines the process of evaluation for accountability purposes, launched in conjunction with non-governmental accreditation or state program approval. Typically, an external agency requests that a TPP assemble information relevant to established program standards, which are reviewed during a site visit by teams of experts. Increasingly, the information gleaned from such a site visit is supplemented with outcome data (see a fuller discussion on using evidence of program outcomes in Chapter 7). This type of evaluation has three possible outcomes: (1) the TPP is accredited or approved and no further action is required; (2) the TPP is required to institute changes recommended by the visiting team while it continues to operate; or (3) the TPP fails to meet approval, usually after having an opportunity to improve, leading to its closure. This process benefits the entire field of education as TPPs address the improvements identified in the evaluation—leading to

higher-quality TPPs—as well as through the gradual winnowing of consistently low-performing programs, which leads to improved outcomes throughout the K–12 education system.

Four constituencies have specific interests in the TPP evaluation process: (1) governmental entities, (2) professional organizations, (3) TPPs and institutions, and (4) the public and communities (see Table 2-1).[1]

First, governmental entities, particularly at the state level, use evaluations for a variety of purposes. States must ensure that TPPs are meeting state and local supply needs by educating candidates with knowledge about the subjects and specialties districts need (e.g., teachers of English learners, students with disabilities, mathematics, sciences). States must also ensure that TPPs are preparing teachers who are equipped with the knowledge, skills, and dispositions (see Chapter 5) necessary to help cultivate a well-educated citizenry; and attending to alignment with state standards of learning and curricular requirements. Additional governmental actors at both the federal and district levels also play a role in accountability. For instance, districts need to ensure that TPPs are meeting

TABLE 2-1 Uses of TPP Evaluations by Different Constituencies

Governmental Entities[a]	Professional Organizations	TPPs and Institutions	Public and Communities
• Ensuring TPPs meet state and local teacher supply needs • Identifying knowledge, skills, and dispositions of teachers who can help cultivate a well-educated citizenry • Aligning TPP curriculum and goals with state standards and requirements	• Protecting the welfare of clients (students and prospective teachers) • Establishing the knowledge base of the profession to enable practice that meets professional standards • Enforcing standards of professional practice and conduct	• Assessing the general academic quality and professional quality of TPPs through internal and external reviews to ensure quality and stimulate program improvement	• Communicating information about TPPs to local communities • Engaging with local community members—who represent the diversity of the community—to learn about their needs and concerns regarding teacher preparation

[a] Governmental entities primarily refer to state governments, as well as federal and district-level governmental actors who also play a role in TPP evaluations.

[1] This report recognizes these constituencies use evaluative information for purposes broader than accountability; however, they are included here as accountability is a primary use for these constituencies.

supply needs and producing teachers prepared to teach their students. The federal government also produces reports on the status of teaching and teacher preparation that inform field-wide trends; however, there has been criticism concerning the frequency and practicality of such reporting for use by TPPs and states (see Chapter 4 for further discussion).

Second, some professional organizations, two of which are recognized by the Council for Higher Education Accreditation—the Council for the Accreditation of Educator Preparation (CAEP) and the Association for Advancing Quality in Educator Preparation (AAQEP)—conduct evaluations that judge TPP quality with respect to their own organizational standards. In some cases, these evaluations lead to a decision about whether to accredit a TPP. As discussed further in Chapter 4, unlike professions such as medicine or law, professional accreditation is voluntary for TPPs in most states.[2] Professional organizations that are part of the accreditation process—including organizations that represent teachers and teacher educators, as well as subject-matter associations—place the welfare of K–12 students as a primary goal and, through their accreditation processes, ensure that TPPs are producing teachers who have mastered the knowledge base and met professional standards. Professional organizations also enforce standards of professional conduct and ensure that TPPs attend to such standards in their curricula. Evaluative guidance, however, may conflict when, for instance, state requirements for teaching certain skills are in conflict with professional organization standards.

Third, TPPs and institutions review the academic and professional quality of TPPs to ensure quality and stimulate program improvement. Some institution of higher education (IHE)-based TPPs conduct self-studies—often as a part of required institutional reviews of their programs, and others have done so collaboratively as part of a network of institutions seeking similar quality improvements (see Chapter 4 for further discussion).

[2] Since 2016, CAEP has accredited more than 400 education preparation providers (Council for the Accreditation of Educator Preparation, 2021b). As of 2022, 9 states (Alabama, Alaska, Arkansas, Connecticut, Delaware, Mississippi, Ohio, Virginia, and West Virginia) and the District of Columbia require CAEP accreditation, 3 states (Louisiana, South Carolina, and South Dakota) require CAEP accreditation for public TPPs but not for private TPPs, and 6 states (Idaho, Kansas, Montana, North Dakota, Oklahoma, and Tennessee) adopted CAEP standards for state approval but their accreditation processes may differ from CAEP's (C. Koch, personal communication, May 5, 2022). As of 2024, AAQEP has accredited 124 TPP providers and has regular members in 35 states and territories. Out of roughly one-quarter of the states that mandate national accreditation, 9 states have active partnerships with AAQEP where, based on specific state policies, TPPs can choose AAQEP or other accreditors to fulfill the accreditation requirement (M. LaCelle-Peterson, personal communication, April 1, 2024). See Chapter 4 for more details on professional accreditation.

Fourth, TPPs should be responsive to the communities they operate in and the communities where their graduates will ultimately teach. TPPs should prepare teacher candidates to teach *all* students, including those from both dominant and non-dominant cultures and communities. TPPs should understand the funds of knowledge and needs of the communities their teacher candidates are likely to serve by engaging in open dialogue and culturally sensitive communications with community members. However, this aspect of accountability is currently underdeveloped (Cochran-Smith & Reagan, 2021). In particular, historically marginalized communities have had few opportunities to engage with TPPs, and some teachers and teacher educators harbor deficit perspectives of students from groups other than their own which detrimentally impacts their students (Hood et al., 2022). Recruiting teachers from non-dominant communities, employing culturally responsive pedagogy and curriculum, and other programmatic elements often benefit from community engagement. Ensuring accountability to the public and communities requires increasing the diversity of stakeholders in program development and oversight, as well as ensuring that communities are engaged in conversations that define TPP quality.

Tensions can arise among and between these four constituencies and accountability purposes served by TPP evaluation. For instance, as noted above, professional organization standards or recommendations may conflict with state requirements. Similarly, the goals and desires of some community members could also conflict with state standards, and not all community members may agree about what qualities and aspects of the TPP or teacher preparation, in general, are most important. Additionally, some TPPs prepare teachers for service across the United States, rather than for a specific community, and as such may not be responsive to state standards or specific community needs.

CONSUMER INFORMATION

Program evaluation is also used to provide information to prospective teachers and their families when choosing a TPP; to future employers from K–12 school districts when hiring graduates; and to policymakers as they seek to understand teacher supply and make investments in TPP quality, design, or expansion.

Prospective teacher candidates can use program information to determine whether a TPP is a good fit, including information about the performance of the TPP, the opportunities offered by the TPP (e.g., clinical experiences and placements, duration, and design), the demographics of faculty and current students, information about specialty programs (e.g., English language development/bilingual education or special education

certifications), and the overall orientation of the program (e.g., if the TPP emphasizes mastering particular skills and developing capacity for analyzing classroom events)—although geographical and other factors are also often important determinants (see Chapter 3 for a fuller discussion). Prospective candidates want to know that the TPP they choose offers courses and access to licensing in their interest areas and may also want to ensure both that clinical experiences occur in the kind of schools where they want to teach and that the TPP will prepare them to work with diverse students and families. For example, the California Commission on Teacher Credentialing has a variety of dashboards with information about its 86 accredited IHEs and approximately 600 TPPs.[3] Teacher candidates can use these dashboards to filter by TPP type, credential programs (e.g., special education, English language development/bilingual education), accreditation status, location, and other criteria. Texas also has an interactive map of all TPPs, filterable by many factors, where potential candidates can obtain pertinent information about individual programs they may want to consider.[4] While U.S. states are required to provide some of this information by Title II of the Higher Education Act, candidates benefit from a clear and easy presentation and inclusion of information like the percentage of graduates currently employed and how long they stay in the profession.

School districts and schools can use evaluation information to ensure that TPPs are preparing and licensing teacher candidates who meet their staffing and instructional needs. Local education agencies, schools, and communities want assurances that prospective teachers possess relevant local knowledge and are prepared to teach their students and children in ways that honor and respect their local communities. State policymakers may want to see if they have a sufficient number of programs and slots for high-demand fields, whether programs are sending candidates into classrooms with training that enables them to stay, and how different kinds of programs are evaluated by their candidates.

Additionally, as demonstrated in this report's logic model (see Figure 1-2), consumer information about program characteristics and quality can trigger positive change as TPPs, candidates, and employers obtain information that allows them to compare program features to the considerations that are important to them.

[3] The California Commission on Teacher Credentialing dashboards can be viewed at https://www.ctc.ca.gov/commission/reports/data/approved-institutions-and-programs.

[4] The Educator Preparation Programs in Texas map can be viewed at https://www.arcgis.com/apps/dashboards/8fdeed6e29b741ba8bac151ac023186d.

3

Context and Characteristics of Teacher Preparation Programs

In examining the evaluation of teacher preparation programs (TPPs), it is crucial to understand the complex systems in which these evaluations occur, as both TPPs and teacher candidates vary widely. This chapter provides a broad overview of the TPP landscape; examines the teacher workforce, including its distribution across districts and schools; describes the range of TPP types and pathways that have emerged; and considers key patterns in TPP enrollment.

Teacher preparation is a highly variable enterprise in the United States, both because it is managed by more than 50 states and territories and because a large variety of models have proliferated—in part to address inadequate financial support for candidates, preparation programs themselves, or, in many states, the compensation that would recruit an adequate supply of well-prepared teachers (Podolsky et al., 2016; Sutcher et al., 2016). This program variability includes a range of undergraduate and graduate pre-service teacher education models and alternative route pathways.

Moreover, programs differ not only between but also within program types. For example, traditional 4-year undergraduate programs differ in structure, content, and quality and are regulated differently across the 50 U.S. states and territories (Wilson & Kelley, 2022).[1] Neither national

[1] For a fuller discussion of the context and characteristics of TPPs, see the NAEd commissioned paper *Landscape of Teacher Preparation Programs and Teacher Candidates* (Wilson & Kelley, 2022), available at https://naeducation.org/evaluating-and-improving-teacher-preparation-programs-commissioned-paper-series.

nor state-level data tell the full story of TPPs, which are often localized and oriented to respond to individual communities. Across the variety of TPPs, candidates generally take courses in subject matter and pedagogy, child development and learning, curriculum and assessment, and teaching high-need students—including students with disabilities and English learners. However, specific course content varies and may or may not be connected to clinical experiences. Student teaching, within TPPs, can range from nonexistent to a few weeks or a full year. Student teaching might also occur in a carefully selected setting like a professional development school or a residency program, or in settings where state-of-the-art practice or mentoring are not employed and where there is little coherence between student teaching and classroom instruction.

National and state-level demographics data about the teaching workforce can be misleading as teaching is often a localized profession—many teachers are employed close to where they grew up or went to college and labor market factors such as licensure, seniority, tenure, and pensions often create barriers for teachers to move between states or districts (Boyd et al., 2005; National Academies of Sciences, Engineering, and Medicine, 2020; Reininger, 2012). Additionally, despite efforts to diversify the profession, the majority of public school teachers are still female (76.8 percent) and White (79.9 percent) (see Table 3-1; National Center for Education Statistics, 2022a). Teachers of color are underrepresented in the teaching profession—compared to their overall populations in the United States—and most teachers of color work in low-income, high-minority, and urban schools, which often have fewer resources to serve high-need students (Ingersoll et al., 2019). Research has demonstrated that the combination of the lack of resources and poor working conditions in high-poverty and high-minority schools lead to higher teacher turnover rates (Loeb et al., 2005).

THE TEACHING WORKFORCE

Teaching has been characterized as "a localized, situated profession, and averages across the nation obscure important regional differences" (Wilson & Kelley, 2022, p. 4). Historically teachers tend to stay within the same region where they grew up or received their degrees (Boyd et al., 2005; National Academies of Sciences, Engineering, and Medicine, 2020; Reininger, 2012). Although more recent national survey data show that about 25 percent of teachers do move to another state to teach (Sutcher et al., 2016), regulation of the teaching profession occurs at the state level, which works to preserve local markets by making it difficult for teachers to maintain their licenses and pensions when they cross state lines (Goldhaber et al., 2015). Increasing teacher mobility within the United States and new interstate licensing compacts are beginning to change

this historical trend, but considerable regional differences in the teaching workforce remain.

As noted in Table 3-1, there are approximately 4 million teachers in the United States, and the overwhelming majority (87 percent) teach in public schools. The majority of public school teachers are female (76.8 percent) and White (79.9 percent) (see Table 3-1; National Center for Education Statistics, 2022a). Whereas more than half of U.S. students come from minoritized backgrounds, this is true of only about one-fourth of the teachers (National Center for Education Statistics, 2022c). Black, Indigenous, Asian, Pacific Islanders, and Latiné individuals continue to be significantly underrepresented in the teaching workforce as compared to both the general and K–12 student populations.[2] In 2020–2021, 6.1 percent of public school teachers were Black, 9.4 percent were Hispanic, 2.6 percent were Asian and Pacific Islanders and 0.4 percent were American Indian/Alaska Native (see Table 3-1; National Center for Education Statistics, 2022a). This compares to a K–12 public school student population that was 45.3 percent White, 14.9 percent Black, 28.4 percent Hispanic, 5.8 percent Asian/Pacific Islander, and 0.9 percent American Indian/Alaska Native in 2021–2022 (National Center for Education Statistics, 2022b).

While the demographics alone demonstrate the underrepresentation of BIPOC[3] teachers in schools, these data still mask the extensive segregation of teachers *between* schools. As Bireda and Chait (2011) report, as of 2010 approximately 40 percent of U.S. public schools had no teachers of color *at all*. Teachers of color continue to be vastly underrepresented in most parts of the United States, as they are concentrated in urban areas (U.S. Department of Education, 2016). While evidence (see the section "Recruiting and Retaining BIPOC Teachers" in this chapter) shows that Black teachers support significant achievement and attainment gains among Black students, all students, regardless of race, will benefit from the education supplied by a diverse teaching workforce, as these teachers provide a distinctive set of role models and can create broader, shared cultural awareness among the faculty (Blazar, 2021).

Minority Serving Institutions (MSIs)—which include Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions, Tribal Colleges and Universities, and Asian American and Native American Pacific Islander-Serving Institutions—are crucial for recruiting and

[2] For the purposes of this report, the following categories for race and ethnicities are used: White, Black, Indigenous, Asian, Pacific Islander, and Latiné. When a study or reference cited within this consensus report refers to a racial/ethnic group, the report remains faithful to the language used in the original reference.

[3] For the purposes of this report, Black, Indigenous, and people of color (BIPOC) includes Black, Indigenous, Asian, Pacific Islander, and Latiné individuals.

TABLE 3-1 Distribution of Teachers in Public and Private Schools, by Selected Teacher Characteristics: 1999–2000, 2011–2012, and 2020–2021

Selected Teacher Characteristic	Public Schools[a]			Private Schools		
	1999–2000	2011–2012	2020–2021	1999–2000	2011–2012	2020–2021
Total Teachers	3,002,000	3,386,000	3,764,000	449,000	465,000	510,000
Gender						
Male	754,000 (25.1%)	802,000 (23.7%)	873,000 (23.2%)	107,000 (23.9%)	117,000 (25.2%)	115,000 (24.7%)
Female	2,248,000 (74.9%)	2,584,000 (76.3%)	2,890,000 (76.8%)	342,000 (76.1%)	348,000 (74.8%)	351,000 (75.3%)
Race/Ethnicity						
White	2,532,000 (84.3%)	2,773,000 (81.9%)	3,007,000 (79.9%)	402,000 (89.5%)	411,000 (88.3%)	389,000 (83.3%)
Black	228,000 (7.6%)	231,000 (6.8%)	228,000 (6.1%)	17,000 (3.7%)	17,000 (3.6%)	17,000 (3.7%)
Hispanic	169,000 (5.6%)	264,000 (7.8%)	355,000 (9.4%)	21,000 (4.7%)	24,000 (5.2%)	38,000 (8.2%)
Asian	48,000 (1.6%)	61,000 (1.8%)	89,000 (2.4%)	7,000 (1.6%)	9,000 (1.8%)	11,000 (2.5%)
Pacific Islander	[b]	5,000 (0.1%)	6,000 (0.2%)	[b]	[c]	[c]
American Indian/Alaska Native	26,000 (0.9%)	17,000 (0.5%)	16,000 (0.4%)	2,000 (0.6%)	[c]	[c]
Two or More Races	[b]	35,000 (1%)	62,000 (1.6%)	[b]	4,000 (0.8%)	9,000 (2.0%)
Age						
Under 30	509,000 (17.0%)	518,000 (15.3%)	535,000 (14.2%)	87,000 (19.3%)	78,000 (16.7%)	64,000 (13.6%)
30 to 39	661,000 (22.0%)	979,000 (28.9%)	1,016,000 (27.0%)	101,000 (22.4%)	112,000 (24.0%)	106,000 (22.7%)
40 to 49	953,000 (31.8%)	849,000 (25.1%)	1,073,000 (28.5%)	131,000 (29.2%)	110,000 (23.8%)	117,000 (25.0%)
50 to 59	786,000 (26.2%)	783,000 (23.1%)	841,000 (22.3%)	106,000 (23.5%)	99,000 (21.3%)	101,000 (21.8%)
60 and Over	93,000 (3.1%)	256,000 (7.6%)	300,000 (8.0%)	25,000 (5.7%)	66,000 (14.2%)	79,000 (16.9%)

TABLE 3-1 Continued

Selected Teacher Characteristic	Public Schools[a]			Private Schools		
Years of Teaching Experience						
Less Than 3	325,000 (10.8%)	244,000 (7.2%)	274,000 (7.3%)	73,000 (16.3%)	52,000 (11.2%)	60,000 (12.9%)
3 to 9	854,000 (28.5%)	1,104,000 (32.6%)	1,095,000 (29.1%)	144,000 (32.0%)	150,000 (32.3%)	131,000 (28.1%)
10 to 20	865,000 (28.8%)	1,265,000 (37.4%)	1,404,000 (37.3%)	137,000 (30.6%)	147,000 (31.6%)	148,000 (31.8%)
More Than 20	958,000 (31.9%)	772,000 (22.8%)	991,000 (26.3%)	95,000 (21.2%)	116,000 (24.9%)	127,000 (27.3%)
Level of Instruction						
Elementary	1,602,000 (53.3%)	1,726,000 (51.0%)	1,884,000 (50.1%)	261,000 (58.1%)	245,000 (52.8%)	239,000 (51.2%)
Secondary	1,401,000 (46.7%)	1,659,000 (49.0%)	1,880,000 (49.9%)	188,000 (41.9%)	219,000 (47.2%)	227,000 (48.8%)

[a] Public school teachers include teachers in public charter schools.
[b] Not available.
[c] Reporting standards not met.
SOURCE: Adapted from the National Center for Education Statistics (2022a).

preparing future teachers of color. In 2019–2020, MSIs awarded 20 percent of all education degrees in the United States and 36 percent of those awarded to BIPOC candidates (Branch Alliance for Educator Diversity, 2022). "Significantly, MSIs awarded 48% of all education degrees in education awarded to Hispanics, 38% of those conferred on Asian Americans, 56% of those awarded to Native Hawaiians and Pacific Islanders, 41% awarded to Native Americans, 26% awarded to African Americans, [and] 22% to two or more races" (Branch Alliance for Educator Diversity, 2022, p. 18).

The teaching workforce should be representative of our large, diverse nation. Ideally, all schools, regardless of their socioeconomic, racial, linguistic, or ethnic composition, should be staffed by a diverse group of certified teachers. *The fact that many schools are still segregated by race and class should not result in similarly segregated teachers.* While the field of education's imperative should be to recruit and retain more BIPOC teachers to address the current imbalance in teacher demographics, it must, with equal urgency, recruit diverse teachers to staff all U.S. schools.

TEACHER PREPARATION PROGRAMS AND PATHWAYS[4]

Prospective teachers in the United States may enter the profession through various types of pre-service programs and may have little or no training, particularly in the face of current and persistent teacher shortages. Pre-service programs include traditional 4-year undergraduate programs; joint programs, where teacher candidates spend 5 or 6 years preparing to teach and are awarded bachelor's and master's degrees in subject matter and teaching; or 1- or 2-year postbaccalaureate programs which may result in a certificate and/or a master's degree. According to the National Teacher and Principal Survey, as of 2017–2018, close to one-third of new teachers were entering the profession as teachers of record without having completed a TPP—some through alternative routes, where they train while teaching, and others on emergency permits with no preparation at all (Carver-Thomas et al., forthcoming). Additionally, there is a stark difference in the number of uncertified and inexperienced teachers in schools with high versus low enrollment rates of students of color. As of 2016, schools serving a majority of students of color are four times more likely to recruit uncertified teachers (Cardichon et al., 2020). While 9.1 percent of teachers in schools with low enrollment of students of color are beginning teachers, in schools with high enrollment of students of color, this value nearly doubles to 17.2 percent (Cardichon et al., 2020; see Chapter 6 for a more expansive discussion of the importance of teacher education).

In conformance with Title II of the Higher Education Act, this report categorizes TPPs into the following general groupings: (1) traditional programs based in institutions of higher education (IHEs); (2) alternative route programs based in IHEs; and (3) alternative route programs not based in IHEs. These program categorizations are fluid, and research has demonstrated that there is as much program-related variation within as across these program categories (Grossman & Loeb, 2008; Humphrey & Wechsler, 2005, 2007; S. M. Wilson et al., 2001). This report defines the three TPP categories as follows:

- **Traditional programs based in IHEs:** Traditional IHE-based programs are those in which teacher candidates complete all program coursework and supervised clinical experiences and are awarded a standard, beginning-level teaching certificate— often alongside a bachelor's or master's degree—before serving as a

[4] The teacher preparation system includes not only TPPs but also professional development programs for certified teachers conducted by IHEs, districts, unions, community and industry partners, and formal and informal opportunities for teachers to continue to grow and develop as educators. This report limits its focus to considering only pre-service TPPs.

teacher of record in a classroom. This traditional route includes a full complement of pre-service courses and clinical experiences as a condition of licensure. While most traditional programs begin at the undergraduate level, a growing number of programs are now also available at the graduate level. In addition, some innovative approaches, such as residency programs, have created postbaccalaureate approaches that are responsive to district and labor market needs.

- **Alternative route programs (IHE- and non-IHE-based):** Alternative route programs are typically postbaccalaureate programs where, after a short introductory program, teacher candidates are appointed as teachers of record in classrooms before they have completed their preparation. These alternative route candidates complete most or all coursework while they are teaching and may receive mentoring while on the job. Alternative route candidates, while serving as teachers of record, are enrolled in a TPP that is either IHE-based (e.g., housed in an IHE) or non-IHE-based (e.g., established by school districts, governmental agencies, private providers, and teachers' unions or associations). There are a variety of features in alternative route programs, and some do include the prominent features of traditional TPPs—like student teaching.

In the approximately 2,000 IHEs that offer teacher preparation in the United States, many house multiple programs—including traditional pre-service programs, alternative routes, and institution-based options that include innovative recruitment and retention strategies and promising new practices (U.S. Department of Education, 2022).

Teacher residencies are one example of innovative pre-service programs that are partnerships between districts and organizations (e.g., universities, states, teachers' unions, community-based organizations, and non-profit organizations) that hold shared responsibility for teacher preparation (Hollins & Warner, 2021).[5] In residency programs, residents complete their coursework and supervised clinical experiences before becoming teachers of record, and often receive additional coursework and support in their early years of teaching. Initially, the goals of teacher residency programs were to reduce teacher turnover and increase the number of and better prepare teachers who were interested in teaching in urban schools. These models have subsequently expanded beyond urban

[5] For a fuller discussion of teacher residencies and the clinical component of TPPs, see the NAEd commissioned paper *Evaluating the Clinical Component of Teacher Preparation Programs* (Hollins & Warner, 2021), available at https://naeducation.org/evaluating-and-improving-teacher-preparation-programs-commissioned-paper-series.

areas and to address subject-matter areas where there are teacher shortages (Hollins & Warner, 2021). Although the exact number of residency programs is not recorded, the National Center for Teacher Residencies network included 47 programs in 26 states in 2023, and residency programs continue to expand across the United States (National Center for Teacher Residencies, 2023; Will, 2023). Data from California indicate that there are at least 70 residency programs in the state and Texas has funded at least 85 residency partnerships (Patrick et al., 2023; Texas Education Agency, 2022).

Teacher residencies typically include the following design principles: strong district–program partnerships; integration of coursework and clinical experience; and a full-year teaching residency in the classroom of an expert mentor teacher (Pathways Alliance, 2022). In some residency programs, cohorts are placed in "teaching schools" where master teachers and others model quality teaching. In most programs, financial support for tuition and living stipends are offset by commitments to teach in partner district schools for 3–5 years. Although residencies were initially designed as postbaccalaureate programs, states like Texas and West Virginia have funded undergraduate residencies to ensure a full year of student teaching. These undergraduate residencies do not always include the district relationship and financial commitment that graduate-level residencies do. While districts incur high costs for investing in teacher residencies, early evidence suggests that teacher residencies improve student achievement and reduce teacher attrition rates (Worley & Zerbino, 2023).

Some higher education systems have also provided innovative solutions to challenges like the shortage of teachers in the fields of science, technology, engineering, and mathematics (STEM). For example, UTeach, launched at the University of Texas, prepares STEM teachers through a combination of content preparation in math and science with strong clinical practice opportunities designed by faculty. This program, an IHE-based innovation, developed a set of design principles that eventually led to its adoption by 45 other IHEs, including HBCUs (Wilson & Kelley, 2022).

"Pipeline programs," also known as "grow-your-own" programs, seek to capitalize on the local nature of the teacher labor market by recruiting middle and high school students as well as non-traditional candidates such as paraprofessionals, career changers, and local community members (Wilson & Kelley, 2022). Grow-your-own programs are conceptualized and developed by educators and communities to meet a variety of needs and often target niches in the teacher supply and demand market including Black male, rural, bilingual, special education, or STEM teachers. Such programs can offer a variety of incentives for enrollment, including financial assistance and support for completing a teaching degree.

Nearly all U.S. states have pipeline programs that are sponsored by the states themselves, school districts, and community-based organizations.[6]

Established in the 1980s–1990s, alternative route programs were created to recruit teaching candidates who already had a bachelor's degree, often to address shortages in difficult-to-staff subjects and schools.[7] Specifically, they are often geared toward a teaching need (e.g., urban or rural education placements, STEM teachers) or a group of candidates (e.g., career changers, retired military personnel, school district paraprofessionals). A central premise of many of these programs was to create shorter, more accessible teaching pathways than the "traditional" routes (Grossman & Loeb, 2008). For this reason, alternative route programs vary widely. In some states, alternative route programs are permitted to reduce course requirements and waive the clinical component, whereas in other states teacher candidates must complete all of the same coursework, even if they do so while working as a teacher of record (Boyd et al., 2006). The most substantial points of difference between alternative route programs and traditional programs are that many alternative route programs offer little to no supervised student teaching and that most states allow working as a teacher of record to meet the clinical experience requirements, often with little supervision or mentoring. Consequently, many teachers who progress through an alternative route program have not had the opportunity to work under the guidance of a skilled and experienced teacher, to observe a veteran teacher teach in any continuous way, or to be closely mentored by one (Wilson & Kelley, 2022).

Wilson and Kelley (2022) identify several alternative pathways that exist to address teacher supply needs. One of the more well-known alternative pathways, Teach for America (TFA), is a recruitment and placement model premised on recruiting academically high-performing baccalaureate graduates to teach in urban and rural school districts. TFA programming varies widely, based both on the school district and the local alternative IHE-based program that TFA partners with. Typically, TFA recruits are provided with an initial summer orientation, a few weeks of student teaching, and some follow-up mentoring in the first year of teaching. During this period, recruits take coursework at an IHE while they teach as the teacher of record (typically on an intern credential). Other programs, such as The New Teacher Project, use a similar model to TFA.

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[6] For a 50-state scan, see *Grow Your Own Teachers: A 50-State Scan of Policies and Programs* (Garcia, 2020).

[7] The differences between the definitions of traditional and alternative route programs are not always clear. For instance, in some states, all postbaccalaureate programs were called alternative route programs—regardless if they were pre-service or in-service programs. Over time, alternative route programs became focused on shorter pathways into teaching with much of the learning taking place on the job.

Texas Teachers of Tomorrow, a for-profit, non-IHE-based alternative program, has grown fivefold since 2017, enrolling more than 50,000 students in a self-paced, online-only program provided at a modest cost (Partelow, 2019). In addition to affordability and flexibility, the program advertises connection with school districts and the opportunity to begin teaching before completing the program. However, the program's recent enrollment surge has not been accompanied by a high completion rate (Partelow, 2019). In 2022, the Texas State Board for Educator Certification placed Texas Teachers of Tomorrow on probation, requiring significant improvements in key areas to ensure high-quality preparation, such as matching teacher candidates with quality mentor teachers (Richman, 2022a). A recent study of online-only TPPs in Texas reveals that teachers from these programs tend to have lower and delayed effectiveness, accompanied by higher turnover rates, when compared to teachers who completed other types of programs (Kirksey & Gottlieb, 2023).

Beginning in the 2000s, new Graduate Schools of Education (nGSEs) emerged as a novel type of teacher education provider. These programs offer both pre-service and in-serve routes—depending on the provider—and are regionally or nationally accredited or state-approved, non-university-based higher education institutions that grant master's degrees and prepare and certify teachers (Cochran-Smith et al., 2020). Some nGSEs began with links to individual charter schools or networks of charter schools (Stitzlein & West, 2014; Zeichner, 2016). While different from a traditional university program, some nGSEs are also distinct from alternative route programs that offer fast-tracked certification pathways, as some nGSEs aim to be more traditional degree-granting schools using pre-service programs and residency models. As of 2020, there were 10 nGSEs offering teacher preparation in the United States (Wilson & Kelley, 2022). While more research is needed to study the implications of nGSEs, some have been controversial. Some supporters praise nGSEs for their emphasis on practice and innovation but critics raise concerns over, in some cases, the lack of a solid theory and evidence base to support practice, quality assurance, and attention to equity issues (Cochran-Smith et al., 2020; Zeichner, 2016).

TEACHER PREPARATION PROGRAM ENROLLMENT TRENDS

For the 2021–2022 academic year, a total of 2,217 teacher preparation providers offered 26,576 state-approved TPPs, enrolling 600,011 students and producing 156,089 program completers (U.S. Department of Education, 2023a). Figure 3-1 presents the distribution of TPPs by type in 2020–2021, of which approximately 71.4 percent are traditional

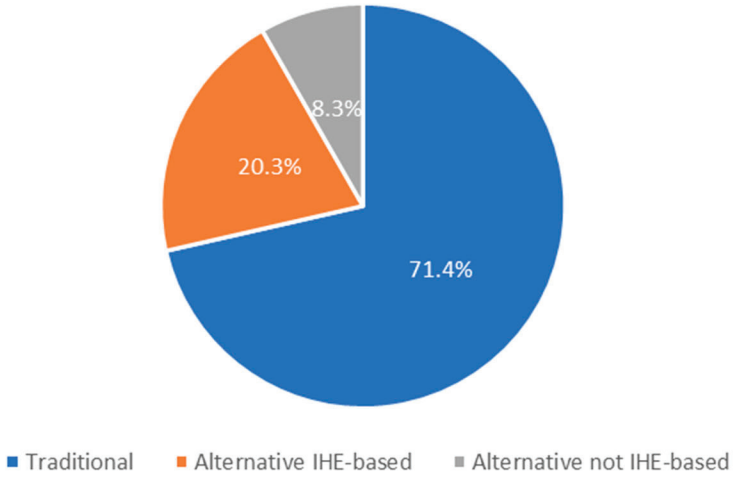

FIGURE 3-1 Percentage of programs by type, academic year 2020–2021
SOURCE: Authors' calculations based on U.S. Department of Education (2022).

IHE-based programs, 20.3 percent are IHE-based alternative route programs, and 8.3 percent are alternative route programs not based in IHEs. An IHE often offers a set of programs that share infrastructure, staffing, and components—in 2020–2021, 19,834 programs were housed in just 1,710 IHEs.

Each TPP is uniquely identified by state certification domain in terms of grade level (e.g., pre-K, early elementary, middle, or secondary), subject matter (e.g., language arts, mathematics, science, or chemistry), or student population (e.g., students with disabilities, English learners) (U.S. Department of Education, 2022; Wilson & Kelley, 2022).

In 2010–2011, 683,903 students were enrolled in some form of TPP, declining to 600,011 students in 2021–2022 (U.S. Department of Education, 2022). As Figure 3-2 demonstrates, in 2018, most of these enrollees were in traditional TPPs, but there has been a significant decline in traditional TPP enrollment since 2010, coupled with a slight rise in non-IHE alternative route program enrollees.

The number of alternative route programs and their enrollment varies by state. Some states have no alternative route providers (e.g., Maine, Ohio) while others have a significant number. For example, Texas has close to 100 alternative route providers and they attract more new entrants each year than traditional programs do (U.S. Department of Education, 2022). Moreover, in some densely populated states, more than one-third

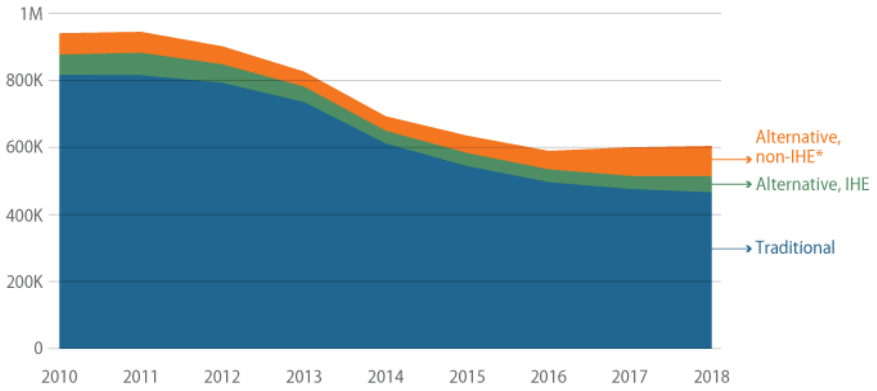

FIGURE 3-2 Enrollment in teacher preparation by program type, 2010–2018.
SOURCE: Partelow (2019).

of newly trained teachers attend alternative route programs—both IHE-based and non-IHE-based (Evans, 2010; Wilson & Kelley, 2022).

Across the United States, districts and schools are struggling to meet the demand for qualified teachers. For instance, as of 2022, approximately 200,000 U.S. classrooms were either vacant or staffed by substitutes or other instructors who were not certified for their positions (Nguyen et al., 2022). These classrooms are disproportionately located in schools that serve a majority of minoritized students from low-income households. Moreover, teachers who lack adequate preparation (e.g., key coursework and student teaching), in addition to being less effective on average, are also two to three times more likely to leave the teaching profession than fully prepared teachers (Ingersoll et al., 2014; Podolsky et al., 2016).

Teacher shortages in certain subjects appear in nearly all states. For 2021–2022, the U.S. Department of Education reported statewide shortages of mathematics teachers in 42 states and the District of Columbia; special education in 46 states and the District of Columbia; science in 39 states and the District of Columbia; world languages in 35 states and the District of Columbia; and career and technical education and teachers of English learners in 30 states and the District of Columbia (National Conference of State Legislatures, n.d.).

Broader social and economic conditions have been shown to influence declines in TPP enrollment and interest in teaching as a profession. For instance, the COVID-19 pandemic placed significant new demands on teachers, creating additional stressors and making the need for well-prepared and adaptable new teachers even more urgent (Diliberti et al., 2021).

