A Good Teacher in Every Classroom: Preparing the Highly Qualified Teachers Our Children Deserve

The National Academy of Education
Committee on Teacher Education

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Each fall, more than one hundred thousand new teachers enter classrooms across America. Some enter with strong preparation, competent and confident to help their students learn. Many, however, are unprepared to meet the challenges they face. The beginning teachers who enter U.S. schools in growing numbers each year vary greatly in the skills and experiences they bring to the job and in the formal preparation they have been given to assume the demanding responsibility of educating America's youth. Most are recent college graduates who have gone through a formal teacher-education program. A growing number are career switchers with widely varying preparation, from a few weeks to a year or more. Some teachers hired on emergency permits have had no preparation at all. Tens of thousands of new teachers, especially in low-income urban and rural areas, have had little or no exposure to basic information about children, curriculum, or schools. And too many of those who have gone through a teacher-education program have not received a rigorous education in some of the essential knowledge and clinical training that would prepare them for success in the classroom.

Why is this the case? How is it that we permit so many ill-prepared individuals to assume such an important role in society? And why do we let some of the least prepared teach our most needy children in the most difficult circumstances? There are many answers to these questions; some beyond the scope of this slim volume:

- As a society, we do not invest seriously in the lives of children, most especially poor children and children of color, who receive the least-prepared teachers.

- The conventional view of teaching is simplistic: teaching is viewed merely as proceeding through a set curriculum in a manner that transmits information from the teacher to the child.
- Many people do not understand what successful teaching requires, and do not see teaching as a difficult job that requires rigorous training.
- Others believe that there is not much more to teaching than knowing the subject matter that children should learn.
- Many state licensing systems reflect these attitudes and have entry requirements that lack demanding standards, especially for teachers who teach poor and minority students.
- Researchers and teacher educators have only recently come to consensus about what is necessary, basic knowledge for entering the classroom and how and when such knowledge and skill should be acquired.

While there are many reasons current teachers are not always well prepared, we have learned a great deal about the importance of good teaching and about what effective teachers do. Despite the popular image of the teacher standing at the front of the room lecturing from a textbook and giving a quiz at the end of the week, we now know that teachers whose students demonstrate strong achievement do much more. Effective teachers use many different tools to assess *how* their students learn as well as *what* the students know. They use this information to help all students advance from where they are to where they need to be. They carefully organize activities, materials, and instruction based on students' prior knowledge and level of development so that all students can be successful. They know what conceptions students bring with them about the subject and what misconceptions are likely to cause them confusion—and they design their lessons to overcome these misinterpretations. They adapt the curriculum to different students' needs—for example, making content more accessible for students who are still learning English and for those who have special educational needs.

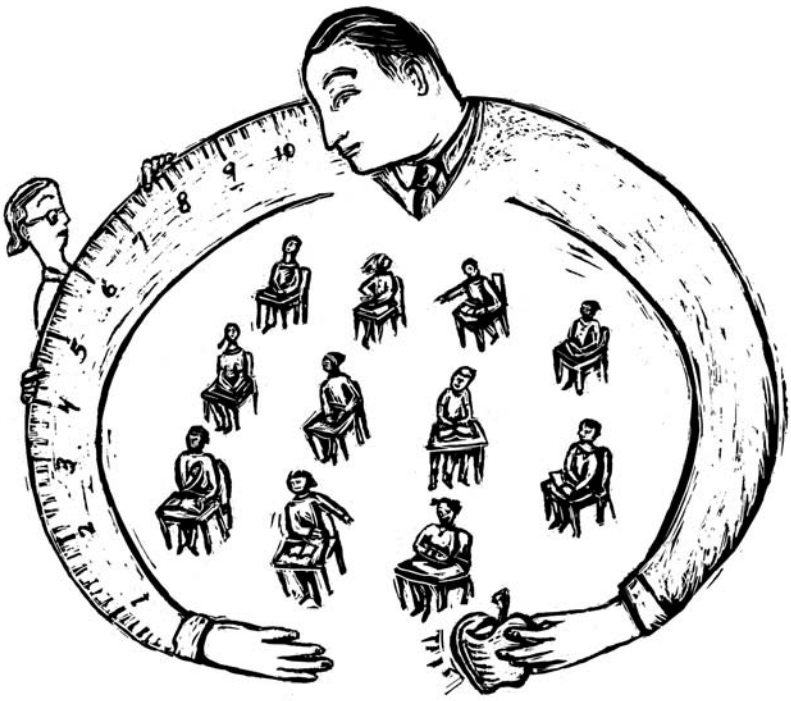
Effective teachers engage students in active learning—debating, discussing, researching, writing, evaluating, experimenting, and constructing models, papers, and products in addition to listening to and reading information, watching demonstrations, and practicing skills. They make their expectations for high-quality work very clear, and they provide models of student work that meets those standards. They also provide constant feedback that helps students improve as they continuously revise their work toward these standards. They design a well-functioning, respectful classroom that allows students to work productively. Finally, they involve parents in the learning process and help create strong connections