While teacher preparation candidates, similar to teachers, tend to be White and female, candidate demographics do vary by TPP type. Specifically, "[t]eachers prepared through alternative preparation programs also skew older than traditional programs (Humphrey & Weschler, 2007), are more diverse (Kee, 2012; Shen, 1998), and are more likely to be career changers or STEM majors (Kee, 2012)" (Wilson & Kelley, 2022, p. 20). Teacher candidates in traditional, IHE-based programs are primarily White (64.3 percent), whereas in alternative, IHE-based programs the percentage of White candidate is 51.9 percent and in alternative, non-IHE-based programs the percentage is 40.2 percent (Wilson & Kelley, 2022). Based on 2020–2021 data, at least 29.4 percent of individuals enrolled in traditional IHE-based programs were BIPOC teacher candidates, compared to 35.5 percent in alternative routes not based at IHEs and 41.6 percent in IHE-based alternative routes (U.S. Department of Education, 2022; see Figure 3-3 for a more complete demographic breakdown).[8]

RECRUITING AND RETAINING BIPOC TEACHERS

BIPOC teachers are significantly underrepresented within the profession, particularly in comparison to their percentage of the overall population. BIPOC teachers provide role models to students and bring an important cultural knowledge base to teaching that benefits all students academically, social-emotionally, and behaviorally (Blazar, 2021).

BIPOC teachers are also often found to support stronger learning in their students. Evidence for this claim is primarily associated with Black teachers teaching Black students: Black student outcomes ranging from achievement to graduation and college-going rates are markedly better when students have had Black teachers (Cheng, 2019; Egalite et al., 2015; Gershenson et al., 2016, 2021). In addition, some research has demonstrated that the assignment of a Black teacher to Black students not only increases the students' self-efficacy and engagement but also increases test scores and decreases chronic absenteeism for *all* students (Blazar, 2022).

Economic and financial issues partially account for BIPOC teacher candidates' low TPP enrollment and completion rates. As explained by Wilson and Kelley (2022), teachers generally suffer from a "wage penalty"—teachers earn significantly less than other college-educated workers, and the gap between teachers and other college-educated workers has only

[8] These data should be interpreted with caution because in traditional IHE-based and alternative IHE-based programs approximately 6 percent of the TPP enrollees did not report their race/ethnicity; however, approximately 25 percent of alternative non-IHE-based TPP enrollees did not report their race/ethnicity.

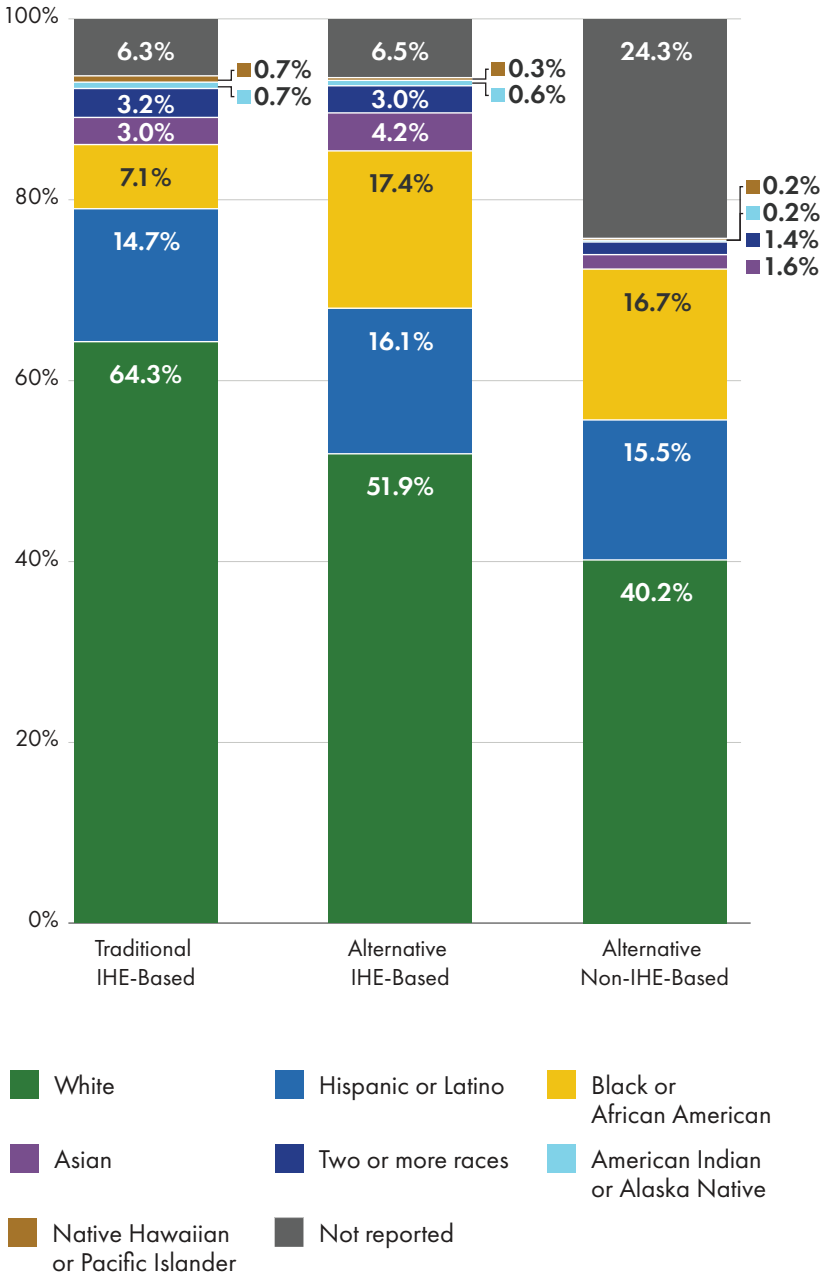

FIGURE 3-3 Race/ethnicity of TPP enrollees by program type, academic year 2020–2021.
SOURCE: Authors' calculations based on U.S. Department of Education (2022).

grown over the past 10 years (Allegretto, 2023). Teachers earn about 74 percent of what other college-educated workers earn, after controlling for the difference in the work year (Allegretto, 2023; Carver-Thomas & Patrick, 2022), although this gap varies by state. Compounding the financial issues presented by the wage penalty, teachers from historically minoritized backgrounds are also more likely to graduate from TPPs with larger student loan debt than their White peers. For example, a 2019 Center for American Progress report showed that, when compared to their White peers, Black and Latinx teacher candidates are more likely to borrow money through federal student loans, and when they become teachers, hold more student loan debt (Fiddiman et al., 2019). Furthermore, as Black teachers are more than twice as likely to teach in cities with higher costs of living than their peers, more than 65 percent report dissatisfaction with their salary compared to 52 percent of peer teachers. As a result, Black teachers are more likely to leave the profession to seek higher-paid positions (Carver-Thomas & Darling-Hammond, 2017b).

These financial burdens and wage disparities help explain the appeal of alternative route programs that reduce entry costs. Teachers of color are disproportionately enrolled in such programs, possibly because candidates can earn a salary while enrolled (Daniels, 2022; Wilson & Kelley, 2022).

> [T]his is especially true for candidates of color who are least able to afford college or graduate school without a salary and carry larger loans. In the meantime, Pell grants have shrunk in value and Perkins loans for graduate school were discontinued. (Wilson & Kelley, 2022, p. 25)

Alternative route programs, however, have significantly higher attrition rates (e.g., teachers leaving the profession), even after controlling for other factors like salaries and working conditions (Carver-Thomas & Darling-Hammond, 2017a, 2019). Research on teacher loan forgiveness and service scholarship programs suggests that meaningful financial benefits increase the recruitment and retention of high-quality teachers (Podolsky & Kini, 2016). Therefore, to recruit and retain a high-quality, diverse workforce, it appears critical to enhance the financial supports that allow all candidates to access the highest quality preparation, increasing the likelihood of their long-term success.

BIPOC candidates' entry into teaching is affected not only by their choice of TPP but also by other reasons that BIPOC teacher candidates and teachers do not remain in the teaching profession. Ingersoll (2004) described the "leaky bucket"—the phenomenon of BIPOC teacher candidates' or teachers' decisions to leave the program or profession for a variety of reasons, including financial support, program support, and human

capital (e.g., mentor teachers). Wilson and Kelley (2022) update the phrase to the "leaky pipeline," with critical points that could lead to the loss of teacher workforce diversity, including "(a) postsecondary enrollment; (b) enrollment in education programs; (c) postsecondary completion; (d) entering the workforce; and (e) teacher retention" (p. 25).

Studies show that the leaky pipeline effects yield a dwindling supply of BIPOC teachers, and new and innovative policies and programs are needed to remedy this problem. For example, data from 2012–2013 and 2013–2014 show that bachelor's degree completion rates were lower for Black and Hispanic students when compared to their White peers (U.S. Department of Education, 2016). While 73 percent of White students majoring in education completed their bachelor's degree within 6 years, only 42 percent of Black students and 49 percent of Hispanic students pursuing the same degree did so. Research and internal data collected by TPPs point to issues including loan debt, family responsibilities, institutional barriers, a lack of personal connectedness, and a lack of strong preparation as reasons that BIPOC students do not complete their bachelor's degree (Wilson & Kelley, 2022).

High attrition rates among BIPOC teachers are also influenced by their placement. BIPOC teachers are more likely to be placed in underresourced, high-need schools than their White peers (Ingersoll et al., 2019). BIPOC teachers have reported that their administrators were often unsupportive when teachers requested assistance and even exacerbated issues through punitive measures directed at both students and teachers (Stanley, 2021). Carver-Thomas and Darling-Hammond (2017b) found that, in addition to unsupportive school cultures and conditions, mentoring opportunities are also less available to Black teachers. Working and organizational conditions also appear to be strong predictors of BIPOC teachers leaving the teaching profession, as schools with more positive working conditions—like teacher autonomy, collective faculty decision making, and higher faculty input—tend to demonstrate lower levels of BIPOC teacher turnover (Ingersoll et al., 2019). For example, evidence from qualitative studies suggests that community-building efforts, like providing mentoring opportunities and creating affinity groups can create an effective support system where Black teachers feel empowered and affirmed "and consequently improve the retention rate of Black teachers" (Mason et al., 2021).

Consequently, the data demonstrate that financial constraints (both the cost of attending TPPs as well as teachers' subpar salaries when compared to other professions), program type (traditional versus alternative and particularly alternative IHE-based versus alternative non-IHE-based),

and working conditions are strong predictors of teacher recruitment, completion, and attrition and the negative consequences of these factors disproportionately affect BIPOC teacher candidates and teachers. However, as noted in this chapter in the section "Teacher Preparation Programs and Pathways," some new pathways into teaching—including teacher residency programs and grow-your-own programs—are bolstering BIPOC recruitment without lowering entry requirements, preparing a more diverse group of candidates that are well supported financially and educationally, and are resulting in higher retention rates. As discussed in subsequent chapters, while there are excellent examples of some of these new pathways, each program needs to be evaluated in terms of its specific program features and implementation.

4

How Teacher Education Is Currently Evaluated

The decentralized nature of both K–12 and higher education in the United States also extends to program approval and accreditation of teacher preparation programs (TPPs) and teacher licensing. As a result of this decentralization, numerous entities—including state governments, national professional accreditation, regional accrediting agencies, TPPs, the federal government, and media outlets and other independent organizations—are involved in evaluating TPPs, each with varying objectives and goals. The primary entities in teacher preparation evaluation are state agencies that approve programs and allow them to operate, and voluntary professional accrediting agencies that provide an additional measure of quality assurance based on standards that have been broadly considered by the profession. These evaluating bodies partially rely on the judgments of regional accrediting agencies that approve universities as a whole (not just the TPPs), often as a prerequisite to program approval or accreditation. Additionally, these evaluating bodies require self-study of the processes they manage, and many TPPs also routinely engage in self-study for purposes of improvement. In recent years, the federal government has also sought a role in teacher education evaluation, and media outlets and other independent organizations have rated TPPs in various ways.

TPPs undergo different evaluations conducted by these entities for different purposes, using different data sources and methods and resulting in different consequences. Although streamlining such a system would be desirable, a more practical approach, given the decentralized nature of education and the different purposes each evaluating entity

serves, would be to ensure some common data collection to reduce the burden on TPPs, allowing for additional focus on the use of data for improvement purposes.[1]

This chapter discusses the roles of the six primary entities engaged in evaluating TPPs: (1) state governments; (2) national professional accreditation; (3) regional accrediting agencies; (4) TPPs; (5) the federal government; and (6) media outlets and other independent organizations. It also describes their responsibilities, requirements, and common measures.

STATE GOVERNMENTS

States have the primary responsibility for establishing teacher policies, including standards for TPP approval and requirements for teacher licensing. States exercise authority over teacher licensure (often also called certification), and, through program approval processes, permit graduates of state-approved TPPs to be recommended for licensure by the TPPs (Feuer et al., 2013; Ludlow, 2013). Although this approach was at one time sufficient to enable candidates to be licensed and enter practice, a range of licensing exams in most states add an additional process for becoming a teacher.

In addition to the legislature, states typically exercise authority over teacher certification and TPP approval through state departments of education that are overseen by a state board of education or a board of regents. About 15 states have an independent professional standards board that takes on these responsibilities, analogous to the state professional standards boards in law, medicine, and other fields (National Association of State Directors of Teacher Education and Certification, 2019).

State teaching certification requirements differ in the amount and substance of coursework and length of time spent in clinical experiences, including student teaching (Townsend & Bates, 2007). Moreover, there are different certification requirements within states based on subject-matter requirements and labor market demands. Standards are sometimes lowered to engage teachers when there are shortages (e.g., emergency or alternative certifications).

Increasingly, states have moved from a focus on inputs—such as the number and type of courses and the number of weeks of student teaching required—to a focus on competency- and performance-based systems. This shift in focus to competency- and performance-based standards was encouraged by the federal government in the 1970s and 1980s, and states

[1] This chapter draws in part on the analysis in the NAEd commissioned paper *The Evolution of Accreditation as Professional Quality Assurance in Teacher Preparation* (Wojcikiewicz & Patrick, 2022), available at https://naeducation.org/evaluating-and-improving-teacher-preparation-programs-commissioned-paper-series.

began instituting such standards in the 1990s when the National Board for Professional Teaching Standards developed standards that articulated what teachers should know and be able to do (National Board for Professional Teaching Standards, 2016; Zeichner, 2012). The Interstate Teacher Assessment and Support Consortium then developed a version of standards for state licensure, and this version was adopted or adapted by more than 40 states (Strauss, 2011). Many state systems now articulate the competencies or performance expectations for teachers and often backward map these into standards for program approval and licensure.

To measure these standards for program approval and licensure, several types of measures beyond the typical reporting and site visits have been adopted by states. The Teacher Work Sample, an early performance assessment, was adopted by Oregon in the mid-1980s and then by a consortium of TPPs across 10 states starting in 1999 (Giovannetti, 2012; Schalock & Schalock, 2011). California, meanwhile, piloted its Performance Assessment of California Teachers, a forerunner to current teacher performant assessments (TPAs), in 2002–2003, which also spread to several other states before those states joined together to create the edTPA (Darling-Hammond et al., 2013). The edTPA focuses on assessment in three areas: planning, instruction, and assessment (edTPA, n.d.). Since its national launch in 2013, edTPA has been integrated into numerous state systems across the country. Educational Testing Service has also developed a standards-aligned performance assessment, the Praxis Performance Assessment for Teachers (PPAT), launched in 2015, which includes tasks focused on knowledge of students and the learning environment, assessment, designing instruction, and implementing/analyzing instruction (Educational Testing Service, 2017).

In addition to performance assessments, several states have launched efforts to collect and report results from surveys of graduates, employers, supervisors, or mentors about how well candidates' programs prepared them in many domains of teaching (Wojcikiewicz & Patrick, 2022). The teaching domains in these surveys are typically mapped to standards and competencies articulated by the state as critical for licensure. For example, the California Commission on Teacher Credentialing fields an annual survey for all state TPP program completers both when they exit the program, en route to a preliminary credential, and 2 years later after induction, en route to a clear credential. The survey asks program completers to evaluate their preparation in aspects of teaching aligned with the California Standards for the Teaching Profession and related Teacher Performance Expectations. The state collects and analyzes the data and returns both summary data and the data files to TPPs for their own use.

States have also become more concerned about whether TPPs are supporting candidates' entry into and retention in teaching. In a 2015 U.S. Government Accountability Office (GAO) survey of all 50 states

and the District of Columbia, 24 states reported that they used completer placement rates in their assessment of at least some traditional TPPs, and 16 states reported that they used the "amount or proportion of TPP completers who stay in the teaching field" in their assessment of at least some traditional TPPs (U.S. Government Accountability Office, 2015; Wojcikiewicz & Patrick, 2022, p. 20). For example, Colorado's Education Preparation Program Dashboard displays the percentage of an initial teaching licensure program's completers who obtain teaching positions in Colorado public schools, whether those completers are teaching within their trained field, the average student characteristics being taught by those completers (e.g., what percentage of completers are teaching in schools with a high proportion of English learners), and retention and attrition rates (i.e., the percentage of completers who remain teaching in Colorado public schools or who have left teaching positions in Colorado public schools).[2] Similarly, the North Carolina Department of Public Instruction releases the percentage of completers from every TPP within the state who are teaching within North Carolina public schools in a given time frame after graduation.[3]

Some states also require graduates' teacher evaluation ratings or the value-added scores of their students as a basis for TPP evaluation. The 2015 GAO report referenced above noted that 17 states reported using classroom observation ratings in their assessment of traditional TPPs while 15 reported using student achievement results (U.S. Government Accountability Office, 2015). The use of student achievement measures was incentivized by the federal government at that time (Bleiberg et al., 2023). However, the Every Student Succeeds Act, which replaced No Child Left Behind at the end of 2015, expressly prohibited the Secretary of Education from prescribing teacher evaluation systems for states (ASCD, 2015), and now fewer states use these ratings in TPP evaluation.

Table 4-1 illustrates the types of data used for TPP approval by states as reported in the 2015 GAO report. In many states, there are differences in how data are collected and applied for traditional TPPs versus alternative route programs (Holston, 2020; Putman & Walsh, 2021). In the GAO report, 49 states reported they reviewed data about traditional TPPs as part of their approval process, while only 43 states reported reviewing data about alternative programs (U.S. Government Accountability Office, 2015). The GAO report found that the pass rate on state licensure assessments was the most used metric with 48 states using it to evaluate

[2] The Colorado Department of Education Educator Preparation Program Report Dashboard can be viewed at https://www.cde.state.co.us/code/eppreport.

[3] The North Carolina's Educator Preparation Program Dashboard can be viewed at https://www.dpi.nc.gov/educators/educator-preparation/epp-performance.

TABLE 4-1 Data Used for Teacher Preparation Program Approval by States

	Traditional Programs		Alternative Programs	
Data Type	Used to Evaluate All	Used to Evaluate Some	Used to Evaluate All	Used to Evaluate Some
Licensure assessment pass rates	48	1	35	3
Candidate performance assessments from pre-service clinical practice	29	4	21	4
TPP graduation and/or completion rates	29	3	27	3
Surveys of some or all recent completers' satisfaction with the preparation they received from the TPP	27	6	20	5
Surveys of K–12 schools' satisfaction with the performance of recent TPP completers (completed by principals, district personnel, or others)	23	8	18	5
TPP completer placement rates	19	5	17	4
Teacher evaluation results for recent completers teaching in public schools within the state	16	1	13	3
K–12 student assessment results to measure teacher effectiveness for recent completers teaching in public schools within the state	14	1	12	2
Amount or proportion of TPP completers who stay in the teaching field	13	3	12	2

SOURCES: Wojcikiwicz & Patrick (2022, p. 17), adapted from U.S. Government Accountability Office (2015).

all traditional programs and 35 states using it to evaluate all alternative programs. Additionally, for traditional programs, over half the states reported using candidate performance assessments, graduation/completion rates, or completer surveys as part of their approval processes with smaller numbers of states using these measures for alternative programs.

Additionally, as the data in Table 4-1 suggest, not all TPPs are held accountable to the same state standards. For example, some states allow full-time teaching without mentored supervision to count as clinical practice. Within a state, the variations in how standards apply to alternative route programs may create loopholes where these programs are

not necessarily held to the rigorous standards traditional programs are subject to. And some states allow alternative route programs to operate for periods of time under provisional approval without meeting the state standards.

State legislatures also operate in ways that can sometimes exempt certain programs from agency rules. For example, Texas state statutes and regulations are particularly permissive, allowing online and multi-state operators to proliferate. Of particular concern are large for-profit alternative route programs serving individuals who are teachers of record. Although enrollment in programs run by for-profit organizations increased by close to 300 percent from 2010–2011 to 2018–2019, the number of completers rose by only 37 percent (King & Yin, 2022). Texas also includes the most providers rated by the state as low-performing or at risk (U.S. Department of Education Office of Postsecondary Education, 2022). Texas has also identified most of its districts as "innovation" districts, which can hire teachers with no certification at all (Richman, 2022b). In 2021–2022, only 28 percent of teachers entering the Texas workforce earned a standard certificate after completing a full complement of coursework and student teaching (Bland et al., 2023). Recently, Florida's legislature has also permitted military veterans with no teacher preparation or teaching experience to become teachers of record (Cardona & Trotta, 2022). Similarly, Arizona passed legislation in 2022 that allows those without a bachelor's degree to teach while attending degree programs (Arizona S.B. 1159, 2022).

Despite expectations developed by state agencies for program approval and licensure, the exemptions illustrated above demonstrate how students can still be taught by teachers who do not meet state-based standards. Nationally and in these states, teachers who graduate from alternative non-institution-of-higher-education (IHE)-based programs that are held to less rigorous state standards—or who enter teaching without any preparation—disproportionately teach in schools within historically marginalized communities. Funneling underprepared teachers into schools that are already struggling with a lack of high-quality teachers and a high teacher turnover rate (which also leads to less productive professional communities and lower achievement for students) perpetuates harmful impacts on students and may be in violation of federal and state law (see, e.g., Cardichon et al., 2020; Rahman et al., 2017; *Renee v. Duncan*, 2010).

NATIONAL PROFESSIONAL ACCREDITATION

Another primary vehicle to assess TPP quality—national professional accreditation—is carried out by non-governmental organizations

recognized by the Council for Higher Education Accreditation (CHEA), a non-governmental association of degree-granting colleges and universities that recognizes institutional and programmatic accrediting organizations. Historically, regional bodies provide institution-level accreditation, while national accreditation organizations provide profession- or subject-specific programs with their accreditation. In most states, national professional accreditation for education is a voluntary program-level process, unlike medicine, nursing, or law, which requires accreditation in nearly all states (Wojcikiewicz & Patrick, 2022).

Currently, two organizations recognized by CHEA—Council for the Accreditation of Educator Preparation (CAEP) and the Association for Advancing Quality in Educator Preparation (AAQEP)—provide voluntary national accreditation, along with Teacher Prep Inspection (TPI-US), which is less utilized than CAEP and AAQEP and not recognized by CHEA. CAEP—the primary body that provides voluntary national accreditation—has accredited 423 education preparation providers since 2016 (Council for the Accreditation of Educator Preparation, 2021b). Since its inception, CAEP has provided accreditation to traditional and alternative route providers, including those that are not IHE-based. As of 2022, 9 states (Alabama, Alaska, Arkansas, Connecticut, Delaware, Mississippi, Ohio, Virginia, and West Virginia) and the District of Columbia require CAEP accreditation; 3 states (Louisiana, South Carolina, and South Dakota) require CAEP accreditation for public, but not private, TPPs; and 6 states (Idaho, Kansas, Montana, North Dakota, Oklahoma, and Tennessee) adopted CAEP standards for their state approval processes but their accreditation processes may differ from CAEP's (C. Koch, personal communication, May 2, 2022). As of 2024, AAQEP has accredited 124 TPP providers and has regular members in 35 states and territories. Out of roughly one-quarter of the states that mandate national accreditation, 9 states have active partnerships with AAQEP where, based on specific state policies, TPPs can choose AAQEP or other accreditors to fulfill the requirement (M. LaCelle-Peterson, personal communication, April 1, 2024). From 2013–2023, TPI-US has conducted more than 300 TPP inspections in approximately 24 states (TPI-US, 2023).[4]

Non-governmental accreditation standards have evolved over time. Program standards have moved from standards that placed heavy emphasis on collecting information related to program resources and inputs (such as faculty-to-student ratios) to standards or competency-based

[4] For a fuller discussion of TPP evaluation landscape, see the NAEd commissioned paper *Landscape of Teacher Preparation Program Evaluation Policies and Progress* (Hood et al., 2021), available at https://naeducation.org/evaluating-and-improving-teacher-preparation-programs-commissioned-paper-series.

indicators of what teacher candidates should know and be able to do, with greater emphasis on the interactions between teaching and learning (Wojcikiewicz & Patrick, 2022). This emphasis on competency-based indicators is coupled with a turn toward evidence that captures teacher candidate proficiency in enacting desirable practices and, more recently to evidence that links such practices to student outcomes. In part, this development has been fueled by the growing knowledge base about effective teaching, which increasingly provides an evidence-driven base for TPP practice.

Additionally, effective TPP accreditation requires standards and processes developed in consultation with the larger teaching profession (e.g., National Education Association, American Federation of Teachers), subject-matter communities (e.g., National Council of Teachers of English), state education departments, and constituents in the broader education communities. CAEP accreditation is rooted in standards and processes that have been collaboratively developed by representatives of professional organizations, including teachers, teacher educators, and state leaders (e.g., the National Education Association and the American Association of Colleges for Teacher Education) (Wojcikiewicz & Patrick, 2022). The coalition of professional organizations that supported the National Council for Accreditation of Teacher Education—CAEP's predecessor—illustrated this tradition by engaging inputs from the wider education community (Feuer et al., 2013). Similarly, the AAQEP standards were developed with input from a national representation of faculty and staff from higher education, P–12 educators and leaders, state education departments, and/or independent standards boards (M. LaCelle-Peterson, personal communication, November 15, 2023).

Both CAEP and AAQEP promote an inquiry-oriented accreditation process and provide flexibility for TPPs to make choices about what evidence will support their request for accreditation. However, evidence of completer performance and program outcomes are required, in one form or another, by both national TPP accreditors (see Table 4-2). Although different states and accreditors utilize different data sources, there are similarities to the performance and outcome data typically required as part of TPP assessment, such as the requirements for CAEP and AAQEP accreditation (Wojcikiewicz & Patrick, 2022; U.S. Government Accountability Office, 2015).

CAEP's standards require three program impact components—completer effectiveness, employer satisfaction, and completer satisfaction—that capture completers' performance when they are working as educators. CAEP gives discretion to TPPs to determine exactly how to measure each type of impact. AAQEP standards require TPPs to provide multiple measures that capture candidate and completer performance

TABLE 4-2 Performance-Based/Outcomes-Based Standards and Evidence Requirements for CAEP and AAQEP Accreditation Processes

Standard	Suggested Measures
Panel A: CAEP's Performance-Based/Outcomes-Based Reporting Standards (Council for the Accreditation of Educator Preparation, 2021a)	

4.1 Completer Effectiveness	Measures of student learning growth of program completers who are now employed as teachers and their professional knowledge, skills, and dispositions in classrooms.
	
	Measures of student learning growth can be drawn from data such as:
	● State-level data of student performance (e.g., student growth measures, value-add measures)
	● Performance portfolios
	● Case study
	
	Measures of professional knowledge, skills, and dispositions in classrooms can be drawn from data such as:
	● State-level data of teacher performance (e.g., teacher evaluations)
	● Focus groups/interviews
	  ○ Completers
	  ○ P–12 students
	  ○ Observers
	● Observations of completers
	● Surveys

4.2 Satisfaction of Employers	Measures of employer satisfaction or employment outcomes for completers who are now employed as teachers, such as: ● Employer satisfaction surveys ● Focus groups or interviews with detailed methodology ● Employer satisfaction case study
4.3 Satisfaction of Completers	Measures of completers' perception of their preparation and its relevance to their responsibilities on the job. Perceptions can be gathered through: ● Completer/Alumni Satisfaction surveys ● Focus groups or interviews with detailed methodology ● Employer satisfaction case study ● State proprietary measure (administered by state entities)

continued

TABLE 4-2 Continued

Panel B: AAQEP's Performance-Based/Outcomes-Based Reporting Standards (Association for Advancing Quality in Educator Preparation, 2023)	
1. Candidate/Completer Performance	Multiple measures of candidate and completer knowledge and ability, including direct performance measures that address this question: At the end of the program, are completers ready to fill their target professional role effectively? These measures must include data from multiple perspectives, including program faculty, P–12 partners, program completers, and completers' employers. TPPs must include direct measures of candidate performance in a field or clinical setting appropriate to the program. Suggested data sources include: • Grades in content, pedagogical, and professional courses • Licensing or certification examination results • Observations and summary ratings in field placements or internships • Performance assessment results • Survey, interview, or focus group data from completers, cooperating teachers, P–12 employers
2. Completer Professional Competence and Growth	Multiple measures of completers' effectiveness when employed in their professional roles meant to address this question: Were completers prepared to work in diverse contexts, have they done so successfully, and are they growing as professionals? Longitudinal evidence of performance evaluations or student achievement of completers are encouraged, but AAQEP recognizes the challenge of gathering these data and measurement challenges with its use. Suggested data sources include ones similar to those described for Standard 1 but for completers as they begin and continue through their professional career.
4. Program[a] Engagement in System Improvement	Multiple measures of completers' placement, effectiveness, and retention in the profession meant to address this question: Is the program engaged in strengthening the education system in conjunction with its stakeholders and in keeping with its institutional mission? Suggested data sources that can inform providers' quality assurance efforts (with AAQEP recognizing that data supplied by state education authorities varies by its type, format, quality, and the portion of completers covered) include completers' place of employment, survey responses, performance evaluations (e.g., principal ratings), and students' test results.

[a] AAQEP standard 3 was not included as it is a standard of "quality program practices," not a performance- or outcomes-based standard.

SOURCES: Association for Advancing Quality in Educator Preparation (2023); Council for the Accreditation of Educator Preparation (2021a).

and to investigate evidence of completer placement, effectiveness, and retention. Their process requires measures from multiple perspectives (e.g., completers, program faculty, P–12 partners, and employers), and emphasizes the importance of performance measures that capture candidates' and completers' effectiveness in field placements or the classroom. AAQEP does not outline specific outcome measures but offers suggestions about potential types of measures that could be used to fulfill their requirements.

Neither national accreditor requires the use of TPAs in the accreditation process. CAEP lists performance-based assessments as one type of evidence for their first standard on content and pedagogical knowledge (Council for the Accreditation of Educator Preparation, 2021a). AAQEP considers performance assessments such as edTPA, PPAT, and the California Teaching Performance Assessment (CalTPA) to be direct measures of candidate performance and highlights them as one of the strongest measures available for both candidate and program effectiveness (Association for Advancing Quality in Educator Preparation, 2023).

While program accreditation in fields like nursing and medicine is a required step in professional entry and advancement, this is not the case in education, where graduation from an accredited program does not carry similar weight. Only about 50 percent of TPPs are accredited by CAEP or AAQEP, and only some of the alternative route programs are accredited (Wojcikiewicz & Patrick, 2022). The original intention for national accreditation—to address the inconsistencies and loopholes present in state program approval and improve low-performing TPPs—has not been fully realized, as other factors like teacher shortages and unsatisfactory teacher salaries create constant challenges for advancing education as a profession.

REGIONAL ACCREDITING AGENCIES

Undergirding the work of state agencies and national professional accreditors are the seven accrediting commissions that review and accredit colleges and universities in their entirety. In many states, institutional approval from a regional accrediting agency is a prerequisite to gaining state review and approval. The same is true for most national professional accrediting bodies, who expect the soundness of the overall institution to have been verified by one of these agencies. Accreditation by one of these accrediting commissions is a precondition for students at that institution to receive federal financial aid (U.S. Department of Education, 2020).

Recognized by the U.S. Department of Education and CHEA, these seven regional accrediting commissions historically operated across six accreditation regions—although a 2020 regulatory change allowed regional accrediting agencies to operate nationally, institutional level accreditation

processes remain (Council for Higher Education Accreditation, n.d.-a; Wojcikiewicz & Patrick, 2022). In 2020–2021, these accrediting commissions accredited approximately 3,000 institutions (Council for Higher Education Accreditation, n.d.-a). Additionally, in 2021 there were around 25,000 programs across a range of fields accredited by approximately 60 programmatic accrediting organizations (Council for Higher Education Accreditation, n.d.-b). These agencies manage a process that includes standard setting, self-study, and periodic and peer review based on-site visits. While these regional agency reviews have historically emphasized input measures, there has been a shift toward outputs measures as well. The U.S. Department of Education requires that these accrediting agencies assess student achievement, with institutions determining their own learning standards with guidance from the accrediting agencies. Typical measures of student achievement include course completion, licensing completion, graduation rates, and job placement rates (Hegji, 2020). Accrediting agencies also "must consider the institution's or program's curricula, faculty, facilities, fiscal and administrative capacity, student support services, recruitment and admissions practices, measures of program length, objectives of the credentials offered, and student complaints received directly by the agency or those that are available to the agency" (Hegji, 2020, p. 12).

TEACHER PREPARATION PROGRAMS

State approval and national and regional accreditation processes require self-study components. Self-study components have been variously characterized as either helpful for program improvement or compliance-oriented—a necessary hoop that leads to little valuable change (American Association of Colleges for Teacher Education, 2016; Kornfeld et al., 2007). Apart from accreditation and state approval requirements, voluntary self-studies originate in TPPs to evaluate their programs to identify areas for improvement. As described by Peck et al. (2010), program self-study is a process that involves faculty in making data-based decisions about areas like organizational change, institutional policies, collective values, curriculum, and assessment. Program self-inquiry can reveal information about the strengths and weaknesses of a TPP, which can be used to prompt innovation and positive changes (Feuer et al., 2013). Program self-study is one promising approach that can be integrated with external evaluations to yield fuller, context-specific appraisals of TPPs. While some IHE-based TPPs conduct self-studies individually or as part of programmatic institutional reviews led by the president's or provost's office, some have done so as part of a network of like-minded institutions seeking quality improvements together, as has been the case in the

Holmes Group (2007), the National Network for Educational Renewal,[5] and EdPrepLab.[6]

FEDERAL GOVERNMENT

The Higher Education Act (HEA) of 1965 is the legislative cornerstone of federal policy on TPP evaluation. While the 1965 legislation contained no accountability or reporting requirements for TPPs, the 1998 reauthorization of the HEA does. In the 1980s, several highly publicized news reports highlighted poor reading and writing skills of some teachers, as well as teachers teaching without certifications (Popham, 1986; *The New York Times*, 1986, 1987; Vobejda, 1985). At the same time, other forms of accountability were becoming popular tools for rating K–12 schools (Bales, 2015; Russo & Subotnik, 2005).

Following these events, the 1998 reauthorization of the HEA created an accountability system under Title II that required TPPs to collect data on a wide range of indicators—approximately 400 data points—and required states to compile the results into report cards (Feuer et al., 2013). At the program level, state report cards included indicators like pass rates on teacher licensure tests and program admission requirements. At the state level, the report cards included statistics like the number of teachers teaching on licensure waivers, information on alternative teaching routes, and procedures for identifying and assisting low-performing TPPs. The 2008 reauthorization of the HEA added additional data points to these report cards, including requirements to report average test scores and student teaching requirements, training on using technology in classrooms, and progress concerning teacher preparation in high-need subjects (Sawchuk, 2011).

Most of these data, however, are not used for teacher education evaluation. The annual Title II reports focus on the number of programs, enrollment, and completion rates by candidate field and type. States are supposed to use their data to identify low-performing programs, but there has been little direct connection between the Title II data and its use for program approval or accreditation. Moreover, the federal government has not always released this information on an annual basis, which prevents states from being able to compare data with other states.

[5] More information about the National Network for Educational Renewal is available at https://nnerpartnerships.org.

[6] More information about EdPrepLab is available at https://edpreplab.org.

MEDIA OUTLETS AND OTHER INDEPENDENT ORGANIZATIONS

Other sources have also exerted influence on efforts to evaluate TPP quality. A prime example is the work of the National Council on Teacher Quality (NCTQ), which briefly partnered with *U.S. News & World Report* to release ratings of TPPs. This partnership has ended, but NCTQ continues to rate TPPs.

NCTQ, a non-profit organization funded by a group of foundations, examines seven aspects of TPPs, including approaches to (1) early reading, (2) elementary math, (3) classroom management, (4) clinical practice, (5) admissions, (6) building content knowledge, and (7) program diversity (National Council on Teacher Quality, n.d.). Their methodology involves collecting and scoring program documents and reporting on statistical information about programs. For example, to evaluate clinical practice, NCTQ examines and rates handbooks, application forms for mentor teachers, and other forms used to implement procedures. To evaluate program admissions, NCTQ examines mean SAT/ACT scores and mean grade point average for entering cohorts. A notable feature of these ratings is their reliance on available statistical data and documents on program websites—the NCTQ does not evaluate the enacted curriculum or the practices of teacher educators and candidates. The NCTQ rankings have been controversial and subject to critiques by several investigators about the accuracy of the data used to produce the rankings and the appropriateness of the indicators (see, e.g., Cochran-Smith et al., 2018). Additionally, one study found that NCTQ ratings did not lead TPPs to engage in program improvement efforts, even when programs were provided with individualized recommendations on specific programmatic changes (Goldhaber & Koedel, 2018).

Some states have established public-facing, user-friendly dashboards that provide consumer information about TPPs. For example, the California Commission on Teacher Credentialing provides interactive online dashboards that graphically display trends on important information about each Commission-approved institution that offers TPPs—including location, types of preparation, demographics of enrolled candidates, and pass rates of program completers.[7] The Commission also produces an annual teacher supply report about how many candidates receive teacher credentials in California regardless of their preparation pathway and location of preparation (California Commission on Teacher Credentialing,

[7] The California Commission on Teacher Credentialing dashboards can be viewed at https://www.ctc.ca.gov/commission/reports/data/approved-institutions-and-programs.

2023). Similarly, the Colorado Department of Education Educator Preparation Program Report Dashboard connects consumers with TPP data through an interactive, user-friendly interface that provides information on enrollment, completion, employment, and new teacher performance.[8]

[8] The Colorado Department of Education Educator Preparation Program Report Dashboard can be viewed at https://www.cde.state.co.us/code/eppreport.

5

Knowledge, Skills, and Dispositions Educators Need to Support Student Learning and Development

As this report has noted, a critical educational goal—in which teacher preparation programs (TPPs) play a critical role—is to recruit, prepare, and retain a qualified and diverse teacher workforce, generating supply that is responsive to demand to ensure that all students are taught by well-prepared, culturally responsive teachers. For TPPs to prepare a qualified and diverse workforce, they must identify and impart knowledge, skills, and dispositions to teacher candidates that will prepare them to support student learning and development through high-quality teaching.

Although the knowledge base for teaching has been conceptualized in various ways, this report uses the concepts in the National Academy of Education (NAEd) report *Preparing Teachers for a Changing World: What Teachers Should Learn and Be Able to Do* (*Preparing Teachers*) as its foundation (Darling-Hammond & Bransford, 2005). *Preparing Teachers* integrated evidence on how students learn (as described in the National Research Council's 2000 report *How People Learn: Brain, Mind, Experience, and School* [*How People Learn I*]) with research on how teachers can support this kind of learning and what kind of teacher preparation can support that learning.

More recent syntheses have acknowledged the cultural foundations of learning and how these influence critically important elements of the learning process, motivation, and mindsets (Nasir et al., 2020; National Academies of Sciences, Engineering, and Medicine, 2018). This evidence suggests that transformations in teaching and teacher education are

needed to ensure that all children experience the secure relationships, skillful teaching, rich curriculum, useful assessments, and personalized supports that enable healthy development. These elements of the growing knowledge base are reflected in an updated framework presented in *Educator Learning to Enact the Science of Learning and Development*—which relies on the significant knowledge base identified in *Preparing Teachers, How People Learn I, How People Learn II: The Science and Practice of Learning* (National Academies of Sciences, Engineering, and Medicine, 2018), and a large body of literature in learning sciences, teaching, and teacher education fields—to identify the knowledge, skills, and dispositions educators need to address whole child development as it unfolds in social and cultural contexts (Darling-Hammond et al., 2022a).[1]

This chapter reviews the knowledge, skills, and dispositions teachers need to engage in whole child development—and thus, quality teaching (see Figure 5-1).[2] Chapter 6 then identifies the TPP characteristics often associated with high-quality teaching, and Chapter 7 explores the key evidence and methods used to measure such characteristics.

High-quality teaching draws on three general areas of *knowledge*: (1) knowledge of learners and learning, (2) knowledge of subject matter and curriculum, and (3) knowledge of teaching. These knowledge areas must then be combined with specific *skills* that teachers employ in their work, including (1) adaptive expertise; (2) reflection and diagnosis; (3) curriculum design and instruction; and (4) inquiry-oriented skills including observation, listening, questioning, and analysis. Finally, teaching involves not only *knowledge* and *skill* but also *dispositions* that influence teachers' relationships with students, including (1) empathy, (2) social-emotional capacities, (3) cultural competence, (4) commitment to equity, and (5) sense of efficacy (i.e., a teacher's sense of efficacy in their ability to successfully reach and teach all students). A full review of the literature supporting these capacities lies beyond the scope of this report, but some further elaboration—found in the following sections—is necessary to support the identification of TPP features connected to high-quality teaching.

[1] Whole child education addresses the full scope of a child's development, including social, emotional, cognitive, academic, physical, and psychological needs. A whole child approach recognizes that students' education and life outcomes depend on their access to positive relationships, safe learning environments, and deep learning opportunities (see, e.g., https://www.wholechildpolicy.org).

[2] This chapter significantly relies on *Educator Learning to Enact the Science of Learning and Development* (Darling-Hammond et al., 2022a).

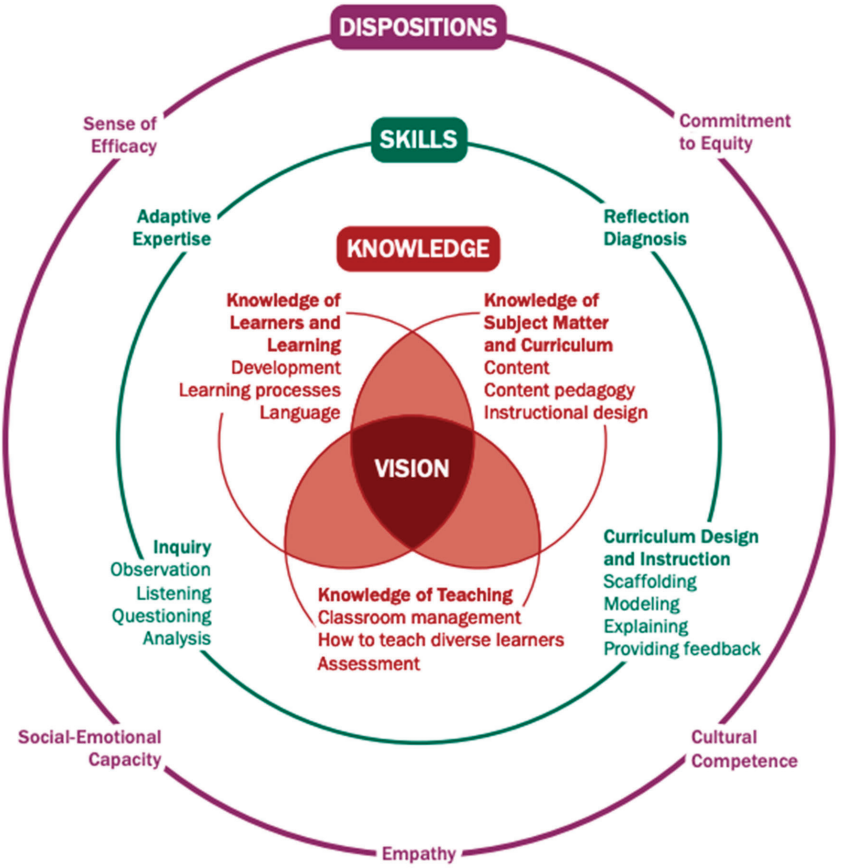

FIGURE 5-1 Knowledge, skills, and dispositions for teaching: The "what" of teacher education.
SOURCE: Darling-Hammond et al. (2022a).

DOMAINS OF KNOWLEDGE

High-quality teaching requires knowledge about child development across the following domains, particularly considering the salient differences among learners that influence their learning: the learner and learning, the subject matter and curriculum, and the teaching methods that teachers employ.

Knowledge of Learners and Learning

To understand learners and learning, teachers must understand human development which is deeply embedded in sociocultural contexts.

Teachers must understand students' differing experiences and attend to their individual learning styles, prior knowledge, and experiences—particularly regarding their diversity of cultural and linguistic traditions and experiences. Through a deep understanding of the diversity of learners and human development, teachers can modify curriculum materials and instructional routines in response to learners' differences (Muniz, 2020; National Academies of Sciences, Engineering, and Medicine, 2018).

The learning process includes attention to children's prior knowledge and experiences, their cognitive strategies, and motivational aspects of learning. Teachers need to know how to surface and build on these prior experiences and how to construct motivating tasks. A "funds of knowledge" framework has often been used to show teachers ways of linking students' unique everyday experiences to classroom instruction (Gonzalez et al., 2005; Lee, 2017). Such teaching practices engage students' interests and foster deeper learning.[3] Additionally, providing students with opportunities to make choices about their learning supports their motivation and develops their sense of agency in learning (Linnenbrink-Garcia et al., 2016; Patall et al., 2008).

It is useful for teachers to understand how cognitive processes like memory and attention are utilized as students are learning. By understanding these processes, teachers can support higher-order thinking and problem-solving, reduce unnecessary cognitive load, scaffold learning in productive ways, and develop mental models connected to children's emergent understanding (National Research Council, 2000a, 2000b, 2005, 2012).

Understanding pathways and progressions in children's developmental areas (i.e., social, emotional, cognitive, academic, physical, and psychological) is critical for designing effective learning environments. Augmenting many decades of work on developmental stages, today cognitive scientists are also providing evidence of specific learning progressions within content fields like mathematics, science, and literacy development (Heritage, 2008). Such progressions, as well as accompanying materials, tools, and assessments, can be used by teachers as they create sequences of learning opportunities for students (e.g., Alonzo & Gotwals, 2012; Bailey & Heritage, 2008; Clements & Sarama, 2014; Duschl et al., 2011).

[3] It is important that TPPs focus on preparing teachers who can support students' deeper learning. One recent study examined seven TPPs that structured their programs around the goals of deeper learning and equity and found that five dimensions of teacher preparation were particularly important for encouraging deeper learning in students: (1) learning that is developmentally grounded and personalized; (2) learning that is contextualized; (3) learning that is applied and transferred; (4) learning that occurs in productive communities of practice; and (5) learning that is equitable and oriented to social justice (Darling-Hammond et al., 2019).

Teachers' understanding of these progressions can assist in goal setting and instructional planning for both individual students and entire classes. Teachers can use this understanding to identify a child's zone of proximal development and target individualized instruction, as well as to design lesson sequences that build understanding in sequential progression.

Teachers must also attend to and support the development of students' social and emotional needs and abilities. Students' personal and academic success is rooted in foundational skills including self-awareness, social awareness, self-management, relationship management, and responsible decision making (Jennings & Greenberg, 2009). Creating a sense of community among students also foster social and emotional learning that concentrates on prosocial norms, values, and behavior as oriented around empathy and respect for others, effective conflict management, acceptance of outgroups, altruistic behavior, and intrinsic prosocial motivation (Osterman, 2000), along with an emphasis on self-regulation of learning, executive function, and growth mindset (Yeager & Dweck, 2020). These foundational skills form a nexus of outcomes that serve both as means and ends—means in the context of academic instruction and ends worth pursuing in themselves (Durlak et al., 2011; Zinsser et al., 2013). Skilled teachers provide explicit instruction around these concepts, model them, and infuse opportunities to practice them in the regular course of instruction.

Children's development also depends on supportive conditions, including positive relationships; physical, emotional, and identity safety; and a sense of belonging and purpose (Osher & Kendziora, 2010). Skilled educators create classrooms that provide for these conditions, including attention to social identity threats that exist in the larger society, which can penetrate the school environment. Teachers can counter such threats by holding high expectations for all students, conveying confidence in them, and linking their funds of knowledge with classroom instruction.

Finally, language plays a central role in the classroom as the medium and outcome of instruction. Children need to learn how to employ academic language together with reading, writing, listening, and speaking skills (Nagy & Townsend, 2012). Of particular concern are the ways teachers enable English learners to access content while developing language proficiency (Valdes et al., 2005). To the extent possible, it is important to also preserve students' use of native languages, as evidence shows that bilingualism benefits cognitive development and literacy (Kuo et al., 2016; Marian & Shook, 2012).

Knowledge of Subject Matter and Curriculum

The second knowledge domain addresses the subject matter to be taught and curriculum goals to be addressed. Teachers must know the subject matter, or content, they are teaching. Teachers can then combine this subject matter or content knowledge with their knowledge of learning and development to organize a productive learning process for a diversity of learners.

Preparing to teach occurs both within the TPP and academic coursework completed before entry to a TPP. Teacher candidates must acquire foundational knowledge of the disciplines they are preparing to teach and knowledge about how to teach the subject matter (Ball et al., 2008; Shulman, 1986). Historically, teacher content knowledge was largely defined by the material within the student curriculum. Shulman (1987) introduced the notion of pedagogical content knowledge, or the "blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners and presented for instruction" (p. 8).

Subsequently, Ball et al. (2008) identified three categories of content knowledge. *Common content knowledge* is defined by its shared use across adult pursuits other than just teaching. For example, both engineers and mathematics teachers use the knowledge of how to solve algebraic problems in their daily work. *Horizon content knowledge* is defined by knowledge of how different content ideas are connected across the domain, from beginning concepts to advanced concepts. *Specialized content knowledge* includes types of content knowledge that are only used in teaching, including what Shulman (1986) referred to as pedagogical content knowledge. Evidence in several subject-matter areas has shown that teachers' specialized knowledge of content, including pedagogical content knowledge, contributes both to teaching quality and student achievement (e.g., Baumert et al., 2017; Carlisle et al., 2011; Copur-Gencturk, 2015; Correnti & Phelps, 2010; Hill et al., 2005, 2008; Kersting et al., 2012).

Darling-Hammond and colleagues (2022a, p. 13) further note that

> [p]edagogical content knowledge, when combined with instructional design knowledge, enables teachers to design, sequence, and pace appropriate activities; diagnose and respond to student learning needs with appropriate scaffolding; and integrate social, emotional, and academic skills. Constructing curriculum requires integrating knowledge about cognitive, social, and emotional processes with curricular content in ways that promote growth in students' understanding, sense of efficacy, and motivation (Reigeluth & Carr-Chellman, 2009).

Knowledge of Teaching

Knowledge of teaching—the third knowledge domain—addresses the knowledge of methods for teaching diverse students, assessment for and of learning, and classroom management strategies. Understanding how students think and learn must be combined with knowledge about learning modalities, differences, and variable abilities; language development; cultural contexts; and ways of differentiating instruction to support all students' development and learning (Banks et al., 2005; Cantor et al., 2018).

An aspect of such knowledge is the use of multimodal teaching strategies like those included in the Universal Design for Learning framework (CAST, 2018).[4] Using multiple engagement and expression modalities in the classroom—including numerous representations that connect to students' experiences and understandings—deliberately supports students who learn in different ways and avoids labeling, tracking, and stigma.

Knowledge about teaching includes understanding assessment as a tool to inform teaching and support learning (Shepard, 2019; Shepard et al., 2005). Feedback from formative assessments assists teachers in adjusting the flow of instruction associated with students' zones of proximal development (Fisher et al., 1981; Vygotsky, 1978). Accurate, timely feedback—including assistance to students in monitoring their own learning—can affect their motivation and ability to guide their own learning (Hattie, 2009; Hattie & Timperley, 2007). Relevant assessment knowledge includes elements of assessment design like criteria clarity, effective forms of feedback, and opportunities to reflect and revise work in response to feedback.

Establishing community in the classroom and organizing students and materials for instruction—traditionally referred to as classroom management—is another important subdomain of teaching knowledge (Bielaczyc & Collins, 1999; Evertson & Weinstein, 2006; McCaslin & Good, 1992; Vescio et al., 2008; Weinstein, 1999). Aspects of this knowledge base include enacting developmentally appropriate and engaging tasks, engaging students in co-constructing norms for behavior and interaction, creating positive roles for students, and encouraging identity-safe classrooms for all students. Specifically, classroom management can include how

[4] Universal Design for Learning provides a framework, based on the science of human learning and development, to improve teaching and learning (for additional information see https://www.cast.org/impact/universal-design-for-learning-udl).

teachers use restorative approaches to behavior,[5] approach students in a non-threatening manner, and use problem-solving options to de-escalate challenging situations (Next Generation Learning Challenges, n.d.).

SKILLS FOR TEACHING

Corresponding skills that teachers employ to ensure that their knowledge of learners and learning, subject matter and curriculum, and teaching are enacted to meet students' needs are necessary complements to these three knowledge domains. In particular, teachers need the following skills to advance learning: adaptive expertise, reflection and diagnosis, curriculum design and instruction, and inquiry.

Adaptive expertise, a cardinal teaching skill, is the ability to make non-routine judgments based on both general and specific knowledge of learners, their paths to learning, and curriculum goals (Bransford et al., 2005). This fundamental and complex skill develops with supportive experiences and ongoing collaborative learning within professional learning environments and through professional development. TPPs can support trajectories into learning this complex skill by emphasizing, "the 'whys' and 'whens,' not simply the 'how-tos'" of teaching (Darling-Hammond et al., 2022a, p. 14). Mastery of this skill requires teachers to develop the equally critical skill of metacognition—awareness and understanding of one's own thinking—to reflect on student learning in response to their teaching.

Teachers must develop skills to *reflect* on their practices and to interpret and *diagnose* their students' learning. Such skills serve and work in tandem with skills to plan and adjustment instruction in response to what teachers are observing in their students. Teachers must learn *from* their teaching as well as *for* their teaching as they consider evidence gleaned from observations, conversations, and examination of student work. High-quality teaching often involves reteaching in response to evidence of what students have and have not learned. Teachers must keep track of both individual students and the entire class in relation to the unfolding of the curriculum; attending to intellectual, social, and emotional outcomes of classroom interactions; and planned and unplanned developments (Lampert, 2001).

[5] Restorative practices focus on resolving conflict, repairing harm, and healing relationships. They include proactive schoolwide strategies to create a sense of community, build healthy relationships, and develop conflict resolution skills, sense of belonging, and agency; and processes like circles, conflict resolution programs, and tribunals that make amends in response to incidents that cause harm (for more information on restorative practices see https://www.nextgenlearning.org/equity-toolkit/school-culture).

Adaptive expertise ties to teachers' *curriculum design skills* as they select materials, develop lessons and unit plans, and scaffold the learning process through task design, selection of learning objectives, and development of key questions and supports to guide learners. All this design work should be based on teachers' emergent understanding of their students—including their students' prior knowledge; social, cultural, and linguistic backgrounds; and interests. Teachers need *instructional skills* to present curriculum materials. These skills including "high leverage" practices like explaining and modeling content, attending to patterns of student thinking, setting up and managing group work, checking student understanding, and providing feedback.[6]

Teachers develop a range of *inquiry skills* involved in discerning the learning progress of their students and studying the effects of their instruction. To be attuned to students' differences, teachers should employ culturally responsive listening and questioning skills as they interact with students and their families. Teachers can use tools and practices to inquire about students' diverse ways of learning, prior knowledge, and cultural and linguistic backgrounds, and then plan in response to these different understandings and needs along several developmental pathways, including physical, social, emotional, cognitive, linguistic, and psychological (Darling-Hammond et al., 2022a). Teachers can gain this understanding through careful observation and listening, as well as regular check-ins, conferencing, journaling, and classroom surveys.

Finally, adaptive expertise involves not only the examination of evidence gathered through a variety of means but also the ability to analyze it conceptually—individually and in collaborative communities. Teachers adapt their techniques by engaging in conceptual thinking and reflections to discern patterns in students' growth and apply theories of how students learn (Sykes & Wilson, 2015). Moreover, by providing opportunities and systemic support for teacher candidates to engage in collaborative analysis of teaching, TPPs can attend to both teacher candidates' conceptual understanding and collaborative skills to adapt and improve instruction (Santagata & Guarino, 2012).

DISPOSITIONS

In addition to *knowledge* and *skills*, teachers must have the *dispositions* to support student development and learning. Teachers need empathy, social-emotional capacity, cultural competence, commitment to equity,

[6] For a complete account of core practices, see, for example, TeachingWorks High-Leverage Practices (https://www.teachingworks.org/high-leverage-practices) and Teaching Core Practices in Teacher Education (Grossman, 2018).

and a sense of efficacy to promote students' positive engagement and learning.

Teachers' *empathy*, associated with their *social-emotional skills*, has been identified as a key disposition influencing their ability to ensure that all students feel respected, nurtured, and safe (Jones & Bouffard, 2012). Teachers can use both modeling and direct instruction to cultivate students' social-emotional skills. Teachers can model values like managing adversity, directing energy in positive ways, and interacting positively with others to support their students' social-emotional growth. Several studies and interventions have demonstrated that teachers can learn and practice empathy and develop an "empathic mindset" that in turn yields positive results for students (see, e.g., Darling-Hammond et al., 2022a, pp. 16–17; Okonofua et al., 2016). Likewise, teachers' social-emotional capacity is associated with positive outcomes related to teacher mental health and student wellness. Social-emotional well-being assists with stress management while enhancing efficacy and job satisfaction (Herman et al., 2018; Jones et al., 2013). In particular, mindfulness practices and mindfulness training are associated with stress reduction, emotional regulation, and increased sense of well-being among teachers (Crain et al., 2017; Khoury et al., 2013).

Affirming a *commitment to equity* and the cultivation of *cultural competence* are also critical teacher dispositions. Darling-Hammond and colleagues (2022a) outline how conveying respect and concern for all students is the basis for culturally responsive pedagogy, which includes

> (1) recognizing students' culturally grounded experiences as a foundation on which to build knowledge, (2) cultural competency in interacting with students and families, (3) an ethic of deep care and affirming views of students, and (4) a critical consciousness and sense of efficacy about learning and creating equity-oriented changes in the status quo that is consciously transmitted to students. (p. 18)

These dispositions include teachers' ability to detect and counteract their own implicit biases, develop asset-based perspectives about students, and identify social identity or stereotype threat that can undermine student performance (Steele, 2011; Steele & Cohn-Vargas, 2013). Teachers who respect cultural differences among students are more inclined to see them as capable learners and convey confidence in their abilities. Such affirming beliefs have been demonstrated to support students of color in achieving at higher levels, attending school more regularly, and feeling better cared for and recognized (Carter & Darling-Hammond, 2016).

Moreover, when considering equity in teaching dispositions, it is critical to not rely on "thin equity," or equity that fails to account for the complex in-school and out-of-school factors in addition to teacher quality

and dispositions that perpetuate inequities for students, families, and communities—but instead ensure that "strong equity" dispositions are taught to teacher candidates (see Box 5-1; Barber, 1984; Cochran-Smith & Reagan, 2021; Cochran-Smith et al., 2016a, 2018).[7]

Finally, teachers' sense of personal and collective *efficacy* supports their positive engagement with all students; investment of effort and enthusiasm; and confidence in achieving results (Bandura, 1997; Tschannen-Moran & Hoy, 2001; Zee & Koomen, 2016). When participating in healthy, productive school communities, teachers come to believe that they, their colleagues, and the entire school can achieve the desired results. Teacher efficacy has been associated with more positive teacher-student relationships and greater student motivation and achievement (Tschannen-Moran & Hoy, 2001). Such efficacy is cultivated through strong TPPs, strong professional communities among teachers in a school, and targeted in-service training (Bray-Clark & Bates, 2003; Chester & Beaudin, 1996).

BOX 5-1
Key Elements of Strong Equity

Reframing introduces equity as an explicit goal and desired outcome for education, underscoring emphasis on and understanding of equity as instantiated in explicit instructional practices.

Redistribution directs attention to how resources for learning in the classroom are allocated equitably, calling on teachers to regularly examine their teaching techniques and learning results across all students, taking steps to redress any inequities in attention and outcomes.

Representation calls on educators to reach out, learn about, involve, and authentically represent the communities served by the school, including parents and caregivers, cultural organizations, and community groups.

Recognition attends to students' cultural and linguistic characteristics by employing pedagogical and curricular practices responsive to students' culture, language, and history. Recognition invokes attention to the issue of identity, which has emerged as a central concept for the disciplines of knowledge. To learn to "think like a historian," for example, means identifying oneself as someone who loves history and who knows what it means to "do" history. But equally, students' identity is grounded and cultivated within their cultural backgrounds and teachers should attend to this critical aspect of educational formation.

SOURCE: Cochran-Smith & Reagan (2021).

[7] For a fuller discussion of the importance of centering equity in TPP designs, see the NAEd commissioned paper *"Best Practices" for Evaluating Teacher Preparation Programs* (Cochran-Smith & Reagan, 2021), available at https://naeducation.org/evaluating-and-improving-teacher-preparation-programs-commissioned-paper-series.

6

Teacher Preparation Program Features Associated with Teacher and Teaching Quality

Based on the knowledge, skills, and dispositions necessary for effective teaching, this chapter identifies teacher preparation program (TPP) features that are associated with high-quality candidate preparation or have emerging evidence and professional consensus regarding their validity. Given the numerous intervening and mediating factors across different TPPs (e.g., school and district supports, professional development, learning communities), it is often difficult to directly tie specific program features to high-quality teaching or specific data points to high-quality teaching. Consequently, this report focuses on the following features, which evidence has shown to support the knowledge, skills, and dispositions of high-quality teaching and thus serve as targets for evaluation: (1) program coherence and alignment; (2) curriculum content; (3) instructional methods; (4) clinical experiences; (5) teacher candidate recruitment, selection, and support; and (6) faculty recruitment, selection, and support. Box 6-1 previews the main components associated with each of these six features. These features are drawn from the 2013 National Academy of Education (NAEd) report *Evaluation of Teacher Preparation Programs: Purposes, Methods, and Policy Options* (Feuer et al., 2013), with additions from this consensus report's committee. Importantly, these six features should serve as guiding principles for continuous program improvement. Improving these features will require TPP leaders to take stock of the strengths and pressing needs of their program to prioritize the next steps for coordinated and sustained efforts to set priorities and

BOX 6-1
Features and Components of TPP Quality

Program Coherence and Alignment

- A conception of teaching and learning that embodies the core value commitments of the TPP and the core knowledge base of the profession;
- A strong common understanding and well-defined standards of high-quality teaching that are consistently embedded across all coursework and clinical experiences;
- Closely interrelated curriculum, instruction, and extended clinical experiences that are grounded in the knowledge, skills, and dispositions of learning and development, including the cultural foundations of learning; and
- Program faculty who share an understanding of teaching practices and the mission of the TPP, and can closely collaborate to ensure that the core principles of teaching are reflected in every element of the TPP.

Curriculum Content

- A theory of action that organizes and sequences curriculum content around a vision of teaching;
- Curriculum content that reflects the knowledge necessary for well-prepared teaching—including knowledge of learners and learning; knowledge of subject matter and curriculum goals; and knowledge of effective teaching practices that support diverse learners;
- Curriculum that develops the skills teachers need to be able to adapt expertise, reflect and diagnose challenges, engage in inquiry-oriented practices, and engage in curriculum design and instruction that includes scaffolding, modeling, explaining, and providing feedback; and
- Curriculum content that supports the teacher dispositions of empathy, social-emotional capacities, cultural competence, commitment to equity, and a sense of self-efficacy.

Instructional Methods

- Explicit modeling of teaching practices and instructional methods;
- Engagement and practice with specific instructional approaches and tools;
- Field-based assignments (as well as simulated practices) linked to classroom instruction and discussion;
- Mentoring, feedback, and opportunities to apply the feedback;
- Integration of action research and inquiry into problems of practice;
- Instruction that models attention to culture and context; and
- Community engagement that aims to integrate funds of knowledge from students' families and communities into teaching.

Clinical Experiences

- Alignment with coursework and other learning experiences;
- Field placement in schools with strong professional learning environments;
- Engagement with instructionally effective mentor teachers;
- Mentor teacher professional development that is aligned with the goals of the TPP;

- Effective use of coaching and modeling to convey good teaching practices; and
- Community experiences that are planned and mediated by program and community mentors.

Teacher Candidate Recruitment, Selection, and Support

- Recruitment of diverse cohorts of teacher candidates with the academic backgrounds, life experiences, and other dispositions associated with empathetic, competent teaching;
- Recruitment strategies that engage teaching candidates in high-demand fields and locations;
- Fair and equitable selection processes for entry into the TPP; and
- Explicit and actionable strategies to support candidates throughout the TPP.

Faculty Recruitment, Selection, and Support

- Strategies for recruiting, selecting, and supporting well-prepared, diverse faculty (including mentor teachers) for both program and clinical components of the TPP;
- Adequate preparation for program faculty to support teacher candidates, including in culturally responsive teaching; and
- Opportunities for faculty to collaborate and address problems of practice in teaching and program design, as well as engage in professional development.

consider constraints—like resources and expertise—rather than attempt to quickly address all six features at once.

PROGRAM COHERENCE AND ALIGNMENT

Coherence and alignment are achieved in well-designed courses that enable access to the foundational knowledge base for teaching, as well as between these courses and the well-designed clinical TPP components that instantiate these principles in practice. Specific elements of a program are desirable to the extent that they cohere and align around a conception of teaching and learning that embodies the TPP's core value commitments and the core knowledge base of the profession, representing a synthesis grounded in the science of learning and development (e.g., Buchmann & Floden, 1992; Darling-Hammond et al., 2019, 2022a). Coherence rests on teacher education that integrates the knowledge, skills, and dispositions that support student learning and development, including addressing the cultural foundations of learning. A lack of coherence in teacher education—such as a disjuncture between teacher candidates' foundational knowledge and opportunities to act on that knowledge in clinical experiences—may lead to fragmented knowledge and hinder teacher

candidates' ability to apply, contextualize, and adapt their knowledge to practice (Canrinus et al., 2019; Hollins & Warner, 2021).

A study of seven high-performing TPPs documented common program features that produced well-prepared teachers (Darling-Hammond et al., 2006). Among these features, program coherence was highlighted as one of the most critical pedagogical cornerstones that undergird powerful teacher education (Darling-Hammond et al., 2006). Specifically, coherence rests within well-defined standards and a strong common understanding of high-quality teaching and is achieved when the standards and understanding are consistently embedded across all coursework and clinical experiences within a TPP. Consequently, coherence requires program faculty who understand the standards, share a strong common understanding of high-quality teaching, and have strong relationships among themselves, enabling collaborations to ensure that the core principles of teaching are reflected in each element of the program.

CURRICULUM CONTENT

A TPP's curriculum content should reflect the knowledge, skills, and dispositions teachers need to deliver high-quality teaching and support student learning and development. As Chapter 5 outlined, a well-prepared teacher is equipped with knowledge along multiple dimensions—including those of learners and learning, subject matter and curriculum, and effective teaching practice—and has developed the necessary skills for adaptive, reflective, and inquiry-oriented high-quality teaching; and embodies the dispositions of empathy, socio-emotional capacity, cultural competence, equity for all students, and self-efficacy.

TPPs should develop and implement a theory of action to guide the design and sequencing of a curriculum that will yield well-prepared teachers. This curriculum design and sequencing requires determining the weight and priority of each content area, especially given the inevitably limited time available for instruction. Curriculum content must also be grounded within a conceptual or theoretical framework about how teachers can effectively learn to enact that content knowledge in teaching. Due to the diversity of program types as well as the diversity of the schools and communities where TPP graduates will serve, no single model of curriculum content can or should be utilized in all TPPs. Furthermore, curriculum content will vary by the target level of schooling (e.g., early childhood, elementary, secondary) and subject area (e.g., mathematics, sciences, special education, English language development/bilingual education).

A question facing all TPPs is how to frame introductory or gateway knowledge and skills in relation to advanced forms of the same

knowledge and skills. The field of education lacks a common, shared theory of teacher development that guides the selection and sequencing of knowledge, skills, and dispositions. Historically, many TPPs have posited that teacher candidates must learn the subject matter to be taught, then engage in education-related coursework that includes attention to teaching subjects to diverse learners, and then gradually engage in clinical experiences where the setting for learning shifts from the program classroom to the school. However, the logic of this historically dominant framework has been disrupted by significant evidence that TPP candidates learn more effectively when they engage in clinical experiences continuously from the start of the program and throughout the process of engaging with coursework (Darling-Hammond & Bransford, 2005; Darling-Hammond et al., 2019; Tom, 1997; Zeichner & Bier, 2015). Many programs are now structured to provide these experiences (Darling-Hammond et al., 2019). Furthermore, about 40 percent of teachers now enter the profession from postbaccalaureate rather than undergraduate programs (Doan et al., 2022; Sutcher et al., 2016), and postbaccalaureate programs are often structured to provide a year of student teaching or residency while candidates undertake coursework, providing the possibility of a more integrated process of learning to teach. Research suggests that these structural programmatic decisions have consequences for how candidates learn to teach (e.g., Zeichner & Conklin, 2005).

While TPPs vary widely and embody a range of curricular decisions, a careful description of how desirable knowledge, skills, and dispositions are embedded in the curriculum is a key component for program evaluation. This account of content—including how it is grounded in empirical research, expert opinion, and professional consensus—may be used to interrogate programs, exploring what is and is not represented in the curriculum. If such analysis exposes major omissions, then reform of curriculum content becomes one source of evaluative input. Ensuring that curriculum identified by TPPs is ultimately included in the program is a necessary but insufficient criterion for evaluation, TPPs also need to understand how the curriculum content is enacted and how program candidates are learning.

INSTRUCTIONAL METHODS

In addition to offering courses that deliver important information to teacher candidates, how courses are taught and connected to clinical experiences in TPPs is also important. Research has identified several successful practices employed by teacher educators to promote teacher learning: (1) intentionally modeling teaching practices for particular pedagogical approaches, including breaking down practice into its constituent

parts; (2) creating activities or assignments that engage teacher candidates as learners with the instructional approaches (e.g., analyzing videos of teaching case studies); (3) providing context for candidates to enact key practices in supervised settings like field-based assignments (as well as simulated practices), which are both linked to classroom instruction and discussion; and (4) providing mentoring and feedback (which can include K–12 classroom observations), along with opportunities to apply the feedback (Cochran-Smith et al., 2016b; Darling-Hammond et al., 2019; Grossman et al., 2009). This complex set of learning opportunities is made possible by organizing well-planned, closely supervised clinical experiences interwoven with well-designed courses. Ideally, in these extended clinical experiences—frequently located in partnership schools that work closely with the TPP—the targeted teaching practices would be modeled and candidates would have the opportunity to get to know diverse learners and families, plan and teach curriculum, assess and support student learning, and reflect continually on how to improve their practice.

These understandings of key instructional practices that promote teacher learning have stimulated a significant body of research that supports both the value of these teaching practices and pedagogies and how they are taught to novices. One approach—simulation-based coursework—aims to prepare teacher candidates for real classroom teaching by breaking down teaching into a set of discrete practices and providing opportunities to engage in repeated trials of instructional strategies (Ronfeldt, 2021). Simulations also allow for mistakes and growth without harming students when teacher candidates falter. Recent research has demonstrated that simulated practice opportunities, paired with individualized feedback, improve teacher candidate skills in the simulated classroom (Cohen & Wiseman, 2019; Cohen et al., 2020; Grossman, 2005). Some studies suggest that simulated practice opportunities positively impact instruction in real classrooms (Garrett & Smith, 2020; Kang & Windschitl, 2018). Findings, however, tend to show that individual self-reflection alone is insufficient, but individualized coaching with feedback in simulated practice yield positive effects (Ronfeldt, 2021).