between home and school, so that students have fewer obstacles and more supports for their learning. And they do all of this while collaborating with other teachers and administrators to create a seamless curriculum and a supportive environment throughout the school.

Clearly, there is much more to effective teaching than standing in the front of the room giving information to students. And there is much that teachers need to learn in order to do this complex job well. The task we undertake here is to outline what teachers need to know before they enter the classroom and what supports they need when they first enter to ensure their development into the effective teachers described above.

While we know a great deal more than we once did about how people learn and how to teach effectively, much of this knowledge is only haphazardly available to those who most need it to do their work—the teachers who today are charged with enabling students to reach the highest standards of accomplishment ever envisioned for the full range of students in our nation's schools.

This paper excerpts a report based on the National Academy of Education's *Preparing Teachers for a Changing World: What Teachers Should Learn and Be Able to Do,* which summarizes research on learning, teaching, and teacher education.[1]



HOW CAN TEACHERS ACQUIRE THE NECESSARY KNOWLEDGE?

While knowledge about teaching and learning has grown, the odds that teachers will have access to this knowledge are far less than certain. This is because of both wide variations in the nature and quality of teacher-education programs and the fact that a substantial number of individuals enter teaching without completing any teacher education. The majority of individuals enter teaching in the traditional fashion with formal preparation from an undergraduate or graduate teacher-education program, but more and more new teachers come through alternative pathways where the rigor of the preparation ranges from excellent to nearly nonexistent. And, in recent years, an increasing number of teachers have been hired on emergency permits or waivers without experiencing any formal preparation. Today, more than 15 percent of beginning teachers enter teaching through nontraditional pathways. Whether traditional or not, the kind and quality of preparation teachers receive can vary widely.

Prospective teachers also vary greatly in their knowledge and skills before they enter preparation. Some come steeped in their content area, but unfamiliar with children, curriculum, and schools. Others, while knowledgeable about child development, are ignorant about particular areas of content or instruction or classroom management. Still others have years of working with children or young adults in settings outside of schools—Sunday school, youth groups, and the like. Many are well educated and have the "book" knowledge relevant to teaching and learning, but lack the skills and experiences necessary to transform that knowledge into effective practice. Some have a good sense of how to present information to students who learn easily in the way they teach, but lack the skills to reach students who learn in different ways, suffer gaps in their knowledge, or have particular learning difficulties.

How can we create programs and learning environments that ensure this diverse teacher-candidate pool will develop the knowledge, skills, and dispositions that allow success in the classroom with all the children they serve? What knowledge and skills are prerequisite to entering the classroom? What aspects of learning to teach can be acquired on the job if beginning teachers' experiences are properly structured?

Clearly, a range of undergraduate and postbaccalaureate programs that respond to the knowledge and experiences brought by different kinds of recruits is needed. No single approach will meet the needs of all prospective teachers optimally. However, all must ensure that candidates understand the basics of learning, development, curriculum, and teaching before they are asked to practice independently. Where prospective teachers are learning on the job—whether through student

teaching or internships—candidates should be supervised by expert veterans who are available daily to coach, model, and oversee decisions in curriculum development, instruction, and the needs of individual students. How to structure this supervision so that it provides adequate expertise and oversight is one of the key program issues needing attention in both traditional and nontraditional settings. How to teach the content that is needed in a way that enables teachers to *use* the knowledge they have acquired is another.

These problems are not unique to teaching. Indeed, they affect all professional education. The curriculum for teacher education should be shaped both by what teachers need to learn and by how they learn. This means, first of all, that the content should be organized so that teachers gain a mental map of what is involved in effective teaching and what factors influence student learning. The domains outlined in this report provide the elements of such a map and create a foundation on which teachers can continue to build. With this schema for their work and learning, teachers can seek out and add knowledge about specific techniques throughout their careers.