Learning to use tools involved in teaching is another important aspect of instruction. Classroom experience alone does not enable teachers to apply what they are learning. Teachers need tools, ranging from knowledge of curriculum materials and assessment strategies to techniques for organizing productive group work and planning well-structured projects and inquiries—and they need to be well guided in learning how to use these tools, as well as provided opportunities to practice with these tools in specific subject areas and with real students. Tools for high-quality teaching include assessment protocols and rubrics, guided reading strategies,

approaches to managing discussion, writers' workshop techniques, use of number talks, techniques for supporting science investigations, strategies for reteaching and revising work, lesson planning templates, observation protocols, child study formats, and performance assessment guidance. Learning about and using tools prepares prospective teachers to connect theory to practice in a well-grounded fashion, developing the adaptive expertise they will need to meet the specific classroom contexts they later encounter.

Additionally, to address the inadequate top-down approach to contemporary educational reforms, action research has shifted the focus of reforms to engaging teachers as educational researchers who can drive changes in content knowledge, disciplinary inquiry, and pedagogical practices (see, e.g., Cochran-Smith & Lytle, 2009; Manfra, 2019). Action research treats teaching as an inquiry process and addresses key problems in practice. Integrating action research into TPPs has been identified, in some cases, as one of the features of exemplary programs (e.g., Darling-Hammond, 2006).

Finally, given the importance of teachers' connections to their students' families, communities, and cultures, practices focused on learning about the funds of knowledge in these families and communities and integrating such knowledge into their classroom is critical for high-quality teaching (Gonzalez et al., 2005; Hong, 2019; Ishimaru, 2019). Given the current expanded and deepened understanding of teaching as a cultural activity, such practices should feature prominently in teacher education. Community engagement in TPPs has a long history (Masla & Royster, 1976), although it has been employed in a minority of programs. While the most common form of community experience has been service learning, there are several other models ranging from short-term "plunges" into communities to long-term immersion with communities throughout the entire TPP (Mule, 2010; Zeichner, 2024). One context for engaging deeply with these funds of knowledge is the use of community-based practicum experiences (see, e.g., Box 6-2 for important qualities of community-based practicum experiences). Many community experiences have not yet incorporated evidence-based features for developing an asset view of communities among teachers such as those identified in Box 6-2, including equal-status relationships, mutually beneficial relationships, and structured reflections (Mule, 2010; Zeichner, 2024). Research has found that community experiences that lack these qualities have sometimes reinforced and even strengthened negative stereotypes of families and communities (Mule, 2010; Zeichner, 2024).

BOX 6-2
Community-Based Practicum Experiences

Research shows that students' learning happens both in school and beyond its walls (Weiss et al., 2018). Students draw on and learn from experiences and values present in the communities where they live. Sometimes, purposefully designed partnerships between TPPs and local communities directly involve community members in teaching and mentoring teacher candidates. Given the reality that many TPP faculty lack in-depth knowledge of the communities in which candidates learn to teach, drawing on community members' unique wisdom is important (Barajas-Lopez & Ishimaru, 2020). Approaches that include community members in teaching and mentoring candidates have existed for many years, dating at least from the establishment of the Teacher Corps program in the first federal Higher Education Act of 1965.

Productive partnerships between TPPs and communities can mutually benefit both entities (Hollins & Warner, 2021). Students, especially traditionally underserved students, benefit more from learning and exhibit better outcomes when the teaching workforce has deep knowledge of the increasingly diverse racial, cultural, linguistic, and socioeconomic backgrounds of students and has integrated this knowledge into their classrooms. Meaningful clinical experience and partnership with communities, when well designed, can also potentially address teachers' deficit perspectives (Boyle-Baise & Sleeter, 2000; Zeichner et al., 2016) and the elevated teacher attrition rates in schools with high concentrations of underserved students (Noel, 2010).

Community partnerships are typically integrated into TPPs in two ways. One is through course-level integration—usually in the form of special-purpose practicums and may involve service learning in the community. Candidates are provided clinical experiences with school and/or community partners through one or a few courses to observe or practice the application of knowledge (Hollins & Warner, 2021). The second approach is program-level integration that centers university–school–community partnerships as a key feature of program coherence guiding the operation of TPPs.[a]

Hallman and Burdick's (2015) study of two community-based course-level clinical experiences found that community experiences planned to mutually benefit the TPP and community, as well as associated structured reflection, are core features that help candidates rethink their preexisting beliefs about students and develop the ability to quickly adapt teaching practices to student needs. A mutually beneficial relationship exists when candidates not only develop knowledge and skills to contextualize curriculum and teaching but also address and incorporate the self-identified needs of communities. Structured reflection allows candidates to critically review their experiences and track how their thinking and attitudes evolve toward better-adapted responses and practices (Hallman & Burdick, 2015).

Community experiences in the Children's Defense Fund's (CDF's) Freedom Schools illustrate a successful example of partnership programs among the CDF, community organizations, and educational institutions with a focus on social justice to ensure access to quality education for historically marginalized students. "Freedom Schools preparation not only focuses on developing teacher dispositions and conceptualizations of social justice, but it also provides specific tools and oppor-

tunities for interns to apply social justice principles to teaching practice" (Hollins & Warner, 2021, p. 17). The success of Freedom Schools is evidenced by an increase in student academic achievement (Phillibber Research Associates, 2008).

Successful teacher education and community partnerships are dependent on careful logistical planning, including attention to material and human resources. Developing equal-status relationships among participants is crucial, as well as ensuring that mutually beneficial agreements are established and maintained. Shared program values are most productive when a culture of collaboration is created among the participants in the planning and implementation phases of program development (Noel, 2010; Zeichner, 2024).

[a] It is important to distinguish between community partnerships and community-based programs. Community partnerships are generally initiated by programs based in institutions of higher education, districts, or nonprofits, whereas community-based programs (such as grow-your-own programs) are often initiated by and based in communities. In community-based programs, the conceptualization and development are done with the full participation of community members.

CLINICAL EXPERIENCES

Over the years, a significant development in teacher preparation has involved a shift from focusing solely on preparing candidates with the knowledge of learning, learners, subject matter, and pedagogy to situating teachers as researchers and enhancing their capacity to learn from and in practice (Ball & Cohen, 1999). As such, there is now an increased emphasis on how TPPs attend to the clinical aspects of preparation and their alignment with overall programmatic features. In summarizing literature concerning clinical experiences, Ronfeldt (2021) found that high-quality clinical experiences are consistently associated with stronger teacher retention, feelings of preparedness, and observed teaching effectiveness. He found that high-quality clinical experiences

> (1) are aligned with other program dimensions including coursework (program coherence); (2) occur in field placement schools with strong professional learning environments and that match employment schools on student demographics, school, and grade levels; and (3) include instructionally effective cooperating teachers who also provide high-quality coaching. (p. 20)[1]

[1] For a fuller discussion of teacher effectiveness and retention, see the NAEd commissioned paper *Links Among Teacher Preparation, Retention, and Teaching Effectiveness* (Ronfeldt, 2021), available at https://naeducation.org/evaluating-and-improving-teacher-preparation-programs-commissioned-paper-series.

Ronfeldt's (2021) analysis also suggests that candidates who complete longer durations of practice teaching feel better prepared to teach and stay in the classroom longer. Beyond examining the duration of clinical work, studies have also identified qualities associated with effective clinical experiences and their impact on outcomes. For example, studies have found that teacher candidates who participate in fieldwork and coursework simultaneously are better able to understand concepts, apply what they learn in coursework, and support student learning (e.g., Denton, 1982; Koerner et al., 2002). This may explain why some TPPs, state requirements, and national accreditation emphasize early clinical experiences—because coherent course design and clinical experience can potentially help teacher candidates more thoroughly understand and apply the knowledge and theories being taught in teaching practices.

Early field experience also provides classroom context, which helps teacher candidates connect the methods they learn in coursework with required teaching skills (Denton, 1982). The level of mediation and alignment across coursework and clinical experiences is an important feature of the quality of clinical experiences. For example, it is valuable to provide fieldwork where candidates have opportunities to rehearse, study, and receive feedback on instructional practices learned in methods courses (Kazemi & Waege, 2015). Ronfeldt (2021) recommends that TPPs incorporate program designs that foster alignment between coursework and clinical components—such as ensuring more hours of clinical experience under mentor teacher guidance, requiring supervisors to observe candidates, requiring collaborations with other program faculty, and centering program faculty and school-based educators in selecting placements.

Researchers have also found that the types and quality of field placements, modeled practices, and quality and frequency of mentoring influence candidates' learning (Boyd et al., 2009; Feiman-Nemser & Buchmann, 1985; Knowles & Hoefler, 1989; LaBoskey & Richert, 2002; Rodriguez & Sjostrom, 1995). Teacher learning benefits when the field placement school features a strong professional community, including quality teacher collaboration, frequent feedback and reflective practices, and an instructionally effective faculty (Darling-Hammond et al., 2005). Further research is needed to examine the effects of school-based professional communities on retention outcomes (Ronfeldt, 2021).

Research has also examined the match between field placement schools—where candidates learn to teach—and the schools where candidates teach after TPP completion. The closer the match—in terms of the type of students, grade level, and subject matter—appears to be associated with stronger teaching in the early years (Koerner et al., 2002). Goldhaber et al. (2017b) also found that teachers tend to receive higher teacher effectiveness ratings from their administrators when they teach

students of similar demographics to their student teaching school. Boyd et al. (2009) likewise found that the closer the match between the context of student teaching and candidates' later teaching assignments in terms of grade level, subject matter, and type of students contributed to teachers' effectiveness as measured by student learning gains. Some researchers hypothesize that teachers develop population- or context-specific knowledge and skills based on the school and student characteristics of their field placement schools. The evidence gains strength when the match is closer at the classroom level—rather than the school or grade level. However, the relationship between the effects of the match and retention is mixed (Ronfeldt, 2021).

Boyd et al. (2009) found that the opportunity to study and learn to use the district curriculum while in teacher education was also a predictor of effectiveness. Residency programs, in which school districts partner with programs (e.g., universities, teachers' unions, community partners) to jointly recruit and prepare candidates into district schools, implement a model where candidates learn to use district curriculum (Matsko & Hammerness, 2014; see Box 6-3, which describes how the residency model embodies many of the features associated with effective clinical experiences).

The effectiveness of mentor teachers also plays an important role in influencing their student teachers' instructional effectiveness. Evidence suggests that candidates placed with instructionally effective mentor teachers, as measured by student test score gains, are more instructionally effective themselves (Goldhaber et al., 2020). This effect is hypothesized to occur through both modeling and coaching, connecting the cooperating teacher's instructional practice and their mentoring interactions with the candidate (Ronfeldt, 2021). At the same time, this relationship appears to be domain-specific—TPP graduates tend to be proficient on the same measures of teacher effectiveness as their cooperating teachers, but not on others (Ronfeldt, 2021). Additional support for the importance of cooperating teachers comes from a small-scale study on the effect of National Board Certified Teachers (NBCTs) as mentor teachers, revealing a statistically significant positive relationship between students taught by teachers who were mentored by NBCTs and higher levels of student achievement (as measured by English language arts or mathematics test scores) than students taught by teachers mentored by individuals who were not NBCTs (Zhu et al., 2019).

A promising alternative strategy that pairs two teacher candidates with a mentor teacher emphasizes the collaborative nature of teaching, creating a learning community among the student teachers and the mentor teacher. This approach can be effective in providing opportunities for co-planning, reflection, and mutual support between the student teachers

BOX 6-3
The Teacher Residency

An approach to clinical preparation has emerged around a teacher preparation model that is gaining attention and being replicated across the United States. Several cities—including Chicago, Boston, and Denver—were among the first to develop Urban Teacher Residencies to recruit, prepare, and retain strong teachers in their districts. Currently, teacher residencies operate in at least 26 states, and residencies continue to expand rapidly (National Center for Teacher Residencies, 2023). Several states have launched funding for residencies as a means to deal with teacher shortages with the hope of creating seamless, well-supported pathways into teaching (e.g., Hatkoff & Russell, 2024).[a]

Residencies began as postbaccalaureate programs, although undergraduate versions are now beginning to emerge. The typical teacher residency model involves a partnership between a TPP and a school district where clinical placements are located, and sometimes also includes community agencies and teacher unions as partners.

These partners carefully screen and recruit talented college graduates who are interested in a long-term career in urban or rural teaching, offering them a year-long paid residency under the tutelage of mentor teachers. During the year, while learning to teach in the classroom of an expert teacher, recruits engage in carefully constructed coursework from partners who work closely with the districts. The courses, which lead to certification and a master's degree, are designed to be relevant to the particular contexts teachers are being prepared to work in. Rather than trying to learn to teach through a "sink-or-swim" model without ever seeing good teaching, these recruits watch experts in action and are tutored into accomplished practice. Residents receive a salary or a stipend and usually continue to receive mentoring over the following year or two. In return, they pledge to teach for at least three to five years in the district's schools.

Most residency models feature several quality-related elements[b]:

1. "Strong district/[program] partnerships
2. Coursework about teaching and learning tightly integrated with clinical practice
3. Full-year residency teaching alongside an expert mentor teacher
4. High-ability, diverse candidates recruited to meet specific district hiring needs, typically in fields where there are shortages
5. Financial support for residents in exchange for a three- to five-year teaching commitment
6. Cohorts of residents placed in 'teaching schools' that model good practices with diverse learners and are designed to help novices learn to teach
7. Expert mentor teachers who co-teach with residents
8. Ongoing mentoring and support for graduates" (Guha et al., 2016, p. i)[c,d]

Residency programs routinely demonstrate significantly higher retention rates than those of other beginning teachers in the same district (Silva et al., 2015). These increased retention rates contribute to teacher effectiveness, as teachers become more effective with experience, with a sharp uptick after the third year of

teaching (Podolsky et al., 2019). Key residency studies have shown that factors including a combination of program quality, residents' commitment to teach for a period of time in exchange for financial support, and induction support during the initial years of teaching may all lead to the higher retention rates (Papay et al., 2012; Silva et al., 2015).

Residency programs also provide the ability to locate clinical preparation in settings that prepare teachers to teach in high-need schools and make sustained contributions to the local community. High-quality teacher residency models with coherent design and implementation can result in long-term benefits for districts, schools, and most importantly, the students they serve (Guha et al., 2016). Although teacher residency programs may present higher costs to districts in the short term, researchers have found that the longer-term benefits of more effective teachers, higher retention rates, and more teachers staffing hard-to-staff subject areas or schools outweigh the initial costs (Worley & Zerbino, 2023).

Because most residency programs are relatively new, few studies have examined the impact of these types of programs on outcomes—however, the initial data are promising. Evidence from a study of the New Visions Hunter College Urban Teacher Residency (UTR), now the New Visions-Hunter College Charter Residency, in New York City found that students of UTR residents and graduates performed better than those taught by other novice teachers on 16 of 22 (73 percent) of state Regents exams (Sloan & Blazevski, 2015). As measured by value-added scores, graduates of the Boston Teacher Residency (BTR) were initially comparable to other novice teachers in raising students' English language arts scores and less effective in raising mathematics scores, but BTR graduates stayed in the classroom at substantially higher rates and their effectiveness surpassed that of new and veteran teachers in mathematics by the fourth or fifth year of teaching (Papay et al., 2012). Additionally, the 2014 Tennessee Educator Preparation Report Card found that graduates of the Memphis Teacher Residency program had larger student achievement gains than other beginning teachers (Tennessee Higher Education Commission, 2014). When compared to veteran teachers, these residency graduates also had larger gains on most of the Tennessee Comprehensive Assessment Program exams (Tennessee Higher Education Commission, 2014). A 2022 report continues to find that graduates of the Memphis Teacher Residency have scores higher than or similar to those of other novice teachers on all four measures of teacher effectiveness in the first three years of teaching (Garrison, 2022). In San Francisco, principals unanimously agreed that residency graduates were more effective than other new teachers they hired from both university-based and alternative routes (Guha et al., 2016).

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[a] See National Center for Teacher Residencies (https://nctresidencies.org/nctr-network/impact-results).

[b] Although these are common features of high-quality residency programs, there is significant variation between residency models, and thus each must be examined and evaluated for quality.

[c] For a related set of principles concerning residency design, see Pathways Alliance (https://www.thepathwaysalliance.org).

[d] An additional feature of many residency programs is that the expert mentor teachers often receive greater supports and compensation than mentors in non-residency programs (Zeichner & Bier, 2015).

when occurring in conjunction with the goals of the program (see Hammerness et al., 2017, for an example from Finland). Researchers in one study also found that this approach can be effective at disrupting candidates' replication of poor teaching practices and encouraging candidates to deconstruct practices that do not serve the students they teach (Bullough et al., 2003). Moreover, providing opportunities for teacher candidates to work together in learning and school settings that demonstrate ongoing collaborative environments enable them to practice, witness, and reflect on the critical skills necessary to adapt and improve teaching as well as to contribute to a culture of collaboration in school communities.

Many TPPs, though, find it challenging to recruit mentor teachers who model and guide exemplary teaching consistent with approaches advocated by the TPP, particularly in urban and rural schools. Hollins and Warner (2021) report that

> [p]reparation of mentor teachers for traditional student teaching has been criticized for decades as usually involving a cursory orientation to program logistical procedures with little substance or attention provided to theories or methods guiding the facilitation of candidate learning (Guyton, 1989; Lafferty, 2018; Sudinza et al., 1997). (p. 6)

Research shows that professional development for mentor teachers can improve their coaching practices and in turn improve teacher candidate effectiveness (Becker et al., 2019; Gareis and Grant, 2014; Giebelhaus and Bowman, 2002; McQueen, 2018). When mentor teachers are trained to articulate their teaching decisions and encourage candidates to do the same, candidates are more likely to apply those practices in their own teaching (Lafferty, 2018).

TEACHER CANDIDATE RECRUITMENT, SELECTION, AND SUPPORT

TPPs play an important role in the processes and criteria used to recruit and select teacher candidates and support their progress through the program.

Regarding teacher candidate recruitment and selection, TPPs seek to recruit and select teacher candidates with academic backgrounds, life experiences, and dispositions that suggest they will be able to work effectively with, care for, and support students. As noted in Chapter 5, high-quality teaching requires teachers with certain knowledge, skills, and dispositions. While TPPs should teach these knowledge, skills, and dispositions, TPPs should also seek candidates with dispositions such as empathy, cultural competences, social-emotional capacity, and a commitment

to equity when selecting teacher candidates. In addition to recruiting and selecting candidates who possess these qualities, TPPs should recruit and enroll a diverse group of candidates. Research has indicated that there is a strong link between a diverse teacher workforce and better academic and development outcomes for students (Carver-Thomas, 2018). It is also crucial to recruit candidates for high-demand teaching fields, to serve in locations where teachers are most needed, and from communities where teachers are underrepresented (e.g., grow-your-own program recruitment strategies). Given the often local nature of teaching, most TPPs also seek to be responsive to local labor market needs.

To achieve these goals, TPPs are evolving and implementing a range of recruitment strategies, including strategic outreach to populations that are likely to meet the teaching criteria identified above as well as labor market needs; and resource allocation to support and underwrite teacher training. For example, teacher cadet programs in North and South Carolina[2] provide pre-college programs that give young people the opportunity to experience teaching through tutoring or mentoring programs and, in some instances, through studying teaching. Some community colleges have partnerships with TPPs to ease their students' entry into TPPs, and some community colleges are empowered by their states to offer TPPs themselves. Partnerships with community organizations (e.g., grow-your-own programs) and Tribal Nations also help recruit teacher candidates in high-need areas. Moreover, some TPPs further strengthen the teaching workforce by helping paraprofessionals gain certifications as teachers.

As with recruitment strategies, selection strategies should identify specific programmatic needs and provide potential candidates with variable measures to demonstrate their potential to be engaged, empathetic, high-quality teachers. Fair and equitable selection processes will likely yield more diverse and engaging teacher candidates. For instance, in addition to grade point averages and exam scores, academic content background, prior experience with children, interviews, and performance tasks are also useful in judging a prospective teacher candidate's potential to become a high-quality teacher.

In addition to these recruitment and selection strategies, program retention support is essential to the ultimate success of teacher candidates. This support may include academic support along with cohort support and programming, advising, mentoring, and affinity groups that enable prospective teachers to feel a sense of belonging and competence to succeed. Financial support for tuition, expenses, and childcare—as well as

[2] More information about the North Carolina Teacher Cadet Program is available at https://ncfpsc.org/teacher-cadet and more information about the South Carolina Teacher Cadet Program is available at https://www.teachercadets.com/about.html.

forgivable loans—in return for a specified period of service can also support teacher candidates.

FACULTY RECRUITMENT, SELECTION, AND SUPPORT

As with teacher candidate recruitment, selection, and support, faculty recruitment, selection, and support strategies seek faculty members with the academic and social backgrounds, life experiences, and dispositions that suggest they will be able to work effectively with teacher candidates and support their success. A range of considerations must be employed by TPPs in the development of a well-prepared, diverse faculty—broadly defined to include both institution and school-based faculty. In addition to expertise in their particular areas of competence, such considerations include commitment to being part of a collaborative faculty to create a coherent program; commitment to working on ongoing program improvement; supporting candidates in ways that may extend beyond teaching a course; prior experience in teaching (for at least some critical mass of faculty); and willingness to study and engage with practice and the development of their own pedagogy.

Program faculty should be well prepared to support teacher candidate learning. Faculty should be willing to learn about the settings in which candidates are learning to teach and be capable of teaching in ways that are responsive to candidates' backgrounds and the backgrounds of the students that the candidates will likely encounter in their classrooms. Ideally, faculty should have some graduate-level preparation as teacher educators, including preparation to be mentors if they are working with candidates in clinical experiences. Currently, however, many faculty, including program-based mentors, have had no formal preparation for teacher education, and many programs do not provide adequate preparation to faculty for mentoring candidates during their clinical experiences.

Faculty diversity is another critical component that benefits TPPs, including by improving cultural relevance, innovation, creativity, employee experiences, and decision making. A recent American Association of Colleges for Teacher Education (2022) report found that more than 70 percent of tenured or tenure-track positions in education are held by White faculty. Diverse faculty bring a variety of perspectives and life experiences to curriculum development and the instructional process (Denson & Chang, 2009; Page, 2007; Rock & Grant, 2016). In the context of TPPs, diverse faculty can also lead to increased recruitment of diverse teacher candidates, increased understanding and commitment to student needs, and the delivery of culturally sensitive insights that teacher candidates can bring into their future classrooms.

The selection of high-quality and diverse supervisors and mentor teachers is also a critically important aspect of faculty development. When mentored and coached by experienced teachers from diverse backgrounds, teacher candidates will likely learn how to enact a wide range of teaching practices sensitive to student differences (Ronfeldt, 2021). Mentor teachers can demonstrate how to adapt curriculum and instruction to different students; enact culturally responsive approaches; and respond to learning challenges posed by students from varied social, cultural, and linguistic backgrounds. Finally, to support and retain high-quality and diverse TPP faculty, faculty members will require opportunities for ongoing professional development.

7

Using Evidence for the Evaluation of Teacher Preparation Programs

Evaluation of teacher preparation programs (TPPs) involves gathering and appraising evidence about one or more of the purposes that motivate the evaluation: program improvement, accountability, or consumer information (as described in Chapter 2). The evidence used in these evaluations also needs to assess the programmatic features associated with teacher and teaching quality (as described in Chapter 6). The evidence used for evaluations should differ depending on the goals of the evaluation and programmatic features of interest. The specific metrics used as evidence also vary depending on the entity conducting the evaluation or seeking the information (see Chapter 4). For example, federal Higher Education Act reports collect evidence that is easily quantifiable, including admissions criteria and results of teacher licensure assessments (Higher Education Act, Title II, §§ 205–208 [2008]). By comparison, accreditation and state government reviews use a broad range of indicators and information on program quality and outcomes. In recent years, there has been an increasing emphasis on outcome measures that attempt to gauge graduates' preparedness, entry, and retention in teaching; ability to engage in effective practice; and influence in raising student achievement (Wojcikiewicz & Patrick, 2022). Additionally, even though evaluating entities may examine the same program characteristic, they may analyze and operationalize different data as supporting evidence. For example, to assess the selectivity of incoming teacher candidates, some programs might emphasize high school or college grades, SAT scores, or performance on norm-referenced tests. Other programs may use

more qualitative evidence, like analysis of courses taken, experiences with children, recommendations, personal essays, and interviews.

Although substantial variations exist in the measures that are used to evaluate programs across states and accreditation entities, this chapter discusses measures associated with (1) program quality and (2) program outcomes. First, using the features of program quality identified in Chapter 6, this chapter discusses potential measures that can capture aspects of program quality and highlights general evaluative questions that TPPs can consider as they identify and design these measures. Second, this chapter focuses on measuring program outcomes, including teacher-candidate mastery of knowledge, skills, and dispositions; teacher performance and practice in classrooms, including in relation to student learning; and labor market outcomes. The chapter also highlights the strengths and weaknesses of commonly used measures for both program quality and outcomes.

Finally, as this chapter illustrates, many features and measures can help track and understand TPP program quality and outcomes. This report recognizes that no program approval or accreditation will be able to examine all measures. TPPs engaged in self-study need to examine their mission and goals for evaluation studies and, given limited resources and time, likely need to focus on a specific set of features and measures that are important to their program. Additionally, measures will not be able to address all questions about the link between program features and graduate effectiveness and student achievement.

EVIDENCE OF PROGRAM QUALITY

The features associated with high-quality TPPs identified in Chapter 6—(1) program coherence and alignment; (2) curriculum content; (3) instructional methods; (4) clinical experiences; (5) teacher candidate recruitment, selection, and support; and (6) faculty recruitment, selection, and support—are typically assessed to evaluate the quality of a program. To assess these features, programs use measures tied to the features, with some measures more predictive of the quality of a program feature and others providing rougher estimates of quality. Table 7-1 provides a list of potential measures for TPP quality indicators associated with high-quality preparation of teachers. As demonstrated in Table 7-1, some measures can be used to inform more than one program feature, and, while some measures are easy to collect (e.g., average grade point average of entering candidates), they may prove to be less useful when serving as a proxy for a quality feature compared to measures that may be harder to collect (e.g., classroom observations). Similarly, many of the quality features of TPPs require examining multiple measures to assess how the TPP is performing

TABLE 7-1 Commonly Used Measures of TPP Quality Features

Features	Measures
Program coherence and alignment	• Surveys and/or interviews of candidates, recent graduates, and program faculty[a,b] • Analytic description of curriculum and clinical components
Curriculum content	• Course syllabi • Lectures and assignments • Texts and readings • Course offerings and required hours • Number of required content courses • Course evaluations • Surveys and/or interviews of candidates, recent graduates, and program faculty[b] • Classroom observations[b] • Teacher performance or portfolio assessments[b]
Instructional methods	• Course syllabi • Lectures and assignments • Number of required content courses • Course evaluations • Surveys and/or interviews of candidates, recent graduates, and program faculty[b] • Classroom observations[b]
Clinical experiences	• Fieldwork policies, including required hours • Qualifications of mentor teachers • Course evaluations • Surveys and/or interviews of candidates, recent graduates, and program faculty[b] • Observations of student teaching
Teacher candidate recruitment, selection, and support	• Grade point averages (GPAs) • Entrance exam scores (e.g., SAT, ACT, GRE) • Additional admissions criteria, including academic content background, prior experience with children, interviews, and performance tasks • Percentage of Black, Indigenous, and people of color (BIPOC) candidates in incoming class • Number of candidates admitted in high-need areas and specialties (e.g., science, technology, engineering, and mathematics [STEM], special education, English language development/bilingual education) • Average program costs/student indebtedness as a result of program costs • Surveys and/or interviews of candidates, recent graduates, and program faculty[b] • Teacher performance or portfolio assessments[b] • Pass rates and/or average scores on licensure tests[b] • Graduation/completion rates[b] • Surveys of principals/employers about graduates[b]

continued

TABLE 7-1 Continued

Features	Measures
Faculty recruitment, selection, and support	• Percentage of faculty with advanced degrees • Percentage of faculty that are full-time, part-time, or adjunct • Percentage of BIPOC faculty • Percentage of faculty with prior K–12 teaching experience • Number of faculty qualified to provide instruction for high-need areas and specialties (e.g., STEM, special education, English language development/bilingual education)

[a] Program faculty includes all course instructors (tenure, nontenure, adjunct, etc.), mentor teachers, program-based supervisors, and any others who provide instruction and support to teaching candidates (see the section "Definitions of Terms" in Chapter 1).

[b] Denotes measures generally used for program outcomes that also inform attributes of TPP quality.

and make recommendations for improvement. This section, following the quality features identified in Chapter 6, examines commonly used measures and provides key evaluative questions[1] for each feature of program quality.

Program Coherence and Alignment

As described in Chapter 6, program coherence manifests through program elements that are coherently structured and grounded in a shared conception of teaching and learning that reflects the TPP's core value commitments and evidence-based knowledge that supports the entire profession. Program coherence can be assessed along both its structural and conceptual dimensions. Structural coherence emphasizes the alignment of key activities like coursework, assignments, and clinical experiences. This alignment is commonly measured through analytic descriptions of curriculum and clinical components. Conceptual coherence emphasizes a common professional vision shared among TPP faculty. This coherence is commonly measured through surveys and interviews of program candidates, graduates, and faculty, and analyses of the curriculum and clinical components (Hammerness, 2006). Evidence of program coherence and alignment provides critical information for accountability and program improvement as it demonstrates how well the program's goals, resources,

[1] Because multiple measures can support the evaluation of a single program feature, the key evaluative questions presented in this chapter serve as guiding considerations for designing evaluation measures but do not prescribe the specific measures that should be used.

and structures are aligned to ensure high-quality implementation, which ultimately affects K–12 student learning.

The following questions provide guidance for designing evaluations to measure the quality of program coherence and alignment:

- How are program objectives and goals reinforced across program components?
- How are coursework and clinical experiences aligned and integrated?
- How are program faculty engaged in program planning and design to ensure learning experience coherence?
- What procedures has the program instituted to monitor the degree of coherence in the program and to steadily improve along this dimension?

Curriculum Content

TPP curriculum content should reflect the knowledge, skills, and dispositions necessary for effective teaching (as detailed in Chapter 5). Adequate curriculum content relies on a well-developed theory that informs the selection and arrangement of content and how it integrates with clinical experiences. Common measures to evaluate high-quality curriculum content in TPPs include a review of course syllabi; lectures and assignments; texts and readings; course offerings and required hours; the number of required content courses; surveys and interviews of candidates, recent graduates, and program faculty; teacher performance assessments (TPAs); and classroom observations.

Some of these measures mainly consist of document review (e.g., course syllabi, assignments, texts, course offerings, and required hours) and can provide a baseline for evaluation as well as useful information for consumers—both potential candidates selecting programs and districts seeking candidates with specific areas of expertise. However, a more in-depth examination, using measures like surveys, TPAs, and observations, is likely needed to understand the enacted curriculum content and truly inform accountability and self-study. The intended curriculum can be assessed through a review of course and fieldwork materials that identify key questions, concepts, and learning goals. Evaluating the enacted curriculum, however, involves the collection of survey- and interview-based information from teacher candidates, recent graduates, and faculty that provide their thoughts about the curriculum—including the depth of coverage; specific knowledge, skills, and dispositions gained from the content; and candidates' understanding of the information. Evidence about curriculum content can also be gathered through

classroom observations during courses and practice teaching—although this method is labor-intensive and dependent on meeting observation quality standards. Finally, program evaluation can examine how TPPs are assessing what their candidates and graduates are learning of the curriculum content, including through TPAs. Such evaluation can also scrutinize the relationship between the program's assessments and the curricular content that makes up the program. Program evaluation can also examine the evidence that programs collect about what candidates are learning, in relation to high-value curricular content.

The following questions provide guidance for designing evaluations to measure the quality of curriculum content:

- How is curriculum content organized and sequenced around a shared vision of teaching among faculty?
- How is contemporary knowledge about learners, learning, and human development represented in the curriculum?
- How does the program support the learning of subject-matter knowledge to support teaching and content pedagogy?
- How is the knowledge of methods for teaching diverse learners reflected in the curriculum?
- How are the necessary teaching skills for adaptive, reflective, diagnostic, inquiry-oriented, and curriculum design and instruction attended to in the curriculum?
- How are dispositions in support of empathy, cultural competence, socio-emotional capacity, self-efficacy, and equity attended to in the curriculum?
- What specific models and strategies for instruction are employed?
- How is teacher candidate learning assessed throughout the program?
- How are candidates prepared for TPAs, either as culminating assessments or for state licensure, taking specific state requirements into account?
- How does the program help candidates learn to plan, instruct, and reflect on their practice?
- How does the program attend to culturally responsive and affirming practices?

Instructional Methods

High-quality teacher preparation requires that curriculum content be coupled with instruction that engages teacher candidates directly in the practice of teaching. Therefore, documenting both what is taught and how it is taught is a priority for program evaluation. Additionally, many TPPs

have experienced a shift from traditional instruction methods—such as lectures, reading and writing assignments, and small group discussions—to more engaged and collaborative methods including rehearsals, simulations, videotaped lessons for analysis, collaborative projects that bridge program coursework and the school classroom, child study projects, and community-based projects. TPPs, as well as approval and accreditation entities, need to determine what instructional methods are being employed in the programs, as well as how effective these instructional methods are and possibly what different methods would more effectively deliver the curriculum content. Some instructional methods can be gleaned from course syllabi, lecture notes and assignments, and the required course content. Course evaluations; surveys; and interviews with program faculty, teacher candidates, and recent graduates can be employed to gather more fine-grained descriptive detail. Moreover, observations of classroom instruction can also gauge the quality of instruction.

The following questions provide guidance for designing evaluations to measure the quality of instructional methods:

- What are the primary or widely used instructional methods for promoting effective teaching practices?
- To what degree do instructional methods reinforce shared views of teaching effectiveness?
- How do methods used in the instruction of teacher candidates—in both course-based and clinical contexts—explicitly model ideal teaching methods and reflect the backgrounds of teacher candidates and their future teaching settings?
- How does the program create engagement opportunities and provide feedback and coaching for teacher candidates to practice and adapt instructional methods to learners and to curriculum?
- How is the program studying the effectiveness of its instructional methods? How is the program routinely modifying and improving instructional methods in use?
- How does the program provide community engagement opportunities so that teacher candidates can learn about their students' families and backgrounds and integrate those funds of knowledge into their teaching?

Clinical Experiences

Clinical experiences, where teacher candidates observe mentor teachers modeling effective teaching practices and then engage with students themselves under mentor supervision, are a crucial component of TPPs. As described in Chapter 6, effective education about the practice of teaching involves programs engaging in collaborative partnerships with field

sites—districts, schools, and communities—and co-constructing programming on an ongoing basis. Similarly, TPP evaluative efforts are better served when program faculty and representatives from these collaborative partnerships are engaged in TPP development and evaluation. Common measures to identify high-quality clinical experiences include fieldwork policies; the total program hours devoted to practice-based activity in clinical and course settings; course evaluations; qualifications of mentor teachers; surveys or interviews of candidates, recent graduates, and program faculty; and observations of student teaching. What is collected, how it is collected, and how it is presented can be used to serve different evaluation purposes and audiences. For instance, potential teacher candidates may be interested in understanding the required number of clinical hours and if clinical placement sites are similar to the schools and communities in which they envision teaching. Districts and schools may be interested in the extent of clinical training, the complementary coursework, and the locations provided by TPPs. Given that research has shown the importance of clinical experiences for preparing teacher candidates, the success—or not—of clinical experiences is critical in accountability reviews and self-study for improvement.