Structuring teacher education in terms of *how* teachers learn requires organizing the curriculum in a scope and sequence that capitalize on teacher development—moving from a focus on self to a focus on student learning and from the foundations of learning theories to their implications for teaching. It also means finding ways for teachers to learn about practice *in* practice, so that concrete applications can be made and problems of practice can be raised, analyzed, and addressed. Thus, beginning teachers need consistent opportunities to apply what they are learning, to analyze what happens, and to adjust their efforts accordingly. They need to engage in inquiry and reflection about learning, teaching, and curriculum as well as direct instruction in specific areas of content. All teachers, regardless of their route into the classroom, need these opportunities when they first become teachers of record.

Central to the design of a teacher-education curriculum—whether traditional or alternative—is the fact that teachers not only need to acquire a set of skills; they also need to become "adaptive experts" who are able both to use efficient routines and to seek out and apply new strategies in situations where routines are not enough. Since teacher education cannot impart a body of knowledge that comprises everything a teacher will ever need to know, it must lay a foundation for lifelong learning. Given the relatively short time available for preparing teachers in both traditional and alternative programs and the fact that not everything can be taught, teacher preparation should be designed to help teachers learn from their practice and from the insights of others when they assume their initial teaching responsibility.

How Teachers Learn and Develop

To design successful teacher education, it is important to understand how teachers' practice develops. For example, most teachers focus initially on themselves—what others think about them as teachers and their ability to control the classroom—and then eventually on students and their learning. Some teachers take a long time to move from a focus on self to a focus on students. And there are some teachers who never reach the stage of attending to student learning—who do not feel compelled to adjust their teaching if students do not learn and who do not know what might be done if some students are having difficulty. Teacher education can influence whether—and how quickly—teachers move from concern about themselves to concern for their students and a set of problem-solving strategies that promote student success. Strategies that involve teachers in analyzing learning and relating it to teaching are particularly useful in helping beginning teachers focus on learning and how to support it.

Teachers also progress from "novice" to more "expert" thinking about teaching—growing more able to deal with the many aspects of classroom life and to attend to the intellectual work of students. Experts in teaching—like experts in other fields—can quickly analyze complex situations and bring to bear many sources of knowledge about how to respond to them. They also have a broader and more flexible repertoire of skills to achieve their goals. Teacher education that develops teachers' abilities to analyze teaching and expands their repertoires of teaching strategies—along with knowledge of when different strategies are likely to be useful—helps beginners move more quickly toward expertise.

Teachers also develop dispositions about what it means to be a teacher. Chief among them is the disposition to continue to seek strategies for reaching students who are not initially successful. Being a professional involves not simply "knowing the answers" but also having the skills and the will to evaluate one's practice and search for new answers when needed, at both the classroom level and the school level. Teacher education that helps teachers diagnose what is going on in problematic situations—when students are not learning, for example—and seek out other resources or knowledge to address the problem helps develop this crucial disposition.

Problems of Learning to Teach

To develop beginning teachers who will become skilled practitioners who continue to learn, it is necessary to address three common problems associated with learning to teach—misconceptions about teaching, the problem of enactment, and the problem of complexity.

Misconceptions about Teaching

Learning to teach requires that new teachers come to understand teaching in ways quite different from what they have learned from their experience as students. These earlier experiences as students create strong preconceptions about teaching and learning that new teachers bring with them to the profession.[2]

Prospective teachers tend to start with views of teaching that focus more on the teacher's personality and less on the role of subject matter or pedagogical knowledge. They often believe that teaching is merely transmitting information and enthusiastically encouraging students, rather than assessing student learning to guide purposefully organized learning experiences with carefully staged supports. They also often underestimate the importance of the home and community contexts in teaching. If preconceptions about teaching are not addressed, prospective teachers can unconsciously cling to ineffective practices and fail to learn more-beneficial approaches.

Programs that successfully change beginning teachers' understandings about teaching and learning use their students' initial beliefs about teaching as a springboard for surfacing and confronting misconceptions. They use structured discussions and guided observations of classrooms as means for candidates to share their initial views about teaching so these can be addressed. These instructional strategies provide candidates with opportunities to examine, analyze, and develop a vision of teaching that leads to higher achievement for diverse learners.

The Problem of Enactment

Helping teachers learn to teach effectively requires not only that they learn to "think like a teacher" but also that they be able to put what they know into action—what has been called "the problem of enactment."[3] Teachers must be able to *do* a wide variety of things, many of them simultaneously. Meeting this challenge requires much more than simply knowing one's subject matter or discussing ideas about teaching.

The issues teachers face regarding enactment are similar to those encountered in other professional fields, but they are even more challenging. For example, teachers do many more things at once, with many more clients assembled at one time, than do most other professionals. Developing an authoritative classroom presence, good radar for watching what many different students are doing and feeling at each moment, and skills for explaining, questioning, discussing, giving feedback, constructing tasks, facilitating work, and managing the classroom—all at once—is not simple.

If the information needed to teach well emerges during the practice itself, then teacher candidates need to have opportunities to practice

and reflect on teaching early on and continuously in their preparation and during their initial entry to teaching. When well-supervised practicum and student-teaching experiences precede or are conducted jointly with coursework, studies find, students are better able to connect theoretical learning to practice, more comfortable and confident in learning to teach, and more able to enact what they are learning in ways that are effective for students.[4]

Experience alone does not accomplish these goals. Seeing practices modeled and analyzing how, when, and why they work are key. Teachers who learn to teach without guidance often learn merely to cope rather than to promote learning for all their students, and they can acquire bad habits that are hard to unlearn. Researchers have found that the process of learning to enact new skills is best supported by skilled coaching in peer-support groups that allow teachers to develop, strengthen, and refine teaching skills together. Teachers hone their skills when they undergo a process of learning, experimenting, and reflecting on their practice with feedback from peers and more-expert practitioners. This process, in turn, strengthens their ability both to implement new approaches and to fine-tune their efforts to produce student achievement gains. Such supports are characteristic of high-quality alternative-route programs as well as of high-quality college and university-based programs that are more traditionally organized.

The Problem of Complexity

Teachers typically work with many students at once and have to juggle many academic and social goals requiring tradeoffs from moment to moment and day to day. As McDonald explains,

> . . . [R]eal teaching happens within a wild triangle of relations—among teacher, students, subject—and the points of this triangle shift continuously. What shall I teach amid all that I should teach? How can I grasp it myself so that my grasping might enable theirs? What are they thinking and feeling—toward me, toward each other, toward the thing I am trying to teach? How near should I come, how far off should I stay? How much clutch, how much gas?[5]

While some aspects of teaching can be made somewhat routine, they still will be influenced by changing student needs and unexpected classroom events. And many other decisions in teaching cannot be made routine because they are contingent upon student responses and the particular objectives sought at a given moment. Helping beginning teachers learn to think systematically about this complexity is extremely important.

Some teacher-education approaches do not adequately respond to these problems. For example, telling teachers in general ways about strategies that might be used in the classroom, without examples and models, does not typically lead to deep understanding or enactment. Developing routines can be helpful and can free up teachers' attention for other aspects of their work; however, offering only routines does not help teachers develop the diagnostic and instructional skills for dealing with students who require different approaches or additional supports if they are to learn successfully. Because teachers have multiple goals, students are many and diverse, and teaching requires that many different areas of knowledge be integrated, teachers need to learn to analyze what is going on in the classroom and to make sound decisions about curriculum, instruction, assessment, and classroom management in light of the particular students they teach.

IMPLICATIONS FOR TEACHER PREPARATION

In the recent past, traditional teacher preparation has often been criticized for being overly theoretical, having little connection to practice, offering fragmented and incoherent courses, and lacking in a clear, shared conception of teaching among faculty. Programs that are largely a collection of unrelated courses and that lack a common conception of teaching and learning have been found to be feeble agents for affecting practice among new teachers. This can also be the case in some alternative routes that give short shrift to critical content of teacher education, keeping course work separate from unguided practice that provides little meaningful support to beginning candidates.

Beginning in the late 1980s, teacher-education reforms began to produce program designs representing more integrated, coherent programs that emphasize a consistent vision of good teaching. These programs—which included postbaccalaureate alternative models as well as traditional programs—created stronger links among subject matter and pedagogical courses and connected clinical experiences to formal course work, in part by interweaving student teaching with course work and by infusing classroom practices into the curriculum. The programs teach teachers to do more than simply implement particular techniques; they help teachers learn to think pedagogically, reason through dilemmas, investigate problems, and analyze student learning to develop appropriate curriculum for a diverse group of learners. Studies have found that such programs have a greater impact on the initial conceptions, practices, and effectiveness of new teachers than others that are less coherent and less intent on connecting theory and practice.