The following questions provide guidance for designing evaluations to measure the quality of clinical experiences:

- How does the TPP select and ensure the quality of field sites and mentor teachers?
- How are field sites and mentor teachers selected and supported to serve as ongoing partners in the TPP?
- To what extent do field placement schools provide a strong professional learning environment that instantiates contemporary best practices?
- How are mentor teachers inducted into the program's philosophy and approach, and how are program faculty helped to understand the school and community contexts used as placement sites? What training and support are supplied and/or mandated to mentor teachers?
- How do the clinical portions of the program cohere with other components of the program, such as coursework?
- How effective are the clinical aspects of the program from the perspective of teacher candidates (e.g., the coherence of support and quality of coaching and modeling from supervisors and mentor teachers)?
- How has clinical practice evolved in response to evaluative feedback?

Teacher Candidate Recruitment, Selection, and Support

Program evaluations generally assess a TPP on whether the program has mobilized a range of resources to recruit, select, and support promising candidates that respond to priorities in teacher supply, meet goals for workforce quality and diversity, and are well-matched to open teaching positions. Potential teacher candidates and their families can use such information to determine if a program is the right fit—academically, culturally, socially, and financially, as well as by programmatic features and through the provision of support services. Districts and schools may find such information useful in examining the composition of TPPs. For accountability purposes, programs utilize such measures to examine the composition of teacher candidates as well as their teaching abilities, which are informed by program supports. Such measures are critical to program self-evaluation. The following sections provide common measures and key evaluative questions for teacher candidate recruitment, selection, and support.

Teacher Candidate Recruitment

TPPs need to recruit diverse candidates who can meet both the academic rigors of the program and the demands of the teacher workforce, including successfully gaining the knowledge, skills, and dispositions for high-quality teaching and meeting district- and school-level placement demands. Typically, the primary sources for evaluating candidate recruitment processes are the program documents used in recruitment efforts, together with survey and interview information gleaned from program staff engaged in recruitment. Additionally, interviews with selected candidates from diverse backgrounds and program faculty can inform what recruitment incentives were particularly effective.

Because the recruitment targets of individual TPPs differ, measures and indicators must be aligned to the program's specific goals and labor market needs in the school systems where program graduates are employed. For example, an urban residency program may measure how well it supplies teachers to the cooperating district or districts. Programs targeting STEM fields may measure how they are adding to the STEM teacher workforce.

Teacher Candidate Selection

Several sources of information can be utilized to evaluate the quality of candidate selection. Program documents that include descriptions of selection processes, criteria, and indicators, as well as accounts of how

candidate evaluation is carried out, are important sources of information. Common measures for teacher candidate selection include average GPA, entrance exam scores (e.g., SAT, ACT, GRE), percentage of BIPOC candidates, and number of candidates admitted in high-need areas. Additional admissions criteria, including academic content background, prior experience with children, interviews, and performance tasks are also used to evaluate prospective teacher candidate potential to become a high-quality teacher. Moreover, as with recruitment strategies, selection strategies should be tailored to the specific programs and program types.

Additionally, some programs and states use or require selection measures that include basic skills and subject-matter tests. As discussed more fully in this chapter in the section "Knowledge-Based Licensure Exams," basic skills and subject-matter tests often disproportionately negatively affect minority candidates, without substantial evidence that they are connected to necessary teaching skills. To select candidates into programs and support them to become part of a robust teacher workforce, some programs have developed more flexible program entry standards and emphasize program exit standards while strengthening candidate supports. Some states, including Illinois and California, allow candidates to demonstrate basic skills and subject-matter knowledge through coursework or performance measures rather than standardized tests. By considering an applicant's experiences and potential to become a good teacher instead of simply considering standardized test scores, states can likely increase the diversity of their teacher candidates.

Teacher Candidate Support

Ideally, programs implement meaningful standards in evaluating candidate progress and simultaneously provide high levels of support that address academic, social, economic, or cultural characteristics of the candidates. Generally, programs review relevant program materials alongside feedback on program support from candidate surveys and interviews. Teacher performance and portfolio assessments can also offer insights into the level of program support necessary to ensure candidate success. Weaknesses in teacher performance or portfolio assessments may also lead TPPs to examine the theory that guides their decisions about linking program features and teacher candidate learning. Other measures, such as graduation/completion rates, pass rates on licensure examinations, average student costs and debt, and ratings of graduates by employers can also provide important information about the success and effectiveness of program support.

Programs can also examine candidates across a common set of decision points to assess whether discriminatory impacts have emerged within the TPP, and these data can help compare trends across different candidate categories. For example, TPPs can assess if they are meeting the needs of diverse teacher candidates (e.g., program completion/graduation data can be an indicator, along with data about financial and other supports). Because numbers alone cannot tell the full story, survey data or select interviews can help inform how well programs are supporting all of their candidates and subgroups of candidates as needed (including those at risk of non-completion or those who have not completed the program). Qualitative case studies could also be useful in self-study efforts aimed at improving the system of supports that candidates receive. Programs and/or institutions may also examine strategies to provide financial aid to ensure equitable distribution of limited funding and maximize support for program participants in need.

Recognizing that there are numerous factors outside TPP control, candidates' entry into and retention in the teaching profession can inform aspects of program preparation. As discussed in Chapter 3, teachers are leaving under-resourced, high-need schools at alarmingly high rates, and although many retention-related factors lie outside TPP control, program preparation can play a role in these decisions (Carver-Thomas & Darling-Hammond, 2017a). Comparing data with programs serving similar schools and districts may inform improvements in better supporting teacher candidates.

The following questions provide guidance for designing evaluations to measure the quality of candidate recruitment, selection, and support:

Recruitment

- What strategies does the program use in its recruitment efforts, including to generate a diverse supply of recruits for high-need fields and contexts?
- How does the program match recruitment goals and priorities to labor market needs?
- What is the program's record with respect to recruitment?

Selection

- What are the program's selection criteria and how do they reflect its goals and priorities?
- How does the applicant pool compare to the pool of selected candidates? How do programs avoid discrimination in their selection procedures and indicators?

- Across preparation programs within an institution (e.g., elementary-secondary education, subject area majors), what are trends in applicant pools and selection by candidate characteristics?

Support

- What forms of support—including academic, social, and economic—do programs provide to candidates?
- How do programs monitor candidate progress and program support as a continuous process, attending to any possible discriminatory impacts? How is ongoing candidate evaluation and progress used in decisions concerning candidate support?
- How do candidates perceive the support provided by the program?
- How effective are the supports provided by the program across the spectrum of candidates?
- How do programs utilize data on recent candidate graduation rates, pass rates on licensure tests, and ratings by graduate employers to improve program support for teacher candidates?

Faculty Recruitment, Selection, and Support

Program evaluations should examine whether recruitment, selection, and support strategies bring in and retain faculty members with the academic and social backgrounds, life experiences, and dispositions that suggest they will be able to work effectively with and support teacher candidates. Recruitment evaluation should apply broadly to all program faculty, including course instructors, mentor teachers, program-based supervisors, and others who provide instruction and support to teaching candidates. The quality and diversity of TPP faculty allow teacher candidates to benefit from many perspectives grounded in life experiences and expertise.

Common measures for faculty qualifications include the percentage of faculty: with advanced degrees; who are full-time, part-time, and adjunct; who are BIPOC; who have prior K–12 teaching experience; and who are qualified to provide instruction for high-need areas and specialties (e.g., STEM, special education, English language development/bilingual education). Such information could be relevant to all three areas of program evaluation—program improvement, accountability, and consumer information.

The following questions provide guidance for designing evaluations to measure the quality of faculty recruitment, selection, and support:

- What are the trends in program faculty (course instructors, mentor teachers, program-based supervisors, and others who provide instruction and support to teaching candidates) characteristics, including demographics, qualifications, and teaching experiences, disaggregated by department and rank?
- What are the trends in program faculty retention, promotion, and advancement by characteristics and department?
- How are program faculty evaluated by students and how well prepared to teach do graduates feel?
- How do graduates evaluate the quality of the supervision and mentoring they have received?

EVIDENCE OF PROGRAM OUTCOMES

A variety of program outcomes are also commonly used to assess if TPPs are producing well-prepared teachers who will effectively support students' learning and development. The field of TPP evaluation has seen a significant shift from emphasizing inputs to a focus on measures based on educational outcomes. Historically, input measures—such as the GPA of incoming students or licensure exams taken before program entry—were examined to determine TPP quality, but these measures are not an indicator of the quality of a program. Now, there is a greater emphasis on measuring the preparation of high-quality teachers. For example, non-governmental accrediting agencies have identified several common outcomes to evaluate TPP quality (see the section "National Professional Accreditation" in Chapter 4 for a more detailed discussion).

The following analysis concentrates on three basic categories of program outcomes: (1) mastery of knowledge, skills, and dispositions; (2) teacher performance and practices in classrooms; and (3) labor market outcomes. This section of the report focuses on the use of the outcome measures highlighted in Table 7-2, including how these measures can be used to align program practices and outcomes to standards that support program improvement. Additionally, this section highlights evidence on a range of relevant measurement characteristics including construct and predictive validity, reliability, representativeness, and error. This section also reviews evidence on equity, including the history of racial bias and differential scores, differences in program capacity and content, differences in teacher context, and bias in observational ratings.

TABLE 7-2 Evidence of TPP Outcomes

Program Outcomes	Measures
Mastery of knowledge, skills, and dispositions	• Knowledge-based licensure exam pass rates and/or average scores • Graduation/completion rates • Teacher performance or portfolio assessments • Teacher candidate, completer, and employer surveys
Teacher performance and practices in classrooms	• Value-added model estimates • Teacher candidate, completer, and employer surveys • Ratings of graduates by principals or employers • Teacher performance or portfolio assessments • Classroom observations
Labor market outcomes	• Hiring and retention data • Teacher candidate, completer, and employer surveys

Mastery of Knowledge, Skills, and Dispositions

Chapter 5 describes the knowledge, skills, and dispositions teachers need to engage in whole-child development and quality teaching. TPP evaluations use a range of measures as a basis for inference about how their former students have mastered the necessary knowledge, skills, and dispositions. Historically, TPP evaluation has relied on data that is easy to collect—including pass rates on licensure tests and graduation and completion rates—as measures of TPP content mastery. For example, basic skills examinations are often required as pre-entry to TPPs and thus do not capture the knowledge or skills imparted in the programs. Other practices, such as the use of teacher performance or portfolio assessments and survey data, are increasingly used to more accurately assess the knowledge, skills, and dispositions imparted by TPPs.

Knowledge-Based Licensure Exams

The field of education has long relied on a range of knowledge-based examinations as part of teacher licensure. For example, the Educational Testing Service's (ETS's) Praxis series, established in the 1990s, is used by most states in teacher licensure. Historically, states have required teacher candidates to take knowledge exams in various content areas as part of TPP admission and licensure processes, typically setting state-specific cut-off scores for passing. Assessments currently in use include general or "basic skills" tests (e.g., California Basic Skills Test), content-specific or "subject-matter" tests (e.g., ETS's Praxis Subject Assessments), or knowledge of pedagogy tests (e.g., Pearson's National Evaluation Series Assessment of Professional Knowledge tests), which primarily screen candidates for minimum levels of competency in the test's focus area.

Moreover, while often considered as TPP outcome measures, some candidates take the initial basic skills tests before beginning their TPP or take subject-matter tests before beginning their post-baccalaureate teacher training. As of 2021, 15 states require basic skills tests for TPP admissions (Putman & Walsh, 2021). While 40 states require subject-matter licensure tests for secondary teachers, and 25 states require subject-matter licensure tests for elementary teachers, states often have different requirements for the type and timing of required tests for candidates enrolled in traditional and alternative programs (Putman & Walsh, 2021; Wojcikiewicz & Patrick, 2022).

Evidence showing whether these scores predict future teaching performance is mixed—small positive relationships are sometimes found in mathematics, but rarely in English language arts, and there are differences in predictive power for different groups of candidates (Wojcikiewicz & Patrick, 2022). For example, Goldhaber and Hansen (2010) found that the Curriculum, Instruction, and Assessment portion of Praxis II licensure test scores were predictive of later student achievement for female and White teachers, but not for male and Black teachers.

Knowledge-based examinations as selection measures have a major flaw. Based on test construction conventions and the long history of cultural bias in certain of these measures, they have often disadvantaged teacher candidates of color, especially Black teachers (Carver-Thomas, 2018; Goldhaber & Hansen, 2010; Petchauer et al., 2018). In some contexts, the use of basic skills, subject matter, or general knowledge tests with cutoff scores for entry into TPPs has reduced the diversity of entrants, as candidates of color are statistically more likely to fail these tests than their peers (Nettles et al., 2011). Evidence about the predictive utility of the tests has provided little confidence that they are significantly related to the capacity to teach, and the tests themselves do not represent sufficient relevance to skills in their specialty areas to make this bias acceptable (Wojcikiewicz & Patrick, 2022). Additionally, taking these tests imposes added financial burdens on candidates (Carver-Thomas, 2018). In response, some states have allowed candidates to demonstrate their content knowledge and mastery of basic skills through coursework alternatives that meet common standards of performance. For example, Illinois eliminated the basic skills test requirement in 2019 in the face of teacher shortages (Kunichoff, 2019). Similarly, in 2021 California removed the basic skills test and subject-matter exam requirement if teacher candidates have taken approved college courses and met a standard of performance (Will, 2022). Wisconsin also increased the flexibility for candidates to demonstrate their content knowledge through a GPA, standardized test, or content-based portfolio designed by the TPP (Wisconsin Administrative Code, 2022).

Teacher Performance or Portfolio Assessments[2]

In response to recent advances in knowledge about quality teaching practices, TPAs have gained attention and a modest body of empirical evidence has emerged regarding their features and associations with practice. TPAs are used to assess the program outcomes of (1) mastery of knowledge, skills, and dispositions and (2) how teacher candidates use their instruction in practice. However, because TPAs are typically administered within TPPs, they are described fully in this section of the report.

Because they ask candidates to directly demonstrate how they plan lessons, instruct students, and evaluate their learning, TPAs represent a movement in the measurement community toward "authentic assessment." As authentic assessments, TPAs include real-world teaching activity gauged by observational records of student–teacher interactions and artifacts of teaching work. TPAs provide concrete evidence about candidate ability to integrate teaching knowledge and skill and can also provide predictive evidence of teacher effectiveness. In addition to providing opportunities for the evaluation and improvement of individual teacher candidates, TPAs—when examined collectively—can provide insights into the collective practices of TPPs for program self-study and improvement purposes.

In the context of pre-service teacher education, "[TPA] most often refers to work samples or 'portfolios' that integrate the collection, analysis, and evaluation of artifacts and related products derived from actual classroom teaching practice" (Peck et al., 2021, p. 4). Portfolios may consist of artifacts and work products that candidates assemble over time. Entries might include lesson plans, student classroom assessments, video recordings of teaching, and samples of student work accompanied by candidates' own analytic and reflective comments. TPAs can be used to evaluate individual candidate performance both as a formative measure of progress and as a summative measure used as part of licensure. TPA data can also be aggregated across candidates for use in program evaluation over time within programs and for state-wide, cross-program comparisons. TPAs have particular value in TPP improvement efforts, as they target specific, valued aspects of teaching practice linked to teaching standards.

The use of TPAs for evaluation and improvement is part of a larger vision for the professionalization of teaching:

[2] This section relies heavily on the NAEd commissioned paper *Using Teaching Performance Assessments for Program Evaluation and Improvement in Teacher Education* (Peck et al., 2021), available at https://naeducation.org/evaluating-and-improving-teacher-preparation-programs-commissioned-paper-series.

> The implicit theory of professionalization involves establishing a relationship between consensus on professionally defined standards of practice, localized self-study and peer-mediated assessment related to those standards, and commitment to learning in and from the contexts of actual practice as a resource for improvement (Darling-Hammond & Snyder, 2000). (Peck et al., 2021, p. 5)

Within this framework, TPAs are typically aligned with state and professional standards for teaching practice, including the standards developed by the National Board for Professional Teaching Standards (NBPTS) and the Interstate Teacher Assessment and Support Consortium. A considerable body of evidence suggests that TPAs based on these standards measure important aspects of teaching practice (Bastian et al., 2016; Campbell et al., 2016; Cooner et al., 2011; Denner et al., 2004; Pecheone & Chung, 2006; Sato, 2014; Stanford Center for Assessment, Learning, and Equity, 2015; Stewart et al., 2015).

A growing body of research has examined the predictive validity of performance-based assessments for teacher candidates. Studies have found that the portfolio-based NBPTS assessments are predictive of teacher effectiveness (National Research Council, 2008). In the licensure space, pilot studies of Stanford's Performance Assessment for California Teachers (PACT) found that PACT scores were significant predictors of later student achievement in English language arts in California (Darling-Hammond et al., 2013; Newton, 2010). In Washington, Goldhaber et al. (2017a) showed that teacher candidates passing the edTPA on the first try were associated with significantly higher value-added reading scores of their students. Bastian (2018) found that edTPA scores from three North Carolina universities predicted both value-added and evaluation ratings for first- and second-year teachers, and these relationships held for both White teachers and teachers of color. In their analysis of the Candidate Assessment of Performance (CAP), Massachusetts's performance assessment for teacher candidates, Chen et al. (2021) found that CAP scores are predictive of future observation ratings.

Standardized TPAs, aligned with widely accepted national standards for teaching practice, can provide a holistic assessment and a contextualized view of teaching competence. TPAs can provide teacher candidates with concrete evidence about how they are integrating what they have learned into classroom practice and create an opportunity for feedback, evaluation, and continuous learning. Similarly, standardized TPAs provide program faculty an opportunity to develop a common language of practice and support collaboration that is critical for program coherence and improvement. However, as TPAs have become more standardized and as national and state policies have increasingly emphasized

accountability, TPAs have, in some states, been used more for external accountability and licensure than as part of a holistic review of candidates and programs. Studies of TPA implementation have revealed persistent tensions among the multiple uses of portfolios as resources for candidate learning, licensure decisions, and program improvement (Peck et al., 2021, citing Borko et al., 1997; Delandshere & Arens, 2003; Snyder et al., 1998; Zeichner & Wray, 2001).

States vary in how they use TPAs. As of 2021, 16 states required performance assessments—some for program completion (e.g., Oregon), some for initial licensure (e.g., Illinois, Maryland, New York), and some as a part of program approval (e.g., Minnesota) (Putman & Walsh, 2021). Common TPAs include edTPA (required or optional in 19 states) and the ETS Praxis Performance Assessment for Teachers (required or optional in 7 states) (Putman & Walsh, 2021). Given these high stakes and consequential uses of TPAs, Table 7-3 identifies some of their important design parameters as well as key questions that represent important considerations for evaluating and using TPAs.[3]

When interpreting TPA scores embedded in teacher education, research suggests that attention should be paid to the variation within programs as well as the supports they provide to candidates. Studies have documented significant variations in the quality and quantity of program faculty and support for teacher candidates as they engage in portfolio work (Bastian et al., 2020; Cohen et al., 2020; De Voto et al., 2020; Ratner & Kolman, 2016). Evidence has emphasized the importance of high-quality guidance and support provided by TPPs as candidates construct their portfolios (Bastian et al., 2020). Additionally, unlike traditional assessments of teacher knowledge, which attempt to standardize the conditions of assessment, TPAs rely on practice in actual classrooms, which introduces significant variation in conditions—including contextual factors such as field placement schools, mentor teacher characteristics and support, and school curriculum policies. For example, Bastian et al. (2020) found that student teaching placement characteristics had a statistically significant impact on edTPA scores.

Given the reliance on human raters for evaluating TPAs, achieving consistency in interrater agreement in scoring and evaluations should be an important area of focus (see, e.g., Gitomer et al., 2019; Haertel, 1991; Messick, 1994). Reliability studies suggest the need for strong training

[3] For a fuller discussion of using TPAs for program improvement, see the NAEd commissioned paper *Using Teaching Performance Assessments for Program Evaluation and Improvement in Teacher Education* (Peck et al., 2021), available at https://naeducation.org/evaluating-and-improving-teacher-preparation-programs-commissioned-paper-series.

TABLE 7-3 Design and Evaluation Considerations for Teaching Performance Assessments (TPAs)

Design Parameter	Key Question	Evaluation Focus
Content validity	To what extent does the TPA measure important aspects of teaching practice?	Alignment of TPA with contemporary research on teacher effectiveness and/or professional standards of teaching practice (e.g., Interstate Teaching Assessment and Support Consortium)
Generalizability	To what extent are TPA scores consistent across raters?	Published studies of scorer training and interrater agreement
	To what extent are TPA scores consistent across variations in students, curriculum domains, or school contexts?	Studies of effects of context variables on TPA scores
Predictive validity	To what extent are TPA scores correlated with measures of socially important educational outputs?	Studies of the relationship between TPA scores and K–12 student achievement and teacher employment and retention
Consequential validity	To what extent do TPAs screen ineffective teachers from entering the workforce?	Studies of the uses of TPAs in decision making
	To what extent do TPAs lead to candidate learning?	Studies of pre-service teacher learning
	To what extent do TPA data lead to program improvement?	Studies of program improvement process and outputs

SOURCE: Adapted from Peck et al. (2021).

and audits to achieve and maintain interrater agreement and reliability (Pecheone & Chung, 2006). Moreover, when TPAs are used for high-stakes decisions (e.g., licensure), it is important to plan for multiple scorers near cut points (Whittaker et al., 2018). Finally, interrater agreement data should be continuously evaluated to identify any recalibration, scorer training, or professional development needs.

Some research has pointed to equity concerns about TPAs. Research has shown that the historic scoring disparities between teacher candidates of color and White candidates that have long plagued traditional teacher licensure tests have also appeared on TPAs in some states (Goldhaber et al., 2017a; Williams et al., 2019). These findings have differed from state to state, which may be a function of the degree to which equitable education has been offered or the degree to which different candidates have access

to high-quality, supportive preparation programs. Some have criticized TPAs for failing to attend to teaching practices associated with equity and social justice, although others credit the attention of TPAs to student-centered and equity-focused practices as heightening focus on social justice considerations (Hyler et al., 2013; National Association for Multicultural Education, 2014; Sato, 2014; Stillman et al., 2013; Tuck & Gorlewski, 2016). Like other licensing tests, including the knowledge-based licensures discussed above, several studies indicate that performance on TPAs may be conflated with skills that some argue are not essential for teaching—like writing and technology proficiency— although these skills are important in some areas of teaching (Behizadeh & Neely, 2019; Choppin & Meuwissen, 2017).

In response, some TPAs have attempted to address these equity concerns. For instance, some TPAs—including edTPA—use double or triple reading of portfolio scores at or near cut points for high stakes decisions such as licensure. The Stanford Center for Assessment, Learning, and Equity convened a group of more than 50 TPPs that have been highly successful in preparing candidates of color for the edTPA over the past five years, and these programs are now working together to identify common strategies underlying their candidates' success (Peck et al., 2021). California's new CalTPA also includes a stronger emphasis on equity and culturally responsive and affirming practice (Escalante et al., 2021).

TPAs continue to evolve in response to expanding knowledge about effective teaching practices. For instance, TPAs benefit from leadership plans that attend to TPA implementation and supports based on new evidence on effective teaching practices through professional development. State policy also plays a role in supporting TPA implementation, including by holding programs accountable for the high-quality application of TPAs and increasing state-level support for high-fidelity TPA implementation and cross-program learning and improvement (Peck et al., 2021).

TPAs, on balance, have value as they assist in developing a common, shared conception of practice that is communicated among faculty and teacher candidates. TPAs also likely contribute to a richer, validity-based evaluation of individual teacher candidates and programs. Although TPAs are costly, complex, and time-consuming to administer and score, with the appropriate support structures for candidate engagement—provided by TPPs, institutions, and states—and faculty scoring and examination of candidate practice, they can be effective tools to support candidate and program improvement.

Teacher Candidate, Completer, and Employer Surveys

Programs and states use survey data to gauge perspectives on the quality and outcomes of TPPs, including end-of-course surveys, program exit evaluations, program completer surveys, and employer and district surveys. While this chapter discusses the use of surveys in the section "Mastery of Knowledge, Skills, and Dispositions," surveys are also used as measurements of other program outcomes—including teacher performance and practices in classrooms and to determine if TPPs are meeting labor market needs. Surveys, however, are a measurement tool, not a specific measure, and their validity depends on the content of the instrument and the sample that is drawn (Wojcikiewicz & Patrick, 2022).

The U.S. Government Accountability Office (2015) reported that 33 states use teacher completer surveys as part of traditional TPP evaluation, and 25 reported using surveys to evaluate alternative TPP programs (Wojcikiewicz & Patrick, 2022). Several notable examples include Texas, which surveys first-year standard credential holders about perceptions of their program (Texas Education Agency, n.d.). Ohio also surveys completers teaching in domains aligned with state standards within Ohio schools, reporting institutional and state averages for each question (Ohio State University, 2022). In California, the survey of completer experiences assesses the nature and quality of coursework and clinical support in key areas as well as candidates' views of their preparedness and their program's effectiveness (California Commission on Teacher Credentialing, n.d.-a). In addition, 23 states administer employer surveys to gauge their perceptions of program graduate performance.

Some evidence indicates that certain survey questions can be predictive of future teacher outcomes, and from an equity perspective can target which TPPs provide high-quality learning experiences across completers. For example, Boyd et al. (2009) found a consistent positive association between the mathematics test scores of the students of a cohort of first-year teachers and program-level data drawn from teachers' survey responses about their opportunities for practical coursework (e.g., to study or analyze student work in mathematics), opportunities to learn about the curriculum they would teach, and the degree of similarity between the context of their field experiences and first year of teaching. Bastian et al. (2021) found that certain North Carolina survey measures—particularly a composite measure of teachers' preparation for creating supportive learning environments—predicted teacher value-added and evaluation ratings for early-career teachers. Ronfeldt (2021) also found that cooperating teachers' perceptions of student teachers' preparedness—but not teachers' own perceptions—predicted eventual observational ratings.

The utility of surveys depends both on their content and the representativeness of their responses—and both national accreditors recognize

these challenges. The Council for the Accreditation of Educator Preparation requires TPPs to provide the survey instrument, sampling information, response rates, and timing of the survey along with the survey data, and their accreditation handbook stipulates that data measures created from surveys should "reasonably be expected to achieve a representative response and have an appropriately high response rate" (Council for the Accreditation of Educator Preparation, 2020, p. 84). The Association for Advancing Quality in Educator Preparation recognizes the challenge posed by low response rates, and its handbook highlights that statewide surveys often have higher response rates and more representative samples than surveys fielded by individual programs (Association for Advancing Quality in Educator Preparation, 2023). Different methods of disseminating surveys may also increase response rates and representativeness. In California, the Commission on Teacher Credentialing (CTC) has embedded its survey about TPP experiences into the online application process for teacher credentialing. As a result, their survey response rates are typically above 90 percent, much higher than some surveys conducted in other states (California Commission on Teacher Credentials, n.d.-b). The data are analyzed by the CTC and both raw data and frequencies are returned to TPPs to assist in program improvement.

Additional challenges arise when considering the quality of measures. For example, some surveys have been carefully validated and others have not. Surveys can be labor-intensive to develop, field, and analyze, especially at the individual program level. It is also possible that individual perceptions reflected in survey data may be biased or misaligned with reality. Concerning possible bias, however, some studies have demonstrated that through the use of employer and supervisor surveys (e.g., principal and mentor teacher surveys), principal and mentor teacher perceptions can be triangulated with other data to demonstrate survey efficacy (see, e.g., Patrick et al., 2023). For example, some evidence suggests that principal ratings are positively correlated with teachers' impact on growth in student test scores (Feuer et al., 2013; Harris and Sass, 2009).

Teacher Performance and Practices in Classrooms

TPP graduates' performance in their teaching and the learning achievement of their students inform the evaluation of TPPs. As noted earlier in this chapter in the section "Teacher Performance Assessments," TPAs can provide evidence about the implementation of knowledge, skills, and dispositions into practice—however, TPAs typically occur for teacher candidates, not working teachers. Employer and supervisor surveys can be useful—particularly when triangulated with other data—in examining teacher performance. Two additional approaches—using

value-added models of student achievement data and classroom observation scores—are prominent, and each presents practical and technical difficulties.

Value-Added Model Estimates[4]

Value-added models (VAMs) that examine gains in student achievement test scores, graduation rates, and other outcomes have been used by many large-scale studies to examine the effects of widely implemented educational programs or strategies (National Research Council, 2010), like school finance reforms (Baker, 2017; Jackson et al., 2014), desegregation efforts (Johnson, 2019), professional development efforts (Darling-Hammond et al., 2017), and school-based teacher collaboration (Ronfeldt et al., 2015). As Haertel (2013) notes

> for researchers comparing large groups of teachers to investigate the effects of teacher training approaches or educational policies, or simply to investigate the size and importance of long-term teacher effects, it is clear that value-added scores are far superior to unadjusted end-of-year student test scores. (p. 24)

The use of VAM estimates for evaluating individual teachers, which was for a time incentivized by the federal government, has been more problematic (Aldeman, 2017). The results of teacher evaluation ratings based on individual VAM scores have prompted statements of concern from educational researchers, statisticians, and psychometricians who noted that teacher ratings were unstable and often biased by attributes of students, the context of teaching, and the tests themselves—even with efforts to statistically control for these factors (National Research Council, 2010). Efforts to evaluate TPPs based on test score gains from program graduates' students have generated additional concerns, given the differentials in school and district contexts and teacher assignments that intervene between the program and the students of graduates.

Although a full accounting of this issue lies beyond the scope of this report, Haertel (2013) summarizes several noteworthy points. First, several of the shortcomings of value-added measures are technical in nature. For example, the assumption of an equal-interval scale for test score gains is incorrect—gains can appear larger for students at different points along the scale. A nonlinear scale means that teachers will be penalized depending on students' starting achievement. In addition, state tests that have

[4] This section relies heavily on *Reliability and Validity of Inferences About Teachers Based on Student Scores* (Haertel, 2013).

been used for most teacher evaluation ratings are, by federal law, required to measure grade-level standards, which means they do not include questions that could measure gains above or below grade level, thus failing to measure the progress of students achieving well above or below the norm.

Second, VAMs fail to adequately adjust for a range of factors influencing student learning outcomes, including school climate, curriculum, class sizes, funding levels, and administrator or teacher peer support—as well as out-of-school factors, which account for most variation in achievement (Haertel, 2013). Between annual testing events, students from low-income families often experience what is known as summer learning loss, while those from advantaged families who have more summer learning opportunities often experience learning gains (Haertel, 2013). Teachers working in very different schools or with very different student populations will have varying results based on such factors—often to the disadvantage of teachers working in under-resourced schools with lower-performing students. Therefore "VAM scores do predict important student learning outcomes, but … the evidence strongly suggests that these scores nonetheless measure not only how well teachers teach, but also whom and where they teach" (Haertel, 2013, p. 17).

Third, because of these factors, teacher ratings produced by VAM estimates have often failed to concur with other information about teaching quality—as evidenced by in-depth case studies, classroom observations, and student ratings. Furthermore, results of teacher effects change depending on the particular achievement test used (see Haertel, 2013, citing Hill et al., 2010; The MET Project, 2010, 2012).

Finally, VAMs only include information about a restricted range of learning outcomes—that is, test-based measures of reading and mathematics achievement at certain grade levels. Other grade levels, other kinds of academic achievement, and important non-cognitive outcomes are not addressed (Haertel, 2013).

Additional challenges arise when teachers' VAM scores are aggregated to examine TPPs. For example, program graduates who teach in less well-resourced environments will be affected by the environmental factors that undermine student learning. Certain programs—for example, those that prepare special education teachers—would be disadvantaged because gains for their students are not well measured on tests that include primarily grade-level items. Additionally, small samples from small programs will be associated with larger measurement error.

While some advocates have recommended that VAM scores might be used as a trigger to launch more intensive scrutiny of teachers deemed low performing based on their scores, Haertel (2013) has argued against this because such measures will wrongly classify a substantial number of teachers. It is better to use indicators that provide more general and

widely applicable evidence for use in continuous improvement processes, such as standards-based evaluations and performance assessments of teaching.

Although it remains problematic to use VAM scores from state tests to make high-stakes decisions about individual teachers or program quality, there can be value in assembling large-scale data across programs or pathways with different features to evaluate their impacts on teacher outcomes (e.g., graduation, retention, perceptions of preparedness) and student outcomes (e.g., achievement gains, perceptions of school, graduation rates). Recognizing the controversy around the use of VAMs in evaluating and improving TPPs, Goldhaber et al. (2013) suggest the need to collect additional information—such as information about individual programs and candidate selection processes—to better understand and quantify program estimates that can help address policy questions. Such findings then can be shared with the field to assist with improving teacher preparation at state, regional, or national levels. Working in collaboration with state program approval processes, accreditors can mobilize studies of this kind to help strengthen the knowledge base for program evaluation.

Furthermore, measures that are more sensitive to the curriculum being taught and that allow for timely and authentic measurement of student thinking are particularly valuable for studies of student teaching or graduate teaching and its influences on learning. Such studies can examine student learning before and after teaching efforts and can be helpful in the process of educating candidates about teaching and assessment and helpful for program faculty to evaluate their own teaching. Such studies could be developed by TPPs during their self-study efforts.

Classroom Observations

Classroom observations, tied to state standards, can serve as another measure of quality teaching. For instance, the Gates Foundation–sponsored Measures of Effective Teaching (MET) study used five different classroom observation approaches to identify dimensions of teaching that emerge from research and are present in standards that describe teaching.[5] All five of these instruments were found to be positively related to student

[5] The five classroom observation approaches used by the MET study were (1) the Framework for Teaching (FFT), developed by Charlotte Danielson; (2) the Classroom Assessment Scoring System (CLASS), developed by Robert Pianta and colleagues at the University of Virginia; (3) the Protocol for Language Arts Teaching Observations (PLATO), developed by Pamela Grossman at Stanford University; (4) Mathematical Quality of Instruction (MQI), developed by Heather Hill of Harvard University; and (5) the UTeach Teacher Observation Protocol (UTOP), developed by Michael Marder and Candace Walkington at The University of Texas at Austin (The MET Project, 2012).

achievement gains on two different sets of tests, although teachers whose students fared well on one measure did not always excel on the other. Also, there was a much stronger association between classroom observation scores and student learning on the open-ended English language arts assessment than on the state tests, suggesting that these expansive assessments may capture more aspects of student learning and teachers' approaches to educating than the state tests do (The MET Project, 2012).

Studies of standards-based teacher observations have found that repeated standards-based observations and feedback improve teachers' practice and effectiveness over time (Milanowski et al., 2004). Such tools provide worthwhile approaches that help supervisors, mentor teachers, and teacher candidates examine and focus on important aspects of overarching teaching practices and skills.

While classroom observations can provide rich data, there are design, contextual, and cost implications associated with them. When designing classroom observation protocols, TPPs need to agree on the conceptual and structural elements that will be observed. The conceptual elements should measure the shared professional visions among program faculty and the structural elements should reflect program components including coursework, assignments, and clinical experiences (Hammerness, 2006). This intentional design is necessary because universal, cross-subject observations can fail to detect important aspects of subject- and student-specific teaching. During student teaching, observations may need to account for contextual factors associated with the nature of field site placements—including school resources and educational philosophies that influence classroom instruction. Moreover, classroom observation measurements have been shown to be confounded with the characteristics of the mentor teachers that candidates work with (Boguslav & Cohen, 2023). Additionally, when observing graduates for insights about their practice, other contextual factors, including school curriculum and resources (e.g., class sizes, availability of counselors and specialists, instructional materials, digital tools, and more), may affect what teachers do and potentially disadvantage graduates and TPPs that serve high-need and under-resourced schools (Lei et al., 2018).

While some classroom observation instruments attend to some of these issues, it is critical to have carefully trained raters and procedures for double-checking ratings and counteracting tendencies like rater drift (i.e., rater error caused by factors such as experience, training, and fatigue [Casabianca et al., 2015]). These precautions carry cost and time requirements.

Finally, while it is necessary to train and observe candidates in real classrooms during student teaching, simulation-based observations have

also been demonstrated to improve teacher candidate skills and allow for mistakes, engagement with experimental strategies, and growth. Simulations therefore may be especially valuable to novices, as they are learning new strategies and can gain expertise without harming students if they falter (see Chapter 6; Cohen & Wiseman, 2019; Cohen et al., 2020; Grossman, 2005). Furthermore, some studies suggest that simulated practice opportunities may positively impact instruction in real classrooms (Garrett & Smith, 2020; Kang & Windschitl, 2018).

Labor Market Outcomes

Information about program graduate employment and retention can be a critical piece of a program's self-assessment. States that have existing infrastructure for statewide longitudinal staffing data make it possible for TPP evaluations to track teacher placement and retention (Wojcikiewicz & Patrick, 2022). Receiving data about program graduate employment and retention is often quite instructive to TPPs, particularly for those that do not have the capacity to track it themselves, as it provides direct feedback on important program outcomes. Graduation rates and employment information are also useful in evaluating TPPs at the system level and understanding how well the set of TPPs in a state or locality are serving school and district employment needs. Statewide longitudinal staffing systems, however, only track in-state public school employment—therefore, data is missing for private school teachers or teachers who practice out of state. Additionally, the data do not account for the contextual factors influencing labor market outcomes—such as current economic conditions and hiring needs—which creates a challenge for TPPs to use the data for program improvement (Wojcikiewicz & Patrick, 2022).

Twenty-four states use these data to assess traditional TPPs and 21 states use them for alternative programs as well (U.S. Government Accountability Office, 2015; Wojcikiewicz & Patrick, 2022). Colorado, for instance, posts information about graduates obtaining teaching positions by program, in-field teaching, and retention rates on a statewide dashboard. North Carolina reports the percentage of completers from every TPP who are teaching in the state's public school system within a specified time period after graduation (Wojcikiewicz & Patrick, 2022).

Measures of employment and retention, however, require qualification and interpretation because many factors outside TPP control influence employment. There is also no obvious way to benchmark these data in terms of acceptable rates that would be useful for program improvement. These types of comparisons also encounter potential equity issues

because K–12 schools serving high concentrations of students from low-income and minoritized backgrounds tend to have higher rates of teacher attrition and employ more inexperienced teachers (Carver-Thomas & Darling-Hammond, 2017a). TPPs supplying candidates to such schools should not be penalized by results, such as lower retention rates, as this would work directly against the imperative to prepare teachers to work in such schools. Instead, employment and retention rates should be carefully examined to identify methods of collaborating with school districts to improve working conditions, as well as to ensure high-quality TPP preparation.

8

International Examples of the Evaluation of Teacher Preparation Programs

Comparative analyses and syntheses about the evaluation of teacher preparation programs (TPPs) in countries outside the United States naturally identify considerable variation. A country's historical, political, and cultural context affects its educational governance structures and evaluation systems. Some countries feature highly centralized educational systems dominated by government agencies. Other countries favor a more decentralized approach with significant governance by local universities and the teaching profession itself. Given these differing contexts—from population size and demographics to education financing and health care—researchers advocate for "policy learning" rather than "policy borrowing" when learning from international examples (Sato & Abbiss, 2021).[1] With this spirit of learning in mind, this chapter identifies commonalities and variations in teacher preparation standards and models that foster equitable, high-quality education and compares differences in conceptions and practices of evaluating and improving TPPs across select high-achieving jurisdictions.

[1] For a fuller discussion of international comparisons of TPP evaluations, see the NAEd commissioned paper *International Insights on Evaluating Teacher Preparation Programs* (Sato & Abbiss, 2021), available at https://naeducation.org/evaluating-and-improving-teacher-preparation-programs-commissioned-paper-series.

HIGH-QUALITY TEACHER PREPARATION STANDARDS AND MODELS

In countries where teaching is widely viewed as a highly regarded profession, these cultural attitudes often translate into a strong voice for teachers in the regulation of the profession. Generally speaking, such regard plays an important facilitating role in many aspects of teaching, including recruiting and retaining talented individuals in teacher preparation and subsequently in the teaching profession, rigorous teacher education and professional development, government and community support for schools, competitive salaries, and supportive working conditions. High cultural regard for teachers also generally centers the teaching profession in governance and the establishment of standards. When viewed as a key source of wisdom about teaching, teachers are more likely to be included in deliberations about teaching standards, preparation, and evaluation.

Many countries have developed a common set of national standards that are used in evaluating teaching, and these standards can also serve as guidance in teacher preparation. Such standards gain broad legitimacy among teachers, teacher educators, and key constituencies because they tend to be criterion-referenced, guiding improvement efforts rather than ranking programs on a set of metrics (Sato & Abbiss, 2021)—although commercial enterprises in several countries do offer such rankings. In many cases, the standards for "what teachers should know and be able to do," developed by the U.S. National Board for Professional Teaching Standards, have inspired and informed these statements of desired teacher competencies, variously adopted by governments, professional standards bodies, and teacher education programs around the world (Darling-Hammond, 2021).

Various standards documents across countries tend to feature similar topics, like subject matter knowledge, pedagogical knowledge, assessment skills, and professional collaboration (Sato & Abbiss, 2021). Although attention to student learning is central in these documents, "[t]he international evidence does not seem to suggest that measures of teacher effectiveness based on their students' performance are being used internationally" (Sato & Abbiss, 2021, p. 25).

An examination of standards in a study of seven international jurisdictions with highly developed teacher education systems (Victoria and New South Wales, Australia; Alberta and Ontario, Canada; Shanghai, China; Finland; and Singapore) noted that these jurisdictions increasingly emphasize a comprehensive knowledge base that teachers need to master to develop an understanding of content, pedagogy, and learners to support students' diverse social, emotional, and academic development.

These jurisdictions also value teacher engagement in the research- and inquiry-oriented process of developing knowledge for teaching to address ongoing problems of practice (Darling-Hammond, 2021). Like the variations across U.S. state standards, the standards across these high-performing international jurisdictions have commonalities and culturally rooted differences. All of them include standards focused on teachers' commitment to students and their learning; professional knowledge and skills, including reflection used to evaluate practice; collaboration with other professionals; and continued learning to improve their practice (Sato & Kemper, 2017). In addition, some (e.g., Alberta, Singapore, and Shanghai) emphasize teachers' role in developing all aspects of children's development—moral, ethical, cognitive, social, emotional, and physical. Singapore's standards also include self-management, people management, and innovation and entrepreneurship skills—signals of the country's desire for a dynamic, highly motivated, and leadership-oriented teaching force (Sato & Kemper, 2017).

Because there are relatively few universities providing training in most of these jurisdictions—for example, eight in Finland, nine in Alberta, two in Shanghai, and one in Singapore—the implementation of these teaching quality concepts is much less variable than in places like Australia or the United States. Finland (5.54 million population size) and Singapore (5.69 million population size) have populations about the size of a median-sized U.S. state, where it would not be unusual to find as many as 40 to 50 teacher education institutions with widely varying approaches, implicit standards, definitions of teaching quality, and pathways into teaching (Sato & Abbiss, 2021). Because teacher attrition rates are quite low in most of these international jurisdictions, universities in these countries do not need to prepare a large number of teachers in anticipation of them entering and leaving the profession quickly; and instead they can focus on investing in teacher candidates who will generally stay in the profession (Darling-Hammond et al., 2017). These reduced rates of attrition consequently lower the required number of teachers and enable these international jurisdictions to invest more intensively in that group of prospective professionals.

Common features in many countries ranked highly by the Programme for International Student Assessment are that they both have a distinct process for recruiting and selecting talented teaching candidates and regard the profession as a critical source of human capital for the educational enterprise (Darling-Hammond et al., 2017). Because salaries in these international jurisdictions are equitable across schools and comparable to other professions requiring similar levels of education, and because teacher education is fully or largely subsidized by the national or state/provincial government, there tends to be a larger pool of individuals who

both want to enter teaching and can afford to fully prepare themselves to do so—and there are fewer inequities in the distribution of teachers. In these international jurisdictions, entry requirements for the teaching profession are rigorous and paired with careful selection procedures to choose the best candidates for entry to a relatively high-status profession with competitive compensation and working conditions. Consequently, all candidates can receive the same kind and quality of preparation and schools are more likely to receive teachers who have been well prepared (Darling-Hammond et al., 2017).

While controversies have arisen in some countries concerning the knowledge base for teaching, most countries attend to both the conceptual underpinnings and gradual mastery of teaching practice, set within a continuum that begins with pre-service preparation and extends to ongoing professional development. Unsupervised practice alone is not regarded as sufficient preparation. Teachers must develop both conceptual understanding and adaptive mastery of the critical practices that make up the activity. This is perhaps the central claim to teaching as a profession, requiring extended, university-based education prior to entry as a fully registered teacher (Darling-Hammond et al., 2017).

EVALUATION OF TEACHER PREPARATION PROGRAMS

Globally, as TPPs are more and more located in higher education institutions, the dominant evaluation model for teacher education is higher education quality assurance accreditation and evaluation processes. Teacher education-specific evaluation mandates are not common practice internationally (Sato & Abbiss, 2021). Instead, TPP faculty are expected to align their programs to professional teaching standards and ethical codes of conduct, and the programs are then examined during evaluation and accreditation processes. When examining this alignment, common elements of teacher education quality assurance include

> the location and quality of practical field placements, the nature of partnerships that the program holds with the teaching profession, and the experience that the program teaching staff have as teachers of children and youth. These criteria are the key ways that accrediting and evaluation agencies ensure that links between the conceptual/theoretical aspects of teaching and the practice-based/practical aspects of teaching are maintained with some level of quality. (Sato & Abbiss, 2021, pp. 10–11)

These more coherent and supported international systems for teacher preparation evaluation and its outcomes impact the field of education in several ways. First, having relatively fewer programs of more comparable

design and quality allows evaluation systems to maintain a common focus and dive more deeply into a well-informed process of continuous improvement. Additionally, because salaries and supports for teachers are higher and turnover is lower, teacher shortages are rare (Darling-Hammond et al., 2017). Without the need for alternative pathways into teaching or emergency hiring of unprepared individuals, teacher program improvements are likely experienced among all schools and students within the international jurisdictions that function in this way.

By contrast, in the United States, even if most TPPs achieved a similar level of quality, many students would still be taught by teachers who have not experienced high-quality preparation programs or, in many cases, have not had any preparation at all. For example, the most recent data from the National Teacher and Principal Survey shows that about one-third of new teachers in U.S. schools in 2017–2018 were entering on emergency permits or through alternative routes—meaning they had not completed, or in many cases even entered, a preparation program—and most of these new teachers were serving in schools with the greatest numbers of low-income students and students of color (Carver-Thomas et al., forthcoming). The more systemic approach in high-achieving countries described above has evolved in part because these countries conceptualize teacher preparation as a national or state-wide/province-wide policy target. Rather than treating evaluation as a programmatic function for individual, disparate programs, evaluation is treated as a systemic function intended to serve overarching policy goals for providing well-prepared teachers to all students. As Sato and Abbiss (2021) describe, in some countries the teacher education system is reviewed as a whole—not as individual institutions—to evaluate system reform efforts and inform future policy.

> For example, in 2003, Denmark collected internal evaluation reports from all 18 teacher education colleges. The internal evaluations provided a basis for making national recommendations with individual institutions being anonymized in the final report. In 2006, Malta conducted a national review of all teacher education programs to determine the progress and outcomes of a national teacher education revision that took place in 1999. In 2005 all 25 teacher education institutions in Sweden participated in a review of the reforms implemented in 2001. In 2005, Wales (United Kingdom) undertook a review of initial teacher education to develop policies and supports for how initial teacher education providers could meet the demands for teachers and encourage under-represented groups to enter teaching. Finally, Scotland (United Kingdom) used an "aspect review" of how teacher education was organized across its education system. (Sato & Abbiss, 2021, p. 12)

Singapore's Ministry of Education uses regular evaluations of both school practices and outcomes, as well as pre-service and in-service teacher development practices to gather a systemic view of changes that will continue to build quality. "In this more tightly knit system, the layers of schools, teacher education, and the national agencies work and plan together to create a multi-layered evaluation process to drive system improvement" (Sato & Abbiss, 2021, p. 24).

The Finnish Education Evaluation Centre (FINEEC), an independent agency within Finland's Ministry of Education and Culture, engages in individual program quality audits and systemic thematic evaluations. In the case of individual program audits, FINEEC supports education providers and higher education institutions in organizing evaluation training workshops, conducting quality assurance benchmarking activities, disseminating information about evaluation outcomes, and sharing results that point to promising practices across the system. Thematic evaluations are used to provide strategic information that assist with systemic decision making at the local, regional, and national levels (Sato & Abbiss, 2021). A recent government project, the Teacher Education Development Programme (Finnish Ministry of Education and Culture, 2016), illustrates how a jurisdiction can achieve system improvement by charting a path that engages programs in continuous improvement and development (Sato & Abbiss, 2021).

Scale plays an obvious role in ensuring quality when the system includes a relatively small number of TPPs nationwide—but intention also matters. Policymakers can use policy levers to contribute to the intentional design of educational improvement goals. For example, if a theme such as social and emotional learning gains prominence in policy deliberations, a systemic response could be to introduce this theme as a key learning goal within TPPs. This illustration shows how policies can drive program improvement beyond individual TPP improvement to wholesale changes at the system level. In a system like the United States, the implications of this illustration are most likely directed to actions at the state level, with corresponding supports from the federal level.

A final potential lesson from international research is that, to achieve the program evaluation goals, evaluation should not be overly focused on accountability. The 2006 Eurydice Network report examining teacher education across the European Union identified the risk of over-bureaucratization lessening the utility of quality assurance that is not guided by an overall strategy for quality improvement. As Sato and Abbiss (2021) note in their synthesis of international practices,

> quality assurance is usually driven by both a desire for accountability (is the program designed to meet requirements and does it meet minimum

> outcomes?) and for enhancement (does the program evaluation suggest areas of improvement?). If the evaluation scheme is overly focused on accountability, the opportunity for program improvement may be diminished. (p. 24)

Sato and Abbiss (2021) point to Finland and Singapore as exemplars of systemic approaches to intentional improvement for teacher education support and evaluation.[2]

[2] While this chapter focuses on international examples, some U.S. states have attempted to professionalize the teaching profession and envision teacher preparation as a more systemic endeavor, resulting in improved student learning. For example, in the 1980s and early 1990s, North Carolina and Connecticut supported teaching by increased teacher salaries and made them more equitable across districts; improved teacher education programs; and subsidized teacher preparation. At the same time, these states enhanced TPP accreditation and licensure requirements, and gains in student learning were widely noted (see, e.g., Darling-Hammond, 2000; Grissmer & Flanagan, 1998; National Educational Goals Panel, 1998; S. M. Wilson et al., 2001). These examples suggest that state-level policy reforms could feasibly bolster the U.S. teaching profession.

9

Recommendations for Teacher Preparation Program Evaluation

This report focuses on the evaluation and improvement of teacher preparation programs (TPPs) by gathering useful information through a range of evaluative activities—including state program approval, program accreditation, and self-evaluations—to ultimately ensure that all students are taught by well-prepared, culturally responsive teachers. However, as noted throughout this report, TPPs are situated in a larger social and political context, and as such, the federal government and states must address contextual and policy factors outside the purview of TPPs to provide all teacher candidates access to high-quality preparation and all students access to highly qualified teachers. Thus, this report includes recommendations for both improving teacher preparation evaluation strategies and systemic support to ensure access to improved preparation for all teachers.

As this report has indicated, TPP evaluation serves the three purposes of (1) supporting program improvement; (2) holding programs accountable to various constituencies; and (3) providing consumer information for multiple constituencies, including prospective TPP candidates, their potential future employers, and policymakers. The TPP enterprise as a whole operates in the public professional sphere with a range of governmental and nongovernmental agencies engaged at the federal, state, and local levels. This report provides recommendations for all entities involved and for all purposes that give rise to evaluative activity.

The following four groups of recommendations (see Box 9-1) address (1) teacher preparation program approval and accreditation; (2) teacher

BOX 9-1
Summary of Report Recommendations

Teacher Preparation Program Approval and Accreditation

Recommendation 1. Program approval and accreditation should maintain common expectations for opportunities to learn for all candidates and for the evaluation of TPPs in all routes and pathways into teaching.

Recommendation 2. Program approval and accreditation should use measures of learning opportunities and outcomes aligned to professional standards for teaching and teacher preparation and hold programs accountable for providing adequate supports to help candidates achieve these standards.

Recommendation 3. Program approval and accreditation should encourage the use of measures that are tailored to distinctive features of particular program types, in addition to those commonly used across programs.

Recommendation 4. States should work to implement common measures for all programs (such as surveys of candidates, graduates, and employers) and data on key indicators (such as graduation rates and entry to the profession) to inform program approval, accreditation, and local program improvement efforts.

Recommendation 5. In service of continuous program improvement, states and accreditors should encourage and support programs and the profession to develop appropriate strategies for considering evidence of graduates' teaching practices and influences on student learning.

Teacher Preparation Program Self-Study

Recommendation 6. Programs should develop and participate in collaborations and networks that promote work on common program improvement issues.

Recommendation 7. Programs should assemble a set of tools and measures and establish processes for regularly reflecting on candidates' experiences, learning, practices, and performance throughout their TPP experience, as well as implications for their students' learning.

Recommendation 8. Programs should assemble a set of tools and measures to establish and evaluate processes for regularly reflecting on program efforts to recruit, support, and graduate a diverse group of candidates—including in high-need fields—who are well prepared to enter and stay in teaching.

Recommendation 9. Programs should regularly examine their efforts to recruit, support, and retain a diverse, well-prepared program faculty that are committed to building and continually improving a coherent**,** high-quality, culturally responsive TPP.

System Supports for Teacher Preparation Program Evaluation

Recommendation 10. Institutions should support TPP faculty by providing time and resources to build capacity and skills for TPP evaluation.

Recommendation 11. States and the federal government should provide capacity-building grants to state agencies to enable them to engage in comprehensive and meaningful program approval processes that will contribute to continuous program improvement.

Recommendation 12. States should work to improve the comparability, utility, and validity of the information they provide to consumers about TPPs.

Recommendation 13. The federal government should work with states to develop and fund an information infrastructure that provides timely and useful information about the teacher labor market and TPPs.

Recommendation 14. States should conduct periodic reviews of the system-wide status of teacher preparation in their jurisdictions to inform policy that would strengthen (1) the quality of preparation, (2) access to high-quality preparation for all teachers, and (3) access to well-prepared teachers for all students.

System Supports for Teacher Preparation and Teaching

Recommendation 15. The federal government, with states, should provide financial support and incentives to ensure that all teacher candidates can affordably complete a comprehensive preparation program before becoming a teacher of record.

Recommendation 16. Federal and state governments should provide capacity-building supports and resources for comprehensive, high-quality clinical teacher preparation.

Recommendation 17. The federal government should invest in research and development—and its use—to support ongoing improvement of teaching and teacher preparation.

Recommendation 18. States and the federal government should allocate funding for the development of measures, tools, and protocols for use across the main purposes of teacher preparation evaluation, including program improvement, accountability, and consumer information.

Recommendation 19. Philanthropic organizations should continue—and expand—their contributions to TPP evaluations and improvement.

Recommendation 20. Federal, state, and local governments should ensure an adequate supply of well-prepared, culturally responsive, and diverse teachers in all schools by providing competitive and equitable compensation, supportive learning opportunities and working conditions, and investments in preparing effective school leaders.

preparation program self-study; (3) system supports for teacher preparation program evaluation; and (4) system supports for teacher preparation and teaching. The first two groups of recommendations directly address the primary functions of TPP evaluation. The last two groups of recommendations address the conditions of teacher preparation and teaching in the United States and require attention in conjunction with evaluative practice and program improvement.

TEACHER PREPARATION PROGRAM APPROVAL AND ACCREDITATION

The original goals for TPP program approval and accreditation—to provide a common level of quality assurance through accountability and to spur ongoing program improvement—remain important. Program approval and accreditation entities can work together to gather and share data to inform these goals (see Chapters 2 and 4).

This group of recommendations, for improving TPP program approval and accreditation, are especially crucial as many U.S. states currently face teacher shortages. Some states are responding to these shortages by lowering evaluation expectations for certain teacher pathways, and some are abandoning teacher preparation requirements for entry into the teaching profession entirely. These recommendations underscore the importance of state program approval agencies developing and maintaining common high-quality expectations for all candidates' opportunities to learn and the evaluation of TPPs in all routes and pathways to teaching. As noted in the recommendations, state agencies and accreditors should also build capacity for data collection, storage, and display, and should support programs and the profession in developing appropriate strategies for considering evidence of program graduates' teaching practices and influences on student learning. Program approval should enhance the profession of teaching, improve teacher preparation, and ultimately work to ensure that all students have access to well-prepared, diverse, and culturally responsive teachers.

Recommendation 1. Program approval and accreditation should maintain common expectations for opportunities to learn for all candidates and for the evaluation of TPPs in all routes and pathways into teaching.

This recommendation calls for state approval agencies and accreditors to apply common measures and standards to all TPPs, regardless of the pathway. Similarly, all TPPs should be required to provide their teacher candidates with similarly supportive opportunities to acquire the

knowledge, skills, and dispositions needed for high-quality teaching (i.e., common expectations for opportunities to learn). This goal is fundamental to the accountability purpose outlined in the logic model (see Figure 1-2).

These program quality standards and expectations should be based on the research that informs teacher preparation. This knowledge base reflects the competencies underlying effective practices (see Chapter 5) and includes evidence that links high-quality program features with outcomes like teacher practices, student learning, and teacher retention (see Chapter 6). As reviewed in Chapter 6, these features emphasize program coherence and well-supported clinical education and are indicators of how well coursework and clinical work enable candidates to develop the knowledge and instructional practices that comprise competent teaching. Common expectations for learning opportunities also rely on research that demonstrates the consequences for teacher performance when programs lack the requisite quality features. For example, research discussed in Chapter 6 reveals that teachers who lack access to supervised clinical experiences under the guidance of expert mentor teachers are more likely to both exit the profession early and to provide less effective support for student learning. These program limitations have equity implications for students taught by their graduates because truncated preparation programs disproportionately enroll minoritized candidates, and the graduates of these programs tend to teach in communities highly affected by poverty, many of which include schools that disproportionately serve historically marginalized students.

Given the reality of the current U.S. educational system, implementing this recommendation will require new strategies in states where the solution to teacher shortages has been to design pathways that allow entrants to become teachers of record with little or no preparation (see Chapter 3). Universally rigorous program standards might result in further teacher shortages—and reduced access to the profession for historically disadvantaged candidates—unless they are accompanied by policies that broaden access to entry, provide enhanced program supports, increase attraction to teaching as a profession, and make teacher education affordable (see Figure 1-1 and Recommendations 15 and 20). For example, the federal government and states should introduce incentives that make entering teaching more affordable, like service scholarships, forgivable loans repaid with service in the classroom, and paid residencies (see Recommendation 15) and that encourage teachers to remain in the profession, like competitive compensation and supportive working conditions (see Recommendation 20). These strategies should also bring about rigor into alternative pathways, requiring common coursework

and appropriate levels of clinical supervision to interns[1] who are teaching while they complete their teaching credentials. These standards would engage TPPs and districts in more fully supporting teacher candidates.

Importantly, internships and alternative certification programs should have mentoring and coursework components equivalent to the requirements for traditional pre-service programs. As one example, California requires that all TPPs provide access to coursework and clinical work organized around common Teacher Performance Expectations and that all candidates pass the same teacher performance assessments to gain a preliminary license. In addition to specific content knowledge standards, pedagogical coursework, and clinical work that must be accomplished before becoming a teacher of record, candidates in both pre-service and intern pathways in California must experience at least 600 hours of supervised clinical practice (California Commission on Teacher Credentials, 2022). For interns, this means their TPPs and district support providers must offer significant in-classroom coaching, collaborative planning time, and out-of-classroom supports connected to the Teacher Performance Expectations to maintain state approval. These features are evaluated through specific programmatic plans and descriptions submitted during the accreditation process, information gathered on site visits, and the results of program completer surveys that the California Commission on Teacher Credentials administers each year.

This recommendation need not restrict the diversity of TPPs. There are a variety of programs in addition to traditional undergraduate TPPs—residency programs, five-year university-based programs, postbaccalaureate Masters of Arts in Teaching programs, and high-quality alternative pathways (see Chapter 3)—that have proven successful in providing the requisite opportunities and producing high-quality teaching for a diverse population of teacher candidates. This recommendation seeks simply to ensure that all programs are held to the same standards.

Recommendation 2. Program approval and accreditation should use measures of learning opportunities and outcomes aligned to professional standards for teaching and teacher preparation and hold programs accountable for providing adequate supports to help candidates achieve these standards.

Features of program quality (see Chapter 6) provide targets for program approval and accreditation standards and for evidence associated with program quality. The evidentiary bases for evaluating TPPs (see

[1] Many states award an "intern" credential to alternative route candidates, allowing them to work as teachers of record while they are completing their credential program, usually in lieu of student teaching.

Chapter 7) should be closely tied to these quality features, which reflect teacher preparation learning opportunities meant to develop the established knowledge, skills, and dispositions for high-quality teaching (see Chapter 5). The contemporary emphasis on standards- and performance-based evaluation seeks to move TPP evaluation in this direction and extend attention to program outcomes as well.

Box 6-1 provides a set of program quality features that comprise the scope of practice for a TPP, including program coherence and alignment; curriculum content; instructional methods; clinical experiences; and candidate and faculty selection, recruitment, and support. For these program features, specific sources of evidence may be collected and analyzed to support program approval, accreditation, and program improvement purposes (see Chapter 7). Specific attributes of these features may also vary from state to state, depending on relevant state policies. For example, state standards may reference distinctive curriculum content or student learning standards. There are, however, commonalities that undergird professional standards for teaching, like those established by the National Board for Professional Teaching Standards and the Interstate New Teacher Assessment and Support Consortium, which suggest essential and shared expectations for teacher knowledge, skills, and dispositions (see Chapter 7). These expectations can be assessed by traditional accreditation reports describing program intentions, teacher performance assessments (TPAs), surveys of graduates and employers, and observations of TPP completers aligned with specific teaching standards.

For the evidence to be useful for program approval or accreditation purposes, the instruments must be closely aligned with the standards. For example, graduate surveys can ask about specific programmatic experiences aligned with standards, even attending to fine-grained details. A survey could ask about opportunities to learn about specific pedagogies in specific content areas, the duration and depth of clinical experiences, and the level of support during clinical practice. Some states (e.g., California, North Carolina, Ohio, and Tennessee) already employ this detailed approach in their surveys. Professional associations or national accreditors might also work with state agencies and other professional groups in developing sets of validated survey questions available for use across states, leading eventually to "the national quality assurance system envisioned at the founding of TPP accreditation" (Wojcikiewicz & Patrick, 2022, p. 40).

Through program approval and accreditation, measures should indicate if programs are not providing teacher candidates with adequate support. For example, candidate performance on TPAs is associated with program support that can be quite variable across and perhaps within programs. Where this is the case, programs should be held accountable

for providing adequate scaffolding to ensure equitable access to support for all candidates. Along with providing support to candidates while they are completing performance assessments, faculty also require resources to use TPAs themselves. Mentor teachers must be supported while assisting candidates, and program faculty must be educated on both the importance and value of TPAs as a source of valuable information about program impact and how to effectively work with teacher candidates to properly complete them. California's Teacher Credentialing Commission, for example, has developed clear expectations and enacted standards for clinical placement site selection, candidate support, and program-level analysis of TPA data to support program improvement, with captured program-level performance data displayed on data dashboards (M. V. Sandy, personal communication, March 29, 2023). Kim and Sato (2019) have also developed a set of survey tools aligned with aspects of TPAs to monitor implementation quality. Such information provides useful context that can increase fairness in evaluations and comparisons of programs on TPA results.

Where candidate outcome measures are used, they must be applied equitably and without bias. Furthermore, such measures should not discourage TPPs from preparing teachers to serve in under-resourced schools and should not become metrics that punish TPPs for doing so. Accreditors and states should take care in setting expectations about TPP outcomes, ensuring that differences in teaching contexts and candidate characteristics are considered, as these might affect measure scores or ratings.

Recommendation 3. Program approval and accreditation should encourage the use of measures that are tailored to distinctive features of particular program types, in addition to those commonly used across programs.

This recommendation, while recognizing that common standards and metrics should be applied across programs and pathways, acknowledges that programs may have goals specifically suited to the contexts of their programs, teacher candidates, and school districts where their candidates ultimately serve. Program approval and accreditation processes should invite TPPs to explicitly propose such goals in addition to the elements and features common to all programs. The logic model (see Figure 1-2) posits interaction between the agents of accountability and programs, which can include some negotiation concerning evaluation evidence.

For instance, since residency and grow-your-own programs work closely with cooperating districts that intend to hire program graduates, their goals will specifically tie to the contexts of those schools and districts.

Residency programs typically use district instructional models and curriculum materials that focus on the learning needs of specific groups of students and the needs of local labor markets. Similarly, these programs often provide feedback to teacher candidates that is explicitly aligned with the cooperating school district evaluation system. Consequently, program approval and accreditation should encourage these types of programs to provide evaluative information that directly addresses the program's specific goals. Moreover, many residency programs provide continued support for graduates during the first few years of teaching after initial certification, and assessing this additional support can serve to better evaluate program effectiveness and enhance program improvement.

Similarly, programs designed to support specific certifications or credentialing—like special education, English language development/bilingual education, or literacy—should provide evaluative data to measure the efficacy of these specialized programs. Given the distinctive nature of certain certifications and credentialing, programs should be encouraged to examine and evaluate these programs based on common expectations in the field, for program approval and self-improvement.

To guard against an inequitable application of standards and metrics, the context surrounding these standards and metrics should be considered. For example, retention rates of program graduates are a worthwhile measure, but retention is influenced by factors like school working conditions, especially for programs that provide candidates to fiscally stressed urban and geographically isolated rural schools. Thus, measures should be evaluated considering the context while maintaining performance expectations over time.

Taken in conjunction with Recommendation 1—to maintain common program standards—this recommendation provides programs the opportunity to include additional measures that capture unique or distinctive features of quality that complement, not replace, common standards for all programs. This recommendation seeks to reap the advantages of standardization while allowing for responsiveness to distinctive program features.

Recommendation 4. States should work to implement common measures for all programs (such as surveys of candidates, graduates, and employers) and data on key indicators (such as graduation rates and entry to the profession) to inform program approval, accreditation, and local program improvement efforts.

This recommendation calls on states, as the agencies responsible for approving TPPs, to enhance their data collection and management capacities to advance all three purposes of TPP evaluation: program

improvement, accountability, and consumer information. States should take the lead both in building systems and resources to collect, store, analyze, and report on key program indicator data and in developing strategies for utilizing the data in program improvement efforts. These data can be used for individual program improvement, as well as systemic teacher education analysis. National accreditors could also seek collaborations with states to support state data system capacity around the types of evidence that meet rigor and utility standards for accreditation.

This recommendation seeks to address two long-standing problems. The first is the often-cited complaint that program approval and accreditation have traditionally involved assembling a burdensome quantity of written evidence while providing little information about program quality and outcomes and little guidance for improvement efforts (Wojcikiewicz & Patrick, 2022). In these situations, a focus on compliance undercuts genuine attention to program improvement. The second problem is that many programs, particularly smaller ones, lack the capacity for adequate data collection to provide information about perceived program strengths and weaknesses. For example, surveys of graduates and employers may not garner useful response rates and it may be difficult and costly to track graduate entry and retention rates, but this information could prove important to understanding program quality and outcomes. Therefore, well-designed, state-level efforts should both reduce the burden on programs and provide them with useful improvement data.

Some states have started to develop data systems that deliver information to programs to support improvement goals, for program approval and/or accreditation needs, and in some cases to provide information to the public. California, North Carolina, Tennessee, and Texas, for example, all administer completers and/or recent graduates surveys that provide information about former candidates' experiences in teacher education and/or their sense of preparedness on multiple dimensions of teaching such as the creation of positive learning environments, the teaching of reading, and the support of English learners and students with disabilities. Research has found that selected items on North Carolina's New Teacher Preparation Survey are predictive of graduates' evaluation ratings and effectiveness as measured by student achievement gains (Bastian et al., 2021).

States will need to determine how the array of measures they collect will best serve their multiple goals, including state-level aggregation for overall system appraisals and improvement. Focusing on a common body of information could allow states to provide reliable capacity and resources for data collection, rather than placing the primary burden on individual programs and institutions. Hood et al. (2022) argue for

"establishing data systems that accommodate quantitative and qualitative indicators that explicitly target community needs—candidate outcomes and TPP improvement—and incorporate equity indicators that are often overlooked" (p. 23). For instance, evaluations should attend to measures of candidates' opportunities to learn, access to high-quality programs, and recruitment and support of diverse candidates.

States will also need to make strategic decisions, in consultation with TPPs, about what indicators are useful for program improvement or accountability and which are appropriate for public or consumer information. To enhance the delivery of consumer information, some states have developed key indicator dashboards including retention and graduation rates, patterns of graduate employment, candidate diversity, and graduate and employer views of programs' ability to prepare candidates for the various tasks of teaching. For example, the California Commission on Teacher Credentialing posts both program completion survey questionnaires and results at the aggregate cross-program level on their dashboard.[2] North Carolina's TPP dashboard includes survey results on candidate satisfaction, employer satisfaction, and other indicators of TPP trends.[3] Tennessee's TPP report card includes several data points for public accountability, including both "scored" metrics that enter into summative ratings of TPPs (e.g., first-year employment rate in Tennessee public schools) and "unscored metrics" that are provided for information only (e.g., preparedness from coursework).[4] The Texas Education Agency presents program and performance data, including data for consumer information like the average test scores of the incoming cohorts of teacher candidates, completion rates, and retention rates.[5] In addition to consumer information, these dashboards can also be used for accreditation purposes (e.g., accreditors could examine survey data and use it to focus their reviews).

In many states, implementing this recommendation would require increased funding for state data systems. Partnering arrangements with accrediting bodies to use some of their resources to help states use proven tools could make implementation more feasible and could lead to better and more focused information requirements, benefiting both program

[2] More information about the California Commission on Teacher Credentialing survey data is available at https://www.ctc.ca.gov/educator-prep/program-completion-surveys.

[3] More information about North Carolina's Educator Preparation Program Dashboard is available at https://www.dpi.nc.gov/educators/educator-preparation/epp-performance.

[4] More information about Tennessee's TPP report cards is available at https://teacherprepreportcard.tn.gov/state/TN/overview.

[5] More information about Texas's Educator Preparation Data Dashboards is available at https://tea4avcastro.tea.state.tx.us/ELQ/educatorprepdatadashboard/dashboards.html.

approval and accreditation (see Recommendations 18 and 19 for further information about funding supports).

Recommendation 5. In service of continuous program improvement, states and accreditors should encourage and support programs and the profession to develop appropriate strategies for considering evidence of graduates' teaching practices and influences on student learning.

Ultimately, TPPs are intended to produce teachers who can achieve desired learning results with their students (see this report's conceptual framework [Figure 1-1]), and thus, in principle, student learning is a relevant source of evidence about TPP quality. This recommendation, therefore, encourages states and accreditors to work with TPPs, the field of education, and the research community to continue to develop and refine the evidence base linking high-quality teaching to the teaching practices reliably associated with student learning and development across multiple domains. To encourage this ongoing work, accreditors and state program approval agents should seek information on how programs are gathering and using evidence of student learning as a key indicator of program quality.

While it is important to be able to assess how well a program's graduates are succeeding in teaching students, a great deal of work is needed to identify appropriate assessments to do so. Research has demonstrated that while effective teachers are the in-school factor that matters most to student achievement and other education-related successes (e.g., college attainment and wages), traditional methods of measuring teacher quality, such as certification and years of education alone do not explain the substantial variation in teacher quality (e.g., Goldhaber, 2015; Rivkin et al., 2005). Moreover, there are numerous additional in-school (e.g., class size, curriculum, and leadership) and out-of-school factors (e.g., access to food, health care, and housing) that influence student learning, which shape and mediate the influence of TPPs on student learning and teacher effectiveness.