Some programs have graduates who report significantly higher feelings of preparedness than their peers and are more highly rated by

employers, who say they seek out these candidates because they are more effective in the classroom from their very first days of teaching. Such programs share a number of features, including:

- a common core curriculum grounded in knowledge of development, learning, subject-matter pedagogy, and assessment, taught in the context of practice;
- well-defined standards of practice and performance used to guide the design and assessment of course work and clinical work;
- extended clinical experiences (at least thirty weeks) that are interwoven with course work and carefully mentored;
- strong relationships between universities and schools that share standards of good teaching consistent across courses and clinical work;
- use of case-study methods, teacher research, performance assessments, and portfolio examinations that relate teachers' learning to classroom practice.[6]

Strong alternative-route programs that generate confident beginning teachers who help students learn share many of the same characteristics. Research indicates that the most successful alternative programs

- have high entry-level standards;
- give solid pedagogical training in subject-matter instruction, management, curriculum, and working with diverse students;
- afford intensive mentoring and supervision from carefully chosen, well-trained staff;
- expose candidates to excellent teaching and modeling of good practice;
- develop strong relationships among the partners;
- provide plenty of guided practice in lesson planning and teaching prior to a candidate's taking on full responsibility as the teacher of record; and
- have high exit standards.[7]

What these programs do is consistent with research indicating that new teachers learn best in a community which enables them to develop a vision for their practice; knowledge about teaching, learning, and children; dispositions about how to use this knowledge; practices that allow them to act on their intentions and beliefs; and tools that support their efforts. This framework for learning to teach is shown in figure 1 (next page).

A curricular vision involves teachers' sense of where they are going and how they are going to get students there. Images of good practice

can help new teachers reflect on their work, guide their practice, and direct their future learning. Such visions connect important values and goals to concrete classroom practices and provide a basis for teachers to develop and assess their teaching and their students' learning.

Teachers' knowledge of their subject and how to make it accessible to others relies on an understanding of both the content and of the learning process. Teachers need to possess a rich, coherent conceptual map of the discipline; an understanding of how knowledge is developed and validated within different social contexts; an understanding of why the subject is important; and an understanding of how to communicate knowledge of that subject to others. This, in turn, requires an understanding of learners and their development.

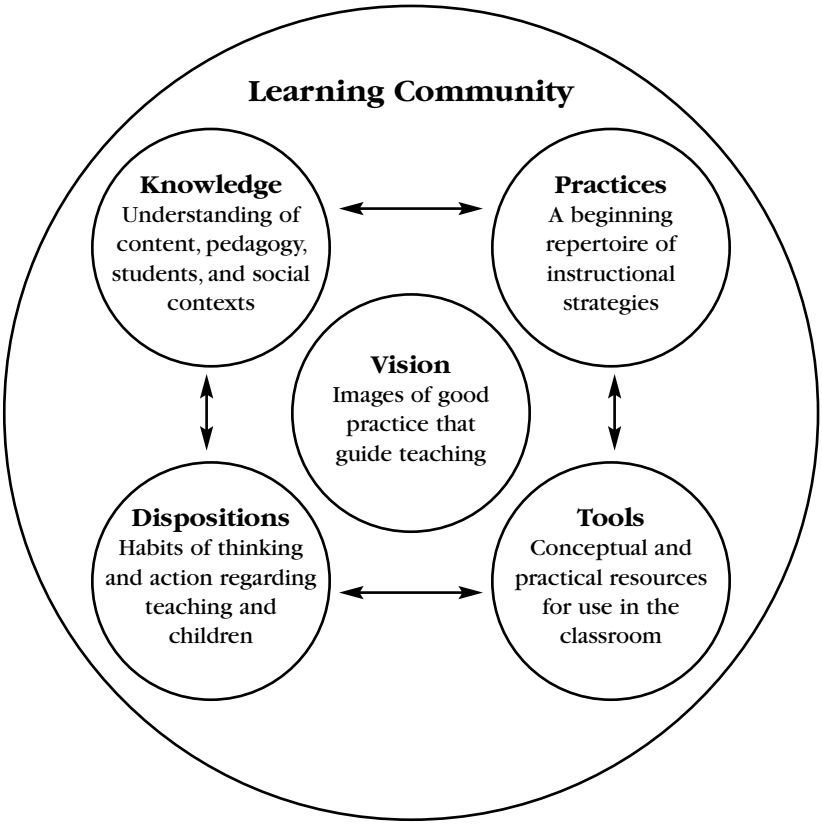


Figure 1: A Framework for Learning to Teach

To put what they know into practice, teachers also need to develop tools for use in the classroom. Conceptual tools include learning theories and ideas about teaching (concepts such as the "zone of proximal