Much attention has been paid to the use of value-added models (VAMs) to measure student learning and teacher effectiveness. In addition to the numerous in-school and out of school factors that influence VAM measures, current federal requirements for annual state tests preclude those tests from including items that would sufficiently measure learning above or below grade level, thus failing to accurately assess gains for a large share of students. As a result, using VAM scores for the evaluation of individual teachers or programs has proven fraught and has, in some

contexts, disincentivized teachers from working with—and programs from preparing teachers to work with—students with special needs, such as those with disabilities and English learners (see Haertel, 2013; National Academies of Sciences, Engineering, and Medicine, 2020; and Chapter 7 for a fuller discussion).

VAMs, however, can be fruitful in large-scale studies measuring the effects of programs, interventions, and large numbers of teachers with shared traits. They can also play a role in carefully controlled studies that use various kinds of assessment data to examine graduates' practices and their outcomes for students. Value-added methods should also be encouraged in the context of self-study activities designed to support analysis for continuous improvement. For instance, evaluations can examine aggregate value-added data (ideally from assessments constructed to measure gains across the learning continuum) on teachers who have graduated from TPPs. Small-scale studies using value-added methods can also be useful. For example, examining teaching using both classroom observations and value-added measures of student learning gains on pre- and post-teaching curriculum-specific assessments could reveal the ways that teachers can support students in learning particular skills and concepts.

TPPs may gather a range of qualitative evidence directly from students in the classrooms of program graduates through interviews, focus groups, surveys, and assessments. Program faculty may also observe graduates' teaching, and TPPs may collect survey data from current employers. Triangulating data from multiple sources provides the best window into the teaching and learning process, where evidence combines attention to teachers' instructional interactions with students and the learning that results from such interactions.

This recommendation encourages states and accreditors to work with programs and researchers to continually develop and refine such measures (as well as others identified in Chapter 7) to inform TPPs about the work of their graduates. For program approval or accreditation purposes, accreditors and state program approvers could also inquire about how programs are pursuing such studies.

TEACHER PREPARATION PROGRAM SELF-STUDY

The recommendations in this section provide strategies to strengthen TPP-led self-studies and evaluations used for program improvement. The recommendations highlight how programs need to have tools and measures to reflect on candidate learning and practices, and implications for their students' learning. These tools and measures should also examine efforts to recruit, support, and graduate diverse, well-prepared candidates,

including in high-need fields such as science, technology, engineering, and mathematics (STEM), English language development/bilingual education, and special education. Similarly, programs need to focus on their efforts to recruit, support, and retain a diverse, well-prepared faculty that can help achieve the goal of preparing high-quality teachers. Additionally, given capacity and funding implications, this group of recommendations provides guidance for TPPs to participate in networks that are addressing and supporting common issues of program improvement.

Recommendation 6. Programs should develop and participate in collaborations and networks that promote work on common program improvement issues.

TPPs vary considerably in their capacity to mobilize program improvement. Faculty expertise in conducting high-quality program evaluations, incentive structures that support program evaluation activities, and other relevant resources are unevenly distributed across the many existing TPPs. Capacity issues, including the size of the TPP and availability of faculty, may create pressures to choose data sources that are readily available—based on convenience and cost—rather than those with genuine utility and validity. To address these capacity issues, this recommendation suggests the creation of networks of programs that can pool resources and expertise about critical aspects of practice and strategies for improvement.

Several bodies of research provide guidance for engaging in a collaborative network (see, e.g., Bryk et al., 2015; Coburn & Stein, 2010; Design-Based Implementation Research, n.d.; Michelli, 2016; Russell et al., 2017). These approaches have identified common elements for successful collaborative engagement, including pinpointing a common problem of practice or set of shared issues for communal work; building organizational processes for continuous improvement; learning and using improvement research methods and strategies for change; fostering the emergence of cultures, norms, and identities within the network; and sustaining the network's operation. These program improvement strategies hold promise for extending TPP capacity to identify and use data to address problems of practice by developing and then studying solutions to shared problems. Such communities mobilize the talents and expertise of researchers and practitioners, creating collaborations that join various types of knowledge, expertise, and experience to search for and test solutions to practical problems. A further advantage of networks focused on shared goals is that good practices can be shared across institutions.

Institutional and programmatic learning is enhanced when promising approaches can be shared—and tested—across programs.

In the TPP context, collaborative networks have emerged through the support of foundations,[6] non-profit organizations,[7] unions,[8] TPPs themselves,[9] and federal and state governments,[10] as well as through partnerships between these entities. Some of these collaborative networks—like the Holmes Group (2007) and the National Network for Educational Renewal (Michelli, 2016)—have been responsible for lasting transformations in program approaches, including the creation of professional development school partnerships, strong partnerships between schools and TPPs, the use of research to inform TPP improvement, and the development of strong clinical experiences tied to coursework—all of which remain central to the work of TPPs today. More recently, TPP networks working on common improvements to specific issues within or across

[6] See, e.g., Bill & Melinda Gates Foundation, Bush Foundation, Carnegie Corporation of New York, Charles Butt Foundation, and Hewlett Foundation.

[7] See, e.g., Raise Your Hand Texas brought the Carnegie Foundation together with 11 TTPs in Texas to strengthen the teacher-candidate pipeline and deepen the clinical experience component of programs (https://www.raiseyourhandtexas.org); the Branch Alliance for Teacher Diversity supports Minority Serving Institutions in diversifying the teaching profession and in addressing critical issues of educational equity for all students (https://www.educatordiversity.org); EdPrepLab are networks of programs that work to support curriculum improvements in preparation programs (https://edpreplab.org); and the National Network for Educational Renewal, established in 1987, includes teachers, school and district personnel, program faculty, and community members who support professional development on best practices to overcome obstacles to equitable educational practices (https://nnerpartnerships.org).

[8] See, e.g., the New York State United Teachers Association involvement in and support of the creation of the New York State Apprenticeship program through the State University of New York System, with grant support from the National Education Association (NEA); and the Louisiana Association of Educators and the Kansas Education Association providing mentoring support for cooperating teachers that grew from NEA's resources, including micro-credentials (https://nea.certificationbank.com/NEA/CandidatePortal/CategoryDetail.aspx?Stack=CT) and independent study courses that cover coaching topics (https://neapartnera.learnupon.com/store?commit=Filter&ct=139708&page=3&ss=1&utf8=%E2%9C%93).

[9] See, e.g., the Holmes Group, a consortium of research universities, public school districts, and organizations with some foundation support, including the Ford Foundation (Holmes Group, 2007).

[10] See, e.g., Teachers Corps, which was established by Congress in the 1965 Higher Education Act—the Teacher Corps functioned in part as a network linking many funded programs across the nation (Edelfelt, 1974).

states have emerged with support from philanthropic institutions and state governments.[11]

A body of knowledge centered on appraisals of these network organizations and activities exists and should be consulted. Networks have seen their greatest successes when they developed a shared set of goals with concrete opportunities for joint action and reflection and received sustained funding over a significant period. Evaluations of some of these efforts provide a valuable set of cautions and lessons (e.g., Corwin, 1973; Fullan et al., 1998; McDiarmid & Caprino, 2018).

Recommendation 7. Programs should assemble a set of tools and measures and establish processes for regularly reflecting on candidates' experiences, learning, practices, and performance throughout their TPP experience, as well as implications for their students' learning.

A collection of well-designed tools, measures, and data collection procedures—along with reflective processes aimed at ongoing change—can contribute to the effective evaluation and improvement of TPPs. This recommendation focuses on tools and measures associated with program learning opportunities and outcomes, as well as processes that use these data for ongoing improvement.

The tools and measures programs choose to assist with evaluation and improvement should be integrated into the processes programs use for regularly reflecting on candidate experiences with coursework, clinical work, and program coherence—as well as candidate learning, candidate performance, and implications, ultimately, for their students' learning. Programs should consider how candidate experiences, learning, and performance relate to the instructional strategies and supports used by the program to help guide ongoing improvement.

[11] See, e.g., the Gates Foundation has sponsored a set of Teacher Preparation Transformation Centers, including the California Educator Preparation Innovation Collaborative (https://usprogram.gatesfoundation.org/what-we-do/k-12-education/educator-preparation); the Charles Butt Foundation has sponsored a network of programs focused on improvement in Texas (https://charlesbuttfdn.org/what-we-do/statewide-programs/raising-texas-teachers-program); the Bush Foundation sponsored a network of preparation programs working on improvements in Minnesota, North Dakota, South Dakota, and 23 Native nations (https://www.bushfoundation.org/using-data-improve-teacher-preparation); and the Hewlett Foundation funded a Networked Improvement Community of four universities to strengthen teacher education for racial equity (https://hewlett.org/grants/michigan-state-university-for-a-network-improvement-community-that-prepares-teachers-to-focus-on-racial-equity-2).

As a critical aspect of program evaluation highlighted in this report's logic model (see Figure 1-2), program faculty[12] should engage in collaborative efforts to analyze data and develop responses that lead to improvements in coursework, clinical work, and program coherence. The section "Evidence of Program Quality" in Chapter 7 discusses measures of program quality features that provide information for program coherence and alignment (e.g., surveys/interviews of candidates, recent graduates, and program faculty), curriculum content and instructional methods (e.g., course evaluations, observation protocols, and TPAs), and clinical experiences (e.g., fieldwork policies; mentor, supervisor, and candidate surveys; and observations of student teaching). Currently, many programs use basic input measures like syllabi reviews; readings, assignments, and required courses; and the number of hours of clinical experiences, which provide some valuable information but may not fully reflect the quality of enacted and received instruction in TPP courses or the quality of clinical placements.

The section "Evidence of Program Outcomes" in Chapter 7 highlights three critical outcomes that should be included in program evaluation to prompt improvement: (1) mastery of knowledge, skills, and dispositions; (2) teacher performance and practices in classrooms; and (3) labor market outcomes. Table 7-2 maps the commonly used measures, some of which are applicable across the three noted program outcomes. At different stages in the program, evidence can be gathered through various tools and measures to evaluate teacher candidate mastery of the knowledge, skills, and dispositions, including knowledge-based licensure exams; TPAs; teacher candidate, completer, and employer surveys; and graduation/completion rates. For example, teacher candidate surveys can offer insights into their feelings of preparedness based on their TPP experience, and employer surveys can measure early-career teacher knowledge and skills. Similarly, TPAs can be used to examine how well teacher candidates are prepared to teach all students, including English learners and students with disabilities.

By using tools like teacher candidate, completer, and employer surveys; ratings of graduates by principals/employers; TPAs; and classroom observations, TPPs can gather information about teacher performance and practices in classrooms, including their impact on student learning. While various tools and measures are available, TPP evaluators should balance the strengths and weaknesses of each, understand that no single measure

[12] Program faculty, as defined in Chapter 1, includes all course instructors (tenured, nontenured, adjunct, etc.), mentor teachers, program-based supervisors, and any others who provide instruction and support to teaching candidates.

can reliably provide a complete picture of TPP quality, and acknowledge that biases can exist in the design and implementation of these measures.

To understand how specific areas of preparation or recent improvements are working, as well as what candidates know and can do, programs could also develop measures that include analyses of candidates' performance on a variety of assessments coupled with reflections on their learning (see, e.g., Darling-Hammond, 2006; Darling-Hammond et al., 2010). For example, as it was being redesigned, the Stanford Teacher Education Program (STEP) used multiple measures of teacher candidate learning and performance to inform program improvement. Instead of relying on a single metric, STEP collected data from pretests and posttests of teaching knowledge, course evaluations, teacher candidate work samples, supervisor and mentor teacher observations in student teaching, researchers' observations in the early years of teaching, candidates' own perceptions of their preparedness and learning through surveys and interviews during the program (and once they started teaching), employers' perceptions of candidate readiness, and TPAs (specifically Stanford's Performance Assessment for California Teachers [PACT], developed by a consortium of California colleges). The use of PACT allowed systematic analysis of candidate performance across different domains of teaching and comparison with other TPPs. In addition to measuring the acquisition of knowledge, evidence of candidate work, reflections, and performance outcome measures can attend to skills and dispositions like critical thinking, creative problem solving, conceptual understanding, and metacognitive processes. While recognizing that each of these measures has limitations, program faculty found them "powerful in the aggregate for shedding light on the development of professional performance and how various program elements support this learning" (Darling-Hammond, 2006, p. 135). In this case, evidence reviewed at the end of each school year was used to adjust coursework and clinical work in the following year, as well as to fine-tune measures to inform continuous improvement.

It takes time and program capacity to develop and implement a comprehensive set of measures. The ongoing process of program self-study might take up a subset of these measures based on appraisals of program aspects that need attention and improvement. The field of education, overall, will benefit from the development of more sophisticated tools and measures to collect valid data that accurately reflect candidate experiences and learning. The development of a library of measures—where measures that meet quality standards could be shared broadly and adapted to the specific needs of individual programs—could be taken up on behalf of the field by numerous organizations. Accrediting agencies, such as the Council for the Accreditation of Educator Preparation (CAEP) and the Association for Advancing Quality in Educator Preparation (AAQEP), play a

central role in advancing TPP quality measures, as do academic organizations like the Association of Colleges for Teacher Education (AACTE) and the American Educational Research Association. Professional bodies like the National Education Association and the American Federation of Teachers, as well as associations of principals like the national associations of elementary and secondary school principals, are also important participants in this process. An undertaking of this scope should receive attention and funding from both public and private sources (see Recommendations 17, 18, and 19 for more information about funding).

Recommendation 8. Programs should assemble a set of tools and measures to establish and evaluate processes for regularly reflecting on program efforts to recruit, support, and graduate a diverse group of candidates—including in high-need fields—who are well prepared to enter and stay in teaching.

As indicated in this report's conceptual framework (Figure 1-1) and Chapter 6, systematic efforts in the recruitment, careful selection, and rigorous and supportive preparation of high-quality and diverse teacher candidates are critical responsibilities for TPPs. Programs must also mobilize recruitment efforts to meet labor market needs, particularly in fields experiencing chronic shortages, and to ensure diverse teacher candidate cohorts with the academic knowledge, life experiences, and dispositions that indicate their potential to work effectively with and support the success of K–12 students.

The ability of TPPs to recruit, select, and support high-quality, diverse candidates is an important program feature to evaluate (see Chapter 6). Typical measures assessing recruitment and selection include overall numbers and yield, the number and percentage of BIPOC[13] applicants and candidates, and the number and percentage of applicants and candidates admitted in high-need areas (see Chapter 7). Other common measures of selection include the average grade point average or entrance exam scores of an incoming TPP class. While these data are easy to collect and represent some measure of academic ability in a single number, they do not measure whether candidates demonstrate requisite dispositions to teach. Moreover, entry requirements, especially when used as cutoffs for entrance to TPPs, can hinder the recruitment and selection of candidates who have the dispositions to be high-quality teachers but require appropriate teaching and supports.

Therefore, programs should expand the measures they use to select candidates, allowing for flexibility to admit high-potential candidates at

[13] Black, Indigenous, and people of color (BIPOC) includes Black, Indigenous, Asian, Pacific Islander, and Latiné individuals.

entry while ensuring sufficient support and maintaining rigorous exit standards for all candidates. Programs often use interviews, essay questions, and evidence of prior work with young people as entry requirements. Some programs also include performance tasks, like asking candidates to spend time in a school and reflect on what they have seen and learned, or to teach a brief lesson to help program faculty understand their cultural competence and teaching sensibilities. Sometimes members of the local school and community are also part of the admissions process. Postbaccalaureate programs—which now prepare around 40 percent of incoming teachers (Doan et al., 2022; Sutcher et al., 2016)—may do transcript reviews to understand the subject-matter background that candidates bring to their study of pedagogy, especially in secondary fields. These strategies can be evaluated—in reflective reviews of class admissions and performance—by how well various indicators worked to identify candidates who were ready for the challenge of learning to teach. Additionally, interviews with candidates from diverse backgrounds and program faculty can inform what recruitment incentives were particularly effective to admit high-potential candidates.

Furthermore, particular recruitment and retention strategies may be associated with different program types (see Wilson & Kelley, 2022, Table 6, p. 58, for more details). For example, grow-your-own programs recruit individuals who are already connected with school districts (e.g., high school students, paraprofessionals). Residency programs may offer financial support, including tuition reduction and stipends during course and clinical work. Programs may be focused on filling priority teaching positions and staffing schools in ways that promote faculty quality and diversity. Some state approval processes examine whether TPPs consult with districts and look for programmatic efforts to respond to district hiring needs (Wilson & Kelley, 2022). Programs also have responded to shortage areas by targeting recruitment to meet demand, such as in STEM fields or English language development/bilingual education.

In addition to recruitment and selection, programs need to meaningfully measure candidate progress and the TPP supports provided to address the academic, social, economic, or cultural characteristics of its candidates. Programs can use TPAs and candidate surveys and interviews to offer insights into program support to ensure candidate success. For instance, weaknesses in TPAs can lead to an examination of the underlying course and clinical experiences. Candidate interviews and surveys can be used to identify successful supports as well as continued areas of need. Measures such as graduation/completion rates, pass rates on licensure examinations, average student costs and debt, and ratings of graduates by employers can also provide important information about the success and effectiveness of program support. Programs can also examine candidates across a common set of decision points to assess whether discriminatory

impacts have emerged within the TPP, and these data can help compare trends across different candidate subgroups.

Recognizing that there are numerous factors outside TPP control, candidates' entry into and retention in the teaching profession can be used to inform needed candidate supports. As discussed in Chapter 3, teachers are leaving under-resourced, high-need schools at alarmingly high rates, and although many retention-related factors lie outside TPP control, program preparation can play a role in these decisions (Carver-Thomas & Darling-Hammond, 2017a). Consequently, program completer, employer, and community surveys and interviews can inform TPPs on needed supports to assist their candidates be effective in classrooms.

Recommendation 9. Programs should regularly examine their efforts to recruit, support, and retain a diverse, well-prepared program faculty that are committed to building and continually improving a coherent, high-quality, culturally responsive TPP.

In addition to recruiting and supporting high-quality, diverse teacher candidates (Recommendation 8), programs must also recruit and support diverse, well-prepared program faculty. As teachers are the foundation of K–12 schooling, TPP faculty (broadly defined, as in Chapter 1, to include course instructors, mentor teachers, program-based supervisors, and any others who provide instruction and support to teaching candidates) are the backbone for educating the new teaching workforce. Consequently, a faculty workforce that can instill the knowledge, skills, and dispositions necessary to teaching (see Chapter 5) and support and guide the next generation of teachers is critical.

TPPs face the dynamic challenge of recruiting and sustaining a high-quality, diverse faculty that provides the range of relevant expertise needed to mount a comprehensive program. In addition to institution-based faculty, programs require a cadre of excellent mentor teachers every year—which can generate significant pressure on supply within the many teaching specializations across grade spans, subject-matter expertise, and responsiveness to particular student populations—including students with disabilities and English learners.

Just as programs must develop a range of strategies for attracting and supporting teacher candidates, they must do the same for program faculty. Typical measures of faculty quality include the percentage of faculty with advanced degrees and faculty that are full-time, part-time, and adjunct. Although these data are easy to collect, allow for comparisons across programs, and offer the face validity that faculty with appropriate credentials are available to teach, there is little empirical evidence to support that these data can be tied to effective teacher preparation—with one exception. The share of tenured and other permanent faculty was found

to be a predictor of program effectiveness in New York City—presumably because they bring expertise, stability, and coherence to program design and implementation (Boyd et al., 2009).

To ensure strong connections between theory and effective practice, programs need to expand their evidentiary base to ensure that faculty can build and support a high-quality, culturally responsive program. In addition to expertise in the content areas taught to candidates (ranging from child and adolescent development and learning to the social, cultural, and historical foundations of education to content- and learner-focused pedagogical courses), a critical mass of faculty should have themselves taught in the content areas and contexts for which the program is preparing its candidates (see, e.g., Darling-Hammond et al., 2005; Hollins & Warner, 2021).

It is also important that faculty are committed to understanding the communities in which their candidates are learning to teach and adapting their courses to be relevant to these contexts—in doing so, theory and practice connections will likely be more developed. In some cases, TPPs also draw directly on the expertise of those who live in these communities in preparing their candidates (Clark et al., 2021; Mule, 2010; Sleeter, 2008; Zeichner, 2024). For example, programs can assess if faculty are competent to prepare teacher candidates for the communities where they will likely teach. TPPs can collect data to determine what percentage of their faculty have prior teaching experience in such communities and how their expertise is made available to students and other faculty. Similarly, TPPs can determine if candidates are prepared, by coursework and prior clinical experiences, to engage in their placement classrooms. As detailed in Chapter 6, well-prepared faculty (especially those who teach methods courses and supervise clinical experiences) should seek to model the practices they want candidates to learn and teach in ways that are responsive to both candidates' and their K–12 students' backgrounds. Programs should also consider engaging individuals and organizations from local communities in the preparation process to help situate coursework in a local context (see, e.g., Mustian et al., 2021).

Program coherence, as described in Chapters 6 and 7, is a critical component and measure of TPP quality. Program coherence requires faculty to understand and share the program's goals, as well as to coordinate how their individual and collective instruction enhances and coheres with the overall program. Given funding limitations, the low status of teacher education in some universities, and the increasing percentage of adjunct and temporary faculty with limited compensation providing instruction in TPPs, the goals of faculty engagement around program coherence can be difficult to achieve without other interventions and supports (see Recommendation 10).

SYSTEM SUPPORTS FOR TEACHER PREPARATION PROGRAM EVALUATION

TPPs require systemic support to engage in meaningful, continuous evaluation aimed at program improvement. This group of recommendations notes that there are roles for institutions that house TPPs—as well as federal, state, and local governments—to further support and enhance program evaluations. For instance, institutions can support TPP faculty by elevating the value and purpose of evaluation and the improvement processes it inspires, including through time and resources—and, for tenure-track faculty, by ensuring that this work is rewarded in the tenure process. This institution-level backing should be further supported by federal and state governments through capacity-building grants to state approval agencies and funding to support an information infrastructure that provides timely and useful information about the teacher labor market and TPPs for use by states, TPPs themselves, and consumers. These data can be important and necessary for program evaluation—and ultimately for program improvement. TPPs, however, cannot support the gathering or evaluation of such data without partners.

Recommendation 10. Institutions should support TPP faculty by providing time and resources to build capacity and skills for TPP evaluation.

Institutions are critical in providing TPPs with the necessary resources and time for engaging in self-evaluation and required program approval and accreditation, as well as to use the information gathered from the evaluation for program improvement (see this report's logic model [Figure 1-2]). An assumption built into the logic model is that program faculty will use information as a basis for improvement, adopting an inquiry-oriented stance to external evaluations—but the quality of the evaluation and the capacity for response are both variable. Although sometimes a stimulus for improvement, program approval and accreditation are often treated as compliance activities.

Institutional support is needed to develop and implement a well-resourced process to gather, interpret, and act on evaluative information to support continuous program improvement. Institutions can provide TPP faculty with appropriate training, dedicated time, and incentives (e.g., making evaluation activities a valued part of the work for tenure-track as well as non-tenure-track faculty) to prioritize the work of evaluation. Institutions can also support and reward the time-consuming processes of data collection and review for TPP evaluation (e.g., encouraging faculty members to engage in the data collection and analysis for publication

purposes as well as for program improvement and providing course load credit for the evaluation process). Recognizing that some TPPs rely heavily on adjunct faculty and mentor teachers, institutions need to build evaluative functions into the pay structure and workload for these team members, as well as work with school districts to reward and compensate mentor teachers for engaging in evaluation. Finally, capacity building includes the ability to utilize data to enact improvements, often requiring the support of TPP administration (including deans and department chairs) as change will need to occur across TPP courses, engaged schools, and faculty in non-TPP-related areas (e.g., subject-matter experts). To enhance institutional support, many institutions will need to prioritize evaluative processes, requiring funding and resource tradeoffs.

One well-developed approach to engaging in this complex work has been described by Patriarca et al. (2021). Working in a large TPP at East Carolina University, Patriarca and her colleagues identified some of the key steps involved in transforming the cultural and organizational context of their TPP to support the process of program evaluation and improvement. Key phases of the process included (1) creating a vision for the change process; (2) motivating and recruiting faculty leaders; (3) identifying locally-valued outcomes and metrics; (4) creating structures to house, access, and analyze data; (5) developing a common language of practice; (6) creating common times and places for evaluation and improvement work; and (7) supporting opportunities for faculty to share their program improvement work through writing, publication, and presentation.

Faculty capacity building is critical to the collection, interpretation, and use of evaluative data. Data gathering is just one aspect of the process—deliberative engagement with data by groups of faculty that foster useful interpretations and insights is also central to evaluation (Peck et al., 2010). Developing this capacity may require collaborative professional development of TPP faculty and fostering the necessary skills to engage all stakeholders in the enterprise of TPP evaluation (Pointer Mace & Luebke, 2021; Sloan & Scalzo, 2021).

Traditionally, input in evaluation efforts has been restricted to immediate program faculty—however, the broader community, including K–12 schools and community members, should also be engaged at the data collection, interpretation, and use stages as the cultural practices and knowledge they carry can inform a more culturally responsive approach to TPP improvement. Moreover, programs should reach out to members of the communities served by the schools where their graduates typically teach to learn more about the social, cultural, and linguistic features of students' lives, family experiences, and communities. Understanding these features will inform program improvement so that TPPs can better understand and integrate what they learn into curricular and instructional programming (see, e.g., Gillette, 2018; Koerner & Abdul-Tawwab, 2006).

Funding for evaluation efforts is also critical. For example, universities and other program providers could establish internal grants that supply financial and logistical support for program evaluations. Grant-supported activities might include professional development, buy-outs of TPP-based faculty discretionary time (e.g., summer salary), and funding for mentor teachers to engage in evaluation. TPPs also can incorporate program evaluation data collection and analysis into coursework taught and supervised by faculty for doctoral and master's students, with the potential benefit of helping future teacher educators develop the skills and dispositions necessary to study their practice.

For TPP evaluation to effectively support program improvement, institutional and TPP leaders—including deans, program directors, department chairs, and senior faculty—must encourage and build a culture of collaboration and inquiry with respect to program evaluation. Particularly in research-intensive universities, participating in evaluations must be valued as part of faculty work for annual reviews, promotion, and tenure. University faculties possess a wealth of expertise and experience in conducting inquiries that can be mobilized for program evaluation and improvement. Moreover, senior-level faculty should also be engaged in the evaluation process, not leaving the work up to junior and temporary faculty. Involving senior-level faculty will engage their leadership and expertise as well as signal the importance of evaluation to both peers and junior faculty. Additionally, ensuring that external accountability factors are useful for internal program purposes requires mediation by institutional actors. The intervening factor is how program leaders utilize and adapt external requirements for internal accountability and improvement.

Recommendation 11. States and the federal government should provide capacity-building grants to state agencies to enable them to engage in comprehensive and meaningful program approval processes that will contribute to continuous program improvement.

The federal government and states can play a constructive role in supporting the continuous improvement of TPPs by investing in the improvement of state approval processes through targeted grants to enhance state agency capacity. This report's logic model (see Figure 1-2) includes an important role for state approval agents and processes, but the relevant actions require capacity. Today, in many states, funding reductions have undercut their ability to implement and monitor program approval processes. This lack of capacity can sometimes translate to thin, compliance-based practices that are both burdensome and ineffective. Under such circumstances, state program approval is a weak vehicle for leveraging improvement. Dedicated, experienced staff; better management

information systems; improved coordination with TPPs; and regularly refreshed program standards that incorporate advances in the knowledge base for teaching would enhance continuous improvement in the program approval process.

The federal government is also vital to these processes, as it provides states with nation-wide funding to ensure their capacity to engage in extensive, fruitful program approval. Historically, the 1965 Elementary and Secondary Education Act (ESEA) included funding to enhance state capacities to engage in comprehensive and meaningful program approval processes. This funding, however, was eliminated in the 1980s, reducing support for state data systems and staff. Today, a targeted federal grant program could provide necessary funding to states to build capacity for TPP program evaluation, approval, and improvement. Using this funding, states could then be encouraged to supply support and capacity building necessary for state agencies to ensure comprehensive, meaningful program evaluation and approval, leading to program improvement.

Recommendation 12. States should work to improve the comparability, utility, and validity of the information they provide to consumers about TPPs.

Providing information about TPPs to consumers is one of the three key purposes of TPP evaluation (see this report's logic model [Figure 1-2] and Chapter 2). The primary consumers interested in such information are potential teacher candidates and their families, employers of TPP graduates, and policymakers. While program approval primarily serves an accountability function, states can develop and refine TPP indicators to also supply useful information to consumers. Given the information they already collect, states could also partner with accreditors to help develop a shared concept of TPP quality for consumer use.

Title II of the Higher Education Act (HEA) requires states to gather TPP information and share it through a state report card. This information includes the number of individuals enrolled in each TPP, admission requirements for each TPP, the number of program completers, and descriptions of programs. These state-level data are accessible on the Title II website, and states are also required to provide a link to their most recent state report card on their education agency website each year.[14]

[14] Besides the required Title II information, for many states potential candidates and employers have limited additional information with which to assess TPP programs. They can review TPP websites, rely on word of mouth, and examine ratings on a set of indicators that may not be suited to informing their needs (see discussion of National Council on Teacher Quality ratings in Chapter 3 of this report).

In addition to Title II requirements, states should determine what additional information will be useful to consumers. Information for consumers is not intended to rank programs on a set of common measures—rather, it is to provide a robust set of indicators that program applicants and their families could find useful in informing selection. Historically, factors that have influenced TPP candidate choices are convenience, cost, reputation, and local access (see Chapter 3). In addition, program applicants need basic information about TPPs, including potential prerequisites and types of certifications available (e.g., English language development/bilingual education, special education, elementary school). Applicants and their families would also likely think information about student debt at graduation; appraisals from program graduates; completion rates; graduate employment and retention rates; and the composition, size, and diversity of candidates and faculty in a program would be useful in choosing a TPP.

Similarly, school districts may want to know about program completion rates, rates of hiring and retention in districts where graduates teach, pass rates on relevant state assessments, and information on past program graduates gathered from employer surveys. Data about teacher candidates would likely be useful to districts and could even assist in expanding their recruitment efforts. For instance, school districts could benefit from data that easily identified if programs emphasize preparing teachers to work in urban environments or to teach in particular content areas, like mathematics or science.

Policymakers could use similar information to better understand teacher supply and make investments in program quality, design, or expansion. For instance, state policymakers may want to see if they have enough programs and slots for training teachers in high-demand fields, whether programs are training candidates well enough to meet the needs of their students, and how different kinds of programs are evaluated by their candidates.

As mentioned in Chapter 4, some states provide public-facing, user-friendly dashboards for consumer information. For example, the California Commission on Teacher Credentialing provides interactive online dashboards that graphically display information on each Commission-approved institution that offers TPPs—including location, types of preparation, demographics of enrolled candidates, and pass rates of program completers.[15] The Commission also produces an annual teacher supply report about how many candidates from various pathways and out of state, find their way into teaching. Similarly, the Colorado Department

[15] The California Commission on Teacher Credentialing dashboards can be viewed at https://www.ctc.ca.gov/commission/reports/data/approved-institutions-and-programs.

of Education Educator Preparation Program Report Dashboard connects consumers with data through an interactive and user-friendly interface to provide information on enrollment, completion, employment, and new teacher performance.[16]

Recommendation 13. The federal government should work with states to develop and fund an information infrastructure that provides timely and useful information about the teacher labor market and TPPs.

The federal government can play a useful role in collaborating with states to assemble a common base of data that allows for system-level appraisals, examining such issues as teacher supply and demand, common program characteristics, and program graduate profiles. The federal government in federal–state partnerships can help streamline this information infrastructure, enabling effective data collection and a feedback loop that could benefit states' high-level decision making. For instance, data on teacher supply and demand could lead states to incentivize—through funding—specific programmatic options or courses of study. In addition, high-level data could identify specific areas of concern for program approval and accreditation entities. Moreover, such data would provide greater insights for potential candidates as they choose their course of studies (e.g., labor market data could highlight high-need areas for candidates to consider). Similarly, TPPs and school districts, working together, could use such data to support potential grow-your-own and residency programs.

Title II of the HEA provides an initial basis for such an information infrastructure but improvements to this framework are needed. Criticism of the federal government's role in Title II data collection, review, and analysis includes that "[t]hese reports span more than 15 years, but their release is sporadic, data are inconsistent over time, and they are challenging for evaluations that require somewhat more precise metrics" (Hood et al., 2022, p. 4). To enhance the usability of Title II data for state and local policy making, the federal government could create a user-friendly system where researchers can link data sets—like the Integrated Postsecondary Education Data System and Title II—and over time create a coherent, comprehensive data set that encompasses teacher preparation, accountability programs, and competitive grant programs that can be used to drive innovation.

Updating and reconstructing information about the teacher labor market and TPPs requires attention to the different uses of TPP evaluative

[16] The Colorado Department of Education Educator Preparation Program Report Dashboard can be viewed at https://www.cde.state.co.us/code/eppreport.

information. A comprehensive information system needs to compile data relevant to the needs of high-level decision makers and individual users, as well as incorporate community input. Federal and state governments should also attend to the most up-to-date evidence base that supports the validity of information available in such a system. Because federal data requirements may be burdensome, to the extent possible, the federal government should reduce cost and burden to states as it continually invests in efficient and effective data gathering methods to obtain important information. Finally, the federal government could enhance the dissemination of useful information, such as reports in various formats, public-facing websites and/or portals, and other affordances that convey information to users in timely and succinct manners.

Recommendation 14. States should conduct periodic reviews of the system-wide status of teacher preparation in their jurisdictions to inform policy that would strengthen (1) the quality of preparation, (2) access to high-quality preparation for all teachers, and (3) access to well-prepared teachers for all students.

In nations with centralized teacher preparation systems, such as Finland or Singapore—which are the population size of the U.S. median state—their national governments sponsor regular system reviews to detect common weaknesses or shortcomings for improvements (see Chapter 8). Similarly, state-based, system-wide reviews could identify common inadequacies in preparation to serve as priority targets for improvement.

Systemic reviews could point to general inadequacies across programs in particular preparation areas. For example, a systemic review could highlight inadequacies in practices of inclusion and attention to the learning needs of populations like English learners. Such review could identify common problems that may emerge in response to policy developments, technological change, and other large forces that affect TPPs. Systemic reviews could also examine which candidates have access to high-quality preparation; whether there is an adequate supply of programs in all fields; if there is a need for additional investment in candidate access or program development and expansion to ensure that all candidates have access to high-quality preparation; and whether incentives or program models that will recruit and prepare teachers for communities experiencing shortages are needed.

In cases of demonstrated systemic weaknesses in teacher preparation or access to high-quality preparation, responses may be mobilized by public and private sources, state and local agencies, and networks of programs to support continuous systemic improvement. Federal sponsorship may be enacted in a variety of ways, oriented primarily to actions at the state level, including the creation of special task forces, directed studies

(such as those regularly conducted on federal policies like Title I of the Every Student Succeeds Act [ESSA]), or state collaboratives (which could also be organized through philanthropic efforts). Such approaches might also involve orchestrating rich cross-state conversations about common issues and emerging problems, potentially facilitated by organizations such as the National Association of State Directors of Teacher Education and Certification, AACTE, CAEP, and AAQEP. At the state level, public and private resources could be used to provide TPPs with an opportunity to collaboratively examine data and determine—and possibly pilot—potential teaching best practices to address identified deficiencies.

SYSTEM SUPPORTS FOR TEACHER PREPARATION AND TEACHING

This group of recommendations suggests broad reforms in the education system needed to support equitable access to high-quality teacher preparation to provide diverse, well-prepared teachers for all children. Federal and state policies and investments, as well as philanthropic investments, are needed to create the conditions in which the outcomes of TPP evaluations can be fully realized. This group of recommendations should be considered against the backdrop of historic developments in other fields, like medicine, for which federal intervention has played a critical role in constructing the infrastructure for the training, funding, and distribution of physicians across the country.