development" or "culturally relevant teaching"), while practical tools include textbooks, assessment tools, curriculum guides, and other instructional materials. Such tools help teachers work smarter.

These understandings and tools need to be integrated into a set of practices for use in the classroom. These practices can include instructional activities such as explaining concepts, holding discussions, designing experiments, developing simulations, planning debates, or organizing writing workshops. Practices also include activities such as designing and carrying out unit plans and daily lessons, developing assessments, and offering feedback that is constructive and specific. Beginning teachers should learn not only the content of these strategies but also when, where, how, and why to use particular approaches.

In addition to knowledge that is connected to tools and practices, teachers need to develop a set of dispositions—or habits of thinking and action—about teaching, children, and the role of the teacher. These include the disposition to reflect and to learn from practice; a willingness to take responsibility for children's learning, determination, and persistence in working with children until they succeed; and the will to continue to seek new approaches to teaching that will allow greater success with students.

Finally, learning to teach occurs most productively within professional communities including, for instance, experienced colleagues who work with cohorts of student teachers. Groups of educators who share norms and practices can be especially powerful influences on learning, especially when there is collective knowledge and common goals across fieldwork and courses. This means that teacher-education programs—whether traditional or alternative—need to develop strong partnerships with schools in which veterans and teachers in training share standards of practice and work collaboratively to put them into action.

In sum, contemporary research suggests that learning about teaching best develops when prospective teachers encounter content in contexts in which it can be applied. Teachers benefit from participating in the culture of teaching—by working with the materials and tools of teaching practice and by examining teaching plans and student learning while immersed in theory about learning, development, and subject matter. They also benefit from participating in practice as they observe teaching, work closely with experienced teachers, and work with students to use what they are learning. And this learning is strengthened when it is embedded within a broad community of practitioners—experienced faculty, other student teachers, and other educators.

Promising Pedagogies

Although research on the pedagogies of teacher education is still in the early stages of development, researchers have assembled evidence

about particular practices that help teachers develop the kinds of teaching expertise necessary to ensure that all children learn. In addition to the usual tools of education—carefully chosen readings and materials, well-crafted lectures, and descriptions or demonstrations of particular strategies—a number of pedagogies have emerged in response to the perennial problems of learning to teach. Many, developed explicitly to aid in the professional problem of helping novices connect theory to practice, focus upon learning in practice using both direct instruction and inquiry.

Cognitive psychologists have found that "deliberate practice"—purposefully rehearsing certain kinds of performances—is particularly important to the development of expertise. Effective teacher-education programs provide structured opportunities to practice particular strategies and to use specific tools in the classroom setting. In addition, teacher educators in effective programs use examples of student work, artifacts from the classroom, videotapes of teaching and learning, and cases of teaching to help teachers relate their course work to real problems of practice in classrooms.

None of these pedagogies is a "silver bullet." Each has particular strengths and limitations and all can be implemented well or poorly, but in combination, these strategies have great potential to enhance the learning of new teachers.

Student Teaching/Internships

Perhaps the most pervasive pedagogy in teacher education is that of supervised student teaching, which has long been acknowledged as having a profound impact on teachers' learning. Some clinical training experiences are also called internships, usually denoting that the teacher in training takes on more direct teaching responsibility but continues to practice with instruction under close supervision. But the student-teaching or internship experience varies dramatically both within and across programs, depending on how cooperating teachers are recruited and what the expectations are for both the novice and cooperating teacher. The length varies from less than eight weeks to more than thirty weeks, the extent and quality of modeling and guidance from minimal to extensive, and the clarity regarding practices desired from obscure to well-defined. The mentoring also varies widely, with some novice teachers practicing under daily supervision that includes planning, coaching, modeling, and demonstration, and others never having the chance to see what they are trying to create modeled in practice.