The experience of other nations can also be instructive. For instance, as discussed in Chapter 8, lessons learned from high-achieving countries show that when there is well-structured entry to and high levels of retention in the profession, more resources can be invested in a smaller pool of teachers and teacher candidates, which in turn makes high-quality teacher preparation more available to all teacher candidates. In addition to policies aimed at enhancing the attractiveness of teaching as a profession to improve supply, the federal government can also provide grants and other assistance to improve existing infrastructure—like supporting clinical teacher education and investing in research and development efforts.

Recommendation 15. The federal government, with states, should provide financial support and incentives to ensure that all teacher candidates can affordably complete a comprehensive preparation program before becoming a teacher of record.

The federal government, in collaboration with states, can assist in reducing financial barriers to entry that exacerbate teacher shortages and drive candidates to low-quality but more affordable entry pathways that

omit student teaching and have high attrition rates. These financial barriers particularly impact candidates from low-income and minoritized backgrounds who carry significant amounts of debt. Historically, loan forgiveness programs and service scholarships have proven effective in recruiting and retaining high-quality teachers (see Chapter 3). The federal government has used such strategies to support medical education for more than 60 years, offering substantial financial assistance to candidates tied to service in high-need fields and locations (Townsend, 1983). There were similar federal programs aimed at teaching in the 1960s and 1970s, but these programs were later discontinued (Darling-Hammond et al., 2023). Other nations, such as Australia and Canada, provide such subsidies for teacher candidates, and teacher education is tuition-free for teachers in Finland and Singapore, where candidates also receive living stipends and/or salaries (Darling-Hammond et al., 2017).

Pell Grants and Perkins Loans have supported general college attendance for decades, but the total amounts of these grants have dwindled, and Perkins Loans were discontinued in 2018. Federal Teacher Education Assistance for College and Higher Education (TEACH) Grants—service scholarships for teachers—have also dwindled and are currently too small to support TPP tuition. The major source of federal loans for graduate-level preparation—Subsidized Stafford Loans—was discontinued a decade ago, and about 40 percent of teachers now enter the profession through postbaccalaureate programs that have no federal financial assistance (Doan et al., 2022; Sutcher et al., 2016). The Teacher Quality Partnership grants that support school–university partnerships, including residencies, are insufficient to fully address the financial needs of the partnerships. These programs could be revitalized or strengthened and serve as sources of enhanced financial support for teachers.

Federal and state support for service scholarships, paid apprenticeships, and residency programs that support tuition and stipends can help diversify the teaching force, enable teachers to receive strong preparation that will support their retention in the profession, and eliminate or reduce TPP-related debt, which will also enhance retention by making teaching as a profession more financially attractive. Such funding should support broad TPP entry standards and incentivize teaching as a career while supporting common, rigorous standards for program completion and entry into the profession.

A robust federal program to support service scholarships that cover tuition in exchange for years of teaching would have significant positive effects on teacher supply (see Chapter 3). Additionally, scholarship programs could target teachers teaching historically marginalized student populations and teachers teaching in high-need fields, as well as the type of TPP to receive funding. By doing so, the federal government could

address teacher shortages in, for instance, rural and urban areas and for students with disabilities and English learners. Similarly, providing specific program requisites for funding opportunities—like clinical preparation with trained mentor teachers in schools serving low-income or historically marginalized student populations—could leverage program quality and equity.

Under the Public Service Loan Forgiveness program, the federal government could pay back teachers' loans on a prorated basis for each year they stay in teaching until their loans are paid off or they leave the profession. This and other financial incentives could also attract teachers to high-need environments if the government was willing to pay off a larger portion of loans for each year of teaching. Expanding TEACH grants for teachers in high-need fields could also incentivize teachers to work in these fields and locations. In addition, the federal government could provide block grants to states, potentially requiring state matching funds, and then permit the states to determine their specific high-need areas and priorities.

Recommendation 16. Federal and state governments should provide capacity-building supports and resources for comprehensive, high-quality clinical teacher preparation.

Research demonstrates that comprehensive, high-quality clinical preparation in the classrooms of expert mentor teachers—particularly when tightly integrated with TPP coursework—are associated with improved learning outcomes for teacher candidates, stronger teacher retention, increased feelings of preparedness, and observed teaching effectiveness (Boyd et al., 2009; Ronfeldt, 2021; see Chapter 6). Clinical placements are more effective in preparing teachers when schools and TPPs are aligned on curriculum, instructional approaches, and effective feedback (see Chapters 6 and 7). Additionally, benefits to teacher learning accrue when the field placement school has characteristics of a strong professional community, including high-quality teacher collaboration, a history of strong and equitable gains in student achievement, high rates of teacher retention, and an instructionally effective faculty (Darling-Hammond et al., 2005; see Chapter 6). Finally, the effectiveness of mentor teachers plays an important role in influencing their student teachers' instructional effectiveness. Evidence suggests that candidates placed with mentor teachers who are instructionally effective, as measured by student test score gains, will be more instructionally effective themselves (Goldhaber et al., 2020; see Chapter 6).

In many locales, however, the supply of integrated and well-resourced field placement schools, as well as the availability of effective mentor teachers—particularly given time and resource constraints—is

limited. Given the important role of mentor teachers in clinical experiences, states should incentivize or require preparation and ongoing support for mentors. Under an expanded Teacher Quality Partnership Program[17] or Augustus F. Hawkins Centers of Excellence Program (Hawkins Program),[18] the federal government could provide grants-in-aid to partnerships between a TPP and local schools or districts to co-develop clinical placement sites dedicated to high-quality teacher preparation. Such funding support should focus on building both TPP–school partnerships and capacities and the capacities of program supervisors and mentor teachers engaged in student teaching.

As part of support for dedicated training sites, funds could provide stipends and release time for supervisors and mentor teachers to engage in high-quality training, as well as mentoring and TPP-related activities—including TPA preparation and TPP and TPA evaluation processes. While incentives and affordances exist in some locales, colleges, universities, and school districts struggling with budget shortfalls and cuts may not be able to provide such support. Consequently, given the equity issues that may arise, funding efforts should be directed toward high-need fields like English language development/bilingual education, special education, and STEM, as well as for placements in low-income and historically marginalized communities.

Residency programs also face capacity and sustainability issues, and important residency improvement efforts have been abandoned because of leadership changes and budgetary constraints (see Chapter 3). The Learning Policy Institute, Prepared to Teach, and EdPrepLab examined sustainable strategies for funding teacher residencies and identified three key strategies, including (1) reallocating resources by integrating residents into existing budgets and programs, (2) reducing costs by utilizing existing TPP resources, and (3) reinvesting savings captured from reduced turnover and onboarding costs (Yun & DeMoss, 2020). Similarly, the National Center for Teacher Residencies prepared residency programs in its network for sustainability by supporting the development of models that increase permanent funding—such as through the reallocation of district funds—and reducing reliance on external philanthropic funding (National Center for Teacher Residencies & Public Impact, 2018).

Federal funding, potentially supplied through the HEA, could be restricted to programs that provide evidence of quality. This type of

[17] More information about the Teacher Quality Partnership Program is available at https://oese.ed.gov/offices/office-of-discretionary-grants-support-services/effective-educator-development-programs/teacher-quality-partnership.

[18] More information about the Hawkins Program is available at https://www2.ed.gov/programs/afhce/index.html.

program could include a matching grant structure to invest states in creating this infrastructure. Furthermore, federal funding for apprenticeships, which recently increased, now includes teaching as an approved field and could be woven into a new grants program (U.S. Department of Education, 2023b). Finally, funding should include additional research to identify the specific elements of clinical placements most tied to improved teaching and retention.

Recommendation 17. The federal government should invest in research and development—and its use—to support ongoing improvement of teaching and teacher preparation.

Investments in knowledge growth have contributed significantly to fields like medicine, engineering, and technology. Although the federal government does invest in educational research (the Institute of Education Sciences received $808 million in fiscal year [FY] 2023), it pales in comparison to other federal research priorities (e.g., the National Science Foundation received $9.9 billion in FY 2023 and the National Institutes of Health received $49 billion in FY 2023).[19] As this report highlights, evidence is accumulating around the knowledge, skills, and dispositions needed for high-quality teaching, as well as for how to best prepare candidates to teach. However, as this report also indicates, there are many areas where additional research is needed. For example, although research has identified that teachers are the most important in-school factors influencing student learning, all key elements of effective teaching have not been identified.

Given the importance of education in our society, federal investment in research on high-quality teacher education, teaching-related practices, and their dissemination and integration into TPP coursework and learning experiences should continue to build the knowledge base for teaching and learning to teach. Such investment would respond to one of the main challenges in teacher preparation: with limited program duration and so many demands, what is the knowledge that is most directly useful to teaching practice and the practice of preparing teachers?

Building a knowledge base for teacher preparation that is widely accepted could directly influence approval, accreditation, and evaluation practice. It could provide for clearer indicators of program quality. To build such a knowledge base to enable program improvement, the

[19] See Institute of Education Sciences FY 2023 appropriations (https://www2.ed.gov/about/overview/budget/budget23/23action.pdf), National Science Foundation FY 2023 appropriations (https://new.nsf.gov/about/budget/fy2023/appropriations), and National Institutes of Health FY 2023 appropriations (https://sgp.fas.org/crs/misc/R43341.pdf).

federal government could provide funding to teacher education networks under the Teacher Quality Partnership Program and Hawkins Program. One special focus for these funds could be Minority Serving Institutions (including Historically Black Colleges and Universities, Hispanic-Serving Institutions, Tribal Colleges and Universities, and Asian American and Native American Pacific Islander-Serving Institutions), which are currently graduating a large share of currently practicing teachers of color (see Chapter 3). Program development in these institutions should be a priority, as is ensuring that the knowledge base for teaching and for teacher preparation is well integrated into program improvement efforts.

Relaunching research centers dedicated to critical topics is another important strategy to support ongoing improvement. In 1985, the federal government funded the National Center for Research on Teacher Learning at Michigan State University, following the funding of a National Center for Research on Teacher Education at The University of Texas at Austin for a decade (National Center for Research on Teacher Learning, 1991). Over the years, these centers made significant contributions to the knowledge base for teaching and teacher preparation. In the ensuing 30 years since these Centers closed, knowledge that can support teacher learning has grown dramatically. Such federally-sponsored centers, if revived, would be able to build and advance the critical research necessary to support TPP improvement—and ultimately, improve teaching.

Recommendation 18. States and the federal government should allocate funding for the development of measures, tools, and protocols for use across the main purposes of teacher preparation evaluation, including program improvement, accountability, and consumer information.

Developing measures, tools, and protocols for data collection is costly, time-consuming, and beyond the scope of individual TPPs. This development—focused on elevating TPP evaluation quality and lessening programmatic burden—should be a field-wide endeavor and requires funding and support from federal and state agencies and input from programs, school districts, professional teaching organizations, and communities. States, professional associations, accreditors, and research centers can play a critical role in the development of common measures, tools, and protocols for use across the main purposes of evaluation. Box 6-1 proposes a set of quality program features that have relevance for all purposes of TPP evaluation and for which measures and indicators may be developed and improved upon. Such measures can inform evaluation for public accountability organized by states in collaboration with accrediting agencies; some may be particularly informative for consumers; and some could be useful for program self-study efforts—supplemented with

locally developed, fine-grained measures that assess improvement effort features that are of particular interest.

To take advantage of economies of scale, regulators and professional organizations—with federal support—could collaborate on building a measurement bank of validated tools to measure one or more of the program features and serve one or more of the purposes for program evaluation. For example, state-wide surveys create an economy of scale in supporting question development and gathering and analyzing data. With state support, it is easier for surveys to meet rigorous technical requirements, and the burdens of analysis and development are not solely on individual TPPs. Cross-state sharing of these surveys would benefit the field at large as it could move education toward a common set of validated items.

Recommendation 19. Philanthropic organizations should continue—and expand—their contributions to TPP evaluations and improvement.

As part of the teacher preparation landscape, philanthropic investments in evaluation and programming have positively contributed to TPP improvement efforts (Koppich & Esch, 2012). Philanthropic efforts have supported and continue to fund the development of collaborative networks; research addressing the key features of high-quality teacher preparation; research and dissemination about successful TPP initiatives; and advocacy for the policy support needed to expand access to high-quality preparation. Along with key stakeholders like federal and state governments, institutions, and programs, philanthropic organizations can significantly contribute to the equitable and high-quality preparation of the future teacher workforce.

Philanthropic organizations have funded numerous programs to support teacher education. For instance, some philanthropies have worked in the regional context, including to support collaborative networks that mobilize resources and expertise to address program improvement capacity issues (see, e.g., the Bush Foundation in Minnesota, North Dakota, and South Dakota; Charles Butt Foundation in Texas; Ewing Marion Kauffman Foundation in Missouri; and the Bill & Melinda Gates Foundation in California, New York, and Texas). Others have worked nationally to connect research and practice to build strong school–university partnerships, as well as clinical programming and university-based networks (see, e.g., the Holmes Group; National Network for Educational Renewal; Teachers for a New Era). Some of the work of these networks is ongoing and long-lasting, including an emphasis on strong partnerships for the academic and clinical preparation of teacher candidates between schools and

TPPs (including in the context of residencies), the importance of research to inform the improvement of teacher education, supports for teacher candidates with a wide range of life experiences, and the importance of engaging non-TPP faculty particularly around key disciplinary subjects. Such foundation–institution partnerships could further expand program capacity to enhance teacher effectiveness.

Philanthropic organizations should continue to fund research on teacher preparation evaluations to ensure that TPPs continue to improve based on the most current research and evidence. Philanthropies can support research on curriculum material development and teaching strategies that help programs employ the characteristics of high-quality preparation (see Chapters 5 and 6); on effective measures, tools, and protocols for program evaluations (see Chapter 7); and on repositories where programs can find and select appropriate measures for their contexts and purposes. To sustain and build on efforts, philanthropies could create a field-building repository of knowledge, including documenting and sharing research, tools, protocols, and lessons learned. In addition to research, private philanthropic efforts can help facilitate teacher education reforms, and funding could be directed at identifying and investing in promising teacher preparation models. Philanthropies, along with the federal government and states, are critical partners in improving and enhancing teacher preparation.

Recommendation 20. Federal, state, and local governments should ensure an adequate supply of well-prepared, culturally responsive, and diverse teachers in all schools by providing competitive and equitable compensation, supportive learning opportunities and working conditions, and investments in preparing effective school leaders.

While TPP evaluation can play a role in addressing educational inequities, many of the impediments to having well-prepared, culturally responsive, and diverse teachers in all classrooms will require actions by federal, state, and local governments (see the report's conceptual framework [Figure 1-1]). As described in Chapters 1 and 3, education conditions in the United States feature long-standing inequities that disproportionately affect specific districts, schools, teachers, and students. Additionally, federal accountability-oriented policies such as testing cannot improve educational opportunities by themselves. Consequently, this recommendation focuses on several contextual factors that influence teacher retention—competitive and equitable compensation, supportive learning opportunities and working conditions, and investments in the

preparation of effective school leaders—that require external financial and policy support to address and improve.

In the United States, 9 out of 10 vacancies each year are to replace teachers who left the year before—only one-third of them for retirement (Carver-Thomas & Darling-Hammond, 2017a). This high rate of attrition—reaching 10 percent nationally by the end of the 2021–2022 school year—which causes ongoing demand to outstrip supply, is a key reason why so many unprepared teachers are entering the workforce (Diliberti & Schwartz, 2023). If teacher attrition was reduced by half—to the levels of countries such as Canada, Finland, and Singapore—the field could focus on better preparing a smaller number of teachers who would be more likely to stay in the profession (Sutcher et al., 2016). For example, among beginning teachers, those who have had little preparation and no student teaching are 2.5 times more likely to leave the profession in the first year than those who have had comprehensive preparation and student teaching (Ingersoll et al., 2014). Those who have had no mentoring or induction are more than twice as likely to leave teaching as those who have experienced high-quality preparation programs, including mentoring, collaboration with other teachers, and a reduced teaching load (Smith & Ingersoll, 2004). In addition to the supports for strong preparation identified in Recommendation 15, the federal government could provide matching grants to states to ensure high-quality mentoring for all beginning teachers and encourage the use of Title II of ESSA funds for these supports.

Beyond these opportunities to support teacher efficacy and success, teacher salaries must also be addressed. Teachers earn significantly less than other college-educated workers, and this gap has only grown over the past decades (see Chapter 3; Allegretto, 2023; Wilson & Kelley, 2022). Moreover, teacher salaries and benefits vary considerably across locales, typically to the disadvantage of schools serving children from low-income backgrounds and in urban and rural settings. Compounding this, BIPOC teachers are more likely to graduate from college with greater student debt and are more likely to teach in cities with higher costs of living than their White peers, making teaching a financially challenging career to enter and stay in (see Chapter 3).

In addition to the financial constraints of attending TPPs and the poor salaries upon graduation, working conditions are also a strong predictor of teacher recruitment and attrition (see Chapter 3). Working conditions include school and instructional resources, class size, access to professional development and learning opportunities, school environment, outreach to families and communities, and school-level leadership. BIPOC teachers are more likely to be placed in under-resourced high-need schools than their White peers, and these schools often have high turnover of both

teachers and administrators, more of whom are inexperienced and underprepared than in other schools (see Chapter 3; Stanley, 2021). Schools with more positive working conditions—adequate resources, reasonable workloads, teacher autonomy, opportunities for collaboration, collective faculty decision making, and more faculty input—had lower levels of teacher turnover for all groups. These features, however, are less likely to be present in the schools where most BIPOC teachers work (see Chapter 3; Carver-Thomas & Darling-Hammond, 2017a; Ingersoll et al., 2019).

Evidence shows that many features of positive working conditions are associated with principal training and that the quality of principal preparation is associated with their practices, teacher retention rates, and their overall effectiveness (Darling-Hammond et al., 2022b). Increased federal funding for administrator training through Title II of the ESSA and, potentially, through Title II of the HEA could build principals' capacities to create productive working environments where teachers want to stay—particularly if funding is focused on leaders in high-need communities. States that sponsor Working Condition Surveys for teachers provide data about what matters to teachers and the conditions they are experiencing in different schools and districts (Hirsch & Emerick, 2007). Local districts can make investments in retention as well as recruitment by increasing salaries with the resources available to them; launching high-retention teacher residencies with federal and state support; creating pipelines of well-prepared administrators from the ranks of teacher leaders who can create supportive, collegial workplaces; and addressing working conditions that matter to teachers.

Finally, improvements in teacher salaries and benefits should happen alongside general school finance reform to address working conditions, including reduced class sizes, access to instructional materials, useful professional development, and supportive school leadership. States that have tackled equity funding reforms in purposeful ways, including raising and equalizing teacher salaries, have ended teacher shortages and created more equitable teacher distributions while also improving overall teacher quality (Darling-Hammond, 2019). Encouragement to undertake these reforms can be offered at the federal level through stronger enforcement of existing equity and comparability ESSA requirements and the creation of competitive grant initiatives that would fund state equity commissions to evaluate and pursue fairer funding formulas for investment in teachers and teaching (Cook-Harvey et al., 2016).

CONCLUSION

Public education is the foundation of U.S. democracy. It is essential for the preparation of an informed and engaged citizenry, to the economic

well-being of individuals and society, and to the collective well-being of the United States. Highly qualified teachers, prepared to educate a diverse student body, are the cornerstones of this essential public education. However, the United States falls short of this goal—in particular, too many historically marginalized students do not have access to qualified, well-prepared teachers.

This report is grounded in the critical educational goal to *recruit, prepare, and retain a qualified and diverse teacher workforce, generating a supply of teachers that is responsive to demand to ensure that all students are taught by well-prepared, culturally responsive teachers*. All teachers should be ready to prepare a culturally and linguistically diverse community of students for more challenging learning goals than ever before—and to adapt curriculum and instruction to include and teach *all* students. Teaching environments—with governmental support—need to encourage teachers to remain in the profession.

TPPs are the starting point to meet the goal of well-prepared teachers for every student. However, improving preparation alone is not sufficient to ensure high-quality teaching for all if teacher shortages mean that classrooms are staffed with individuals who have not had access to this preparation. The teaching profession is facing critical issues, including recurring teacher shortages in hard-to-staff subject areas and high-need schools, declining TPP enrollment, high teacher attrition rates, wage penalties, difficult working conditions when compared to other professions, and attacks on teachers' ability to teach and recognize the histories and identities of historically marginalized populations. Consequently, while this report provides recommendations for the evaluation and improvement of TPPs, it also includes recommendations to address the larger societal and governmental policies necessary to support TPP success.

This report's conceptual framework (see Figure 1-1) and logic model (see Figure 1-2) address the interconnectedness of TPPs' roles to recruit and prepare teachers and evaluate and improve program quality—and the larger policy and contextual supports necessary to ensure adequate preparation of high-quality teacher educators. The report then sets forth the current landscape of teacher preparation evaluation and examines the complexity, nuance, and interrelatedness of the three goals of TPP evaluations (i.e., program improvement, accountability, and consumer information). The report then highlights the complex and variable characteristics of TPPs, including the wide range of TPP pathways, declining enrollment trends, high levels of student debt, and subpar working conditions that are disproportionately affecting BIPOC teachers and candidates. The report addresses the various entities shaping the field of TPP evaluation, which bring about multiple evaluation objectives and processes that present both data collection burdens and opportunities for program

improvement. Grounded in the scientific research on the knowledge, skills, and dispositions that teachers need to support student learning and development, the report identifies crucial TPP features associated with high-quality preparation as targets for evaluation and provides a roadmap that links key evidence and measures to these features while addressing their strengths and weaknesses. The report then highlights teacher preparation systems in other high-achieving countries as examples of effective evaluation processes.

Based on this critical information, the report makes recommendations to support the evaluation and improvement of TPPs by addressing crucial components in the categories of (1) improving TPP approval and accreditation; (2) enhancing TPP self-study; (3) providing system supports for TPP evaluation; and (4) creating system supports for teaching and teacher preparation. Recognizing that teacher preparation is situated in larger societal contexts, these recommendations aim to address the multiple governmental and nongovernmental entities influencing TPP evaluation and improvement at the federal, state, and local levels. This report recognizes that addressing these complex issues requires new levels of funding and resources in teacher preparation—however, doing so has never been more necessary or consequential.

All students should be given the opportunity for an equitable, culturally responsive, and high-quality public education. This opportunity can only exist when, in conjunction with sufficient societal supports, TPPs are evaluated in such a way that allows for continuous improvement, and ultimately improved education for all teachers and learning for all students.

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Biographical Sketches of Steering Committee Members

Linda Darling-Hammond (*Co-Chair*) is the president of the Learning Policy Institute, created to provide high-quality research for policies that enable equitable and empowering education for every child. She is also the Charles E. Ducommun Professor of Education emeritus at Stanford University, where she founded the Stanford Center for Opportunity Policy in Education and served as faculty sponsor for the teacher education program, which she helped to redesign. She is the past president of the American Educational Research Association, a member of the National Academy of Education, and a member of the American Academy of Arts and Sciences. She was recently appointed by President Biden as a member of the National Board for Education Sciences, which oversees the Institute for Education Sciences. Darling-Hammond is an author or editor of more than 30 books and 600 other publications on teacher quality and educational equity, including *Teaching as the Learning Profession*, *Preparing Teachers for a Changing World: What Teachers Should Learn and Be Able to Do*, *Powerful Teacher Education*, and *Preparing Teachers for Deeper Learning*. In 2022, Darling-Hammond received the Yidan Prize for Education Research in recognition of her work that has shaped education policy and practice around the most equitable and effective ways to teach and learn.

Kenneth M. Zeichner (*Co-Chair*) is the Boeing Professor of Teacher Education emeritus at the University of Washington and a professor emeritus in the School of Education at the University of Wisconsin–Madison. He received his Ph.D. in 1976 from Syracuse University and has had

visiting appointments at Deakin University (Australia), Umea University (Sweden), Simon Fraser University (Canada), the University of Southern California, the University of Gothenburg (Sweden), and the University of Minnesota, and he was a Fulbright Senior Specialist in Australia in 2004. The American Association of Colleges for Teacher Education awarded him the Margaret B. Lindsay Award for Distinguished Contributions to Research on Teacher Education in 2002 and a Lifetime Achievement Award in 2009 as well as the award for Excellence in Professional Writing in 1982, 1993, and 2002. He is a member of the National Academy of Education and a fellow of the American Educational Research Association and the National Education Policy Center at the University of Colorado. His books include *The Struggle for the Soul of Teacher Education* (2017), *Empowered Educators in Canada* (with Carol Campbell, Ann Liebermann, and Pam Osmod-Johnson, 2017), *Teacher Education and the Struggle for Social Justice* (2009), *Studying Teacher Education* (with Marilyn Cochran-Smith, 2005), *Currents of Reform in Pre-Service Teacher Education* (with Susan Melnick and Mary Gomez, 1996), *Issues and Practices in Inquiry-Oriented Education* (with Bob Tabachnick, 1991), *Teacher Education and the Social Conditions of Schooling* and *Reflective Teaching* (both with Dan Liston, 1996 and 2014), *Culture and Teaching* (with Dan Liston, 1996), *Democratic Teacher Education Reform in Africa* (with Lars Dahlstrom, 1999), and *Keywords in Teacher Education*: *Communities* (2024).

Shari Becker Albright is the president of the Charles Butt Foundation, where she works to further the mission of pursuing a more equitable and prosperous future for all Texans through public education and community partnerships. A significant part of the foundation's work is focused on the growth and support of high-quality, university-based teacher preparation, anchored by a Charles Butt Scholarship program for 500 aspiring teachers annually. Prior to her foundation leadership, Albright served as the Murchison Distinguished Professor of Practice in Education and the chair of the Department of Education at Trinity University in San Antonio, Texas. In that role, she served as faculty in the undergraduate program and across the three graduate programs, including the Master of Arts in Teaching program and the Master of Arts in School Psychology program, and she fully redesigned and directed the Master of Education in School Leadership. Currently, in the community, Albright serves as the secretary of the municipal board for Pre-K 4 SA, a citywide early childhood initiative for San Antonio, and is a board member of the CAST Network of career-themed high schools in San Antonio. She is also a member of the Governing Board of the Holdsworth Center, a statewide educational leadership center for Texas; serves on the Board of Trustees of Trinity University; and serves on the executive board of the San Antonio

ISD Education Foundation. Additionally, she supports, through board membership, Early Matters–San Antonio, the UP Partnership education collective impact organization, and the Region 14 Comprehensive Center serving the region providing public education in Arkansas, Louisiana, and Texas.

Eva L. Baker is a Distinguished Professor emerita at the University of California, Los Angeles (UCLA), School of Education and Information Studies and the founding director of the National Center for Evaluation, Standards, and Student Testing. Baker continues to engage in research on assessment, technology, and evaluation, including the design and implementation of complex systems. She has worked across the education spectrum in experimental research, curriculum development, and policy formation. Her academic work has focused on design strategies to link learning, teaching, and assessment, efforts that involve games, simulations, and advanced systems. Her work on the evaluation of artificial intelligence systems began in the 1980s. She was the president of the American Educational Research Association, the World Education Research Association, and the Educational Psychology Division of the American Psychological Association. She was the chair of the National Academies of Sciences, Engineering, and Medicine's Board on Testing and Assessment and the co-chair of the Standards for Educational and Psychological Testing (1999). She was the co-editor of the *International Encyclopedia of Education* (2010), co-editor of a series of books on technology and psychology, co-author of a series of teacher education books, editor of *Educational Evaluation and Policy Analysis*, and has produced hundreds of articles, chapters, presentations, and reports on her areas of interest. A recipient of awards given in the assessment area (Lindquist, Angoff, and Chauncey, Coffman Lecture, Linn Lecture), she also received the UCLA Alumni Award for Excellence.

Deborah Loewenberg Ball is the William H. Payne Collegiate Professor of Education at the University of Michigan, an Arthur F. Thurnau Professor, a research professor in the Institute for Social Research, and the director of TeachingWorks. She taught elementary school for more than 15 years and continues to teach children every summer. Ball's research focuses on the practice of teaching, using elementary mathematics as a critical context for investigating the challenges of helping children develop understanding and agency and to work collectively, and on leveraging the power of teaching to disrupt patterns of racism, marginalization, and inequity. Ball is an expert on the demands of teaching and the imperatives for teachers' professional education. Ball has authored more than 200 articles and chapters and has lectured and made major presentations

around the world. She has also developed distinctive collections of video records of practice that are broadly used to make teaching practice visible. Her research has been recognized with several awards and honors, and she has served on national and international commissions and panels focused on the improvement of education. She currently serves on the National Science Board and on the Mathematical Sciences Research Institute Board of Trustees and previously served as the president of the American Educational Research Association (2017–2018) and as the dean of the University of Michigan School of Education (2005–2016). Ball was elected to the American Academy of Arts and Sciences and the National Academy of Education, and is a fellow of the American Mathematical Society and the American Educational Research Association.

Eric R. Brown is a practicing K–12 science teacher at Evanston Township High School (ETHS) in Evanston, Illinois. He served two 3-year terms on the National Education Association's (NEA's) Executive Committee, which comprises three executive officers and six members elected at large by delegates to the NEA Representative Assembly. As a science teacher at ETHS, he advances he academic and social–emotional learning of diverse groups of high school students, with a particular focus on reducing gaps for groups of students that have been historically marginalized. In addition to being a practicing educator and leader within the NEA, Brown has spent a large part of his career improving the preparation of teachers in order to achieve success with an increasingly diverse population of students. He has served as a cooperating teacher, a mentor teacher, coordinator of his district's mentoring and induction program, a member of the Illinois State Educator Preparation and Licensure Board, and a member of the Council for the Accreditation of Educator Preparation board. He worked with President Obama's White House Initiative on Educational Excellence for African Americans to convene a LGBTQ+ Black Youth Summit and has presented internationally at convenings of Education International, a global organization that champions publicly funded education for all students in every country and supports the development of teacher qualifications and the recognition of teachers as professionals. Brown's current teaching focus is on supporting students and educators in addressing the needs exposed and exacerbated by the COVID-19 pandemic.

Robert Floden is a University Distinguished Professor emeritus and dean emeritus of the College of Education at the Michigan State University. Floden received an A.B. with honors in philosophy from Princeton University and an M.S. in statistics and a Ph.D. in philosophy of education from Stanford University. Floden has served as the secretary-treasurer for

the National Academy of Education, as the chair of the Board of Directors for the American Association of Colleges for Teacher Education, and as a board member of the Council for the Accreditation of Educator Preparation and of the Carnegie Project on the Education Doctorate. He is a fellow of the American Educational Research Association, the Philosophy of Education Society, and the American Psychological Association, Division 15. Floden is currently the chair of the Books Editorial Board for the American Educational Research Association. Floden's work has been published in the *Handbook of Research on Teaching*, the *Handbook of Research on Teacher Education*, the *Handbook of Research on Mathematics Teaching and Learning*, and in many journals and books. He has studied teacher education and other influences on teaching and learning, including work on the cultures of teaching, teacher development, the character and effects of teacher education, and how policy is linked to classroom practice.

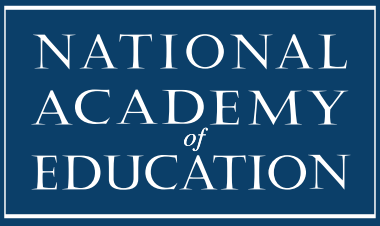
Gloria Ladson-Billings is a professor emerita and former Kellner Family Distinguished Professor in Urban Education in the Department of Curriculum & Instruction and was a faculty affiliate in the Departments of Educational Policy Studies, Educational Leadership & Policy Analysis, and African American Studies at the University of Wisconsin–Madison. She is the immediate past president of the National Academy of Education, the 2005–2006 president of the American Educational Research Association, a 2020–2021 Hagler Institute Fellow at Texas A&M University, and a fellow in the American Academy of Arts and Sciences and the British Academy. Ladson-Billings's research examines the pedagogical practices of teachers who are successful with African American students. She also investigates Critical Race Theory applications to education. Ladson-Billings is the author of the critically acclaimed books *The Dreamkeepers: Successful Teachers of African American Children*, *Crossing Over to Canaan: The Journey of New Teachers in Diverse Classrooms*, and *Beyond the Big House: African American Educators on Teacher Education*. She is the editor of eight other books and author of more than 100 journal articles and book chapters. She is the former editor of the *American Educational Research Journal* and a member of several editorial boards. Her work has won numerous scholarly awards, honorary degrees, and lifetime achievement awards, including more recently the Distinguished Lifetime Achievement Award from the Literacy Research Association (2015), the Lifetime Achievement Award from the Benjamin Banneker Association of the National Council for Teachers of Mathematics (2016), the John Nisbet Award from the British Educational Research Association at the University of Sussex in Brighton, England (2017), the American Educational Research Association's Distinguished Research Award, and the Division B (Curriculum Studies) Lifetime Achievement Award (2018).

John P. Papay is the director of the Annenberg Institute at Brown University and an associate professor of education and economics. Much of his research focuses on policies that affect teachers and their work and how schools and policies create inequality or work to ameliorate it. He has particular interest in the ways that the organizational conditions in schools support or constrain teacher effectiveness. His recent work has centered on how teachers improve over the course of their careers, exploring how schools and professional learning opportunities can support teacher effectiveness and development. He has examined how schools can staff their classrooms effectively, how they can improve the diversity of the educator workforce, and how they can structure opportunity for students living in poverty and from historically marginalized backgrounds. Papay conducts much of his research in collaborative partnerships with policymakers and practitioners. He currently leads the Educational Opportunity in Massachusetts project, a long-standing partnership with the Massachusetts Department of Elementary and Secondary Education and the Department of Higher Education. He is one of the founding senior researchers of the Research Partnership for Professional Learning, which seeks to identify the features of professional learning that improve students' classroom experiences, well-being, and academic growth. Papay is a research affiliate with the Project on the Next Generation of Teachers at the Harvard Graduate School of Education.

Mary Vixie Sandy serves as the executive director of the California Commission on Teacher Credentialing, the nation's oldest independent standards board for educators. In this capacity, she oversees public policy related to educator preparation and licensing and directs an agency that awards more than 250,000 credential documents per year and accredits more than 250 colleges, universities, and local education agencies offering educator preparation programs. Previously, Sandy served as the executive director of the University of California, Davis, School of Education Center for Cooperative Research and Extension Services for Schools, working with faculty to extend their research into the public schools. Sandy also served as an associate director of teacher education and public school programs with the California State University Chancellor's Office, and as a policy analyst for the California Department of Education and the California Postsecondary Education Commission. Sandy holds a doctorate in leadership for education equity from the University of California, Berkeley; a master's degree in philosophy in education from the University of California, Davis; and a bachelor's degree in philosophy from Sonoma State University. She is the recipient of the 2022 James A. Kelley Award for Advancing Accomplished Teaching from the National Board for Professional Teaching Standards, and the author of numerous articles

and policy reports on the use of performance assessment in teacher licensure. Her research and professional focus are on building the capacity of teachers, leaders, public schools, and communities to meet the needs of California's diverse student body.

Marla Ucelli-Kashyap is the senior director for educational issues at the 1.7-million-member American Federation of Teachers (AFT), where she serves as strategic advisor to AFT's president and leads a 30-member team working on policy, practice, technical assistance, and professional development aimed at helping teachers and their unions improve education quality and their profession. Her portfolio includes the teacher career continuum and workforce shortages, community schools' expansion, spread of science-based reading instruction, AFT's signature professional conferences and training programs, and its Share My Lesson resource hub with more than 2 million registered users. Prior to AFT, Ucelli-Kashyap was the director of district redesign and leadership at the Annenberg Institute for School Reform at Brown University. Before that, she was a senior program officer at The Rockefeller Foundation. Her early-career service included roles as a senior education aide to New Jersey Governor Thomas H. Kean and special assistant to the president of the Carnegie Foundation for the Advancement of Teaching. Ucelli-Kashyap has also been an education policy consultant, a press secretary, and a reporter. She holds degrees from New York University and Rutgers. She has served on numerous boards and advisory groups, including multiple terms as the chair of the Learning First Alliance Board of Directors and Editorial Projects in Education (*Education Week*). Ucelli-Kashyap was a member of the Education Agency Review Team for the Biden administration transition.



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