Different strategies for student teaching bring with them different benefits and limitations. For example, multiple settings for practice teaching may allow student teachers to consider how contexts make a

difference in the choice of strategies and how to use them. At the same time, multiple short placements reduce the opportunities for deeply understanding a group of students and a kind of practice; they may make it difficult for student teachers to learn how what came before influences what is happening now in the classroom. Shorter placements also burden schools without the compensating contribution a more-seasoned student teacher (for example, one who spends an entire semester or year) can make, thus sometimes making it more difficult to maintain strong partnerships for practicum placements. There is no one right answer to such trade-offs. What is important is that prospective teachers' clinical experiences are constructed with careful consideration of what the experience should be like and why, so that the program can optimize the experiences offered.

Successful clinical training experiences have the following characteristics:

- *clarity of goals*, including the use of standards guiding the performances and practices to be developed;
- *modeling of good practices* by more-expert teachers in which teachers make their thinking visible;
- *frequent opportunities for practice* with continuous formative feedback and coaching;
- *multiple opportunities* to relate classroom work to university course work;
- *graduated responsibility* for all aspects of classroom teaching; and
- *structured opportunities* to reflect on practice with an eye toward improving it.

The support offered during initial clinical work is critical in enabling beginning teachers to make sense of their experience and learn from it. Studies suggest that powerful learning does not usually occur from letting a teacher "sink or swim." Expert guidance and peer support are important for novices if they are to receive the modeling, coaching, and feedback they need. Program designs that include more early practicum experiences and longer student teaching, integrated with course work—especially where the vision of teaching in the placement aligns with the practices being taught in courses—have been found to make a difference in teachers' practices, confidence, effectiveness, and long-term commitment to teaching.

Settings that foster more powerful clinical learning feature teams of teachers who work together, using state-of-the-art practices based on sound research, collaboratively developing curriculum and instruction, engaging in peer review of each other's practice, and conducting ongoing

inquiry into the effectiveness of the approaches they use. Some school districts and universities have jointly created such settings in high-quality alternative-route programs where candidates learn to teach in high-performing schools through a careful transition from assisting and practice teaching in the classroom of an expert veteran to increasingly independent teaching under the direction of a skilled mentor or team of colleagues who support lesson planning, provide coaching, and are available to address problems that arise.[8]

Other school-university partnerships have created sites such as professional-development schools for the training of pre-service teachers and the continued development of expert veteran teachers. Where they are well-implemented, these professional-development schools function like teaching hospitals in medicine, which improve professionwide practice through research, development, and training. Studies of highly developed professional-development schools have found that teachers completing long-term student teaching in such programs feel more knowledgeable and prepared to teach and are viewed by supervisors as better prepared than other new teachers. Veteran teachers working in these schools report improvements in curriculum and teaching as a result of the professional development, research, and mentoring involved, and some studies have documented gains in areas of student achievement directly tied to interventions the schools have undertaken with their university partners.[9]

Teaching Portfolios and Performance Tasks

While clinical experiences provide the opportunity for practice, they are often rather haphazard opportunities that may not ensure the occasion to encounter certain kinds of teaching problems or to develop and demonstrate particular skills. More-structured performance tasks can provide opportunities for student teachers to demonstrate certain practices and analyze them, along with their effects.

Some teacher-education programs have developed specific performance tasks they require of candidates (e.g., planning and delivering a lesson, delivering a lecture, managing a discussion, completing and teaching a curriculum unit) around which they organize course work and assessment. In some cases, those tasks are presented, evaluated, and repeated until they reach a standard of competent performance. In addition, assessments for teacher licensing and advanced certification have begun to incorporate performance elements that require teachers to demonstrate their proficiency on specific tasks in which teachers must engage in the classroom.

These assessments are generally part of a larger teaching portfolio—a collection of materials from the teacher's work, such as lesson plans,

assignments, samples of student work, and videotapes of the teacher in action. Portfolios are used in many pre-service programs and in some high-quality alternative-route programs to help candidates document their mastery of the standards of teaching practice necessary to enter the profession. As teaching tools, portfolios can provide opportunities for candidates to examine and analyze the process and outcomes of teaching and learning closely. The use of authentic classroom materials enables student teachers and teacher educators jointly to examine and analyze a "common text" to which all have access. A common text is a key element that unites analyses of videotapes of teaching, analyses of student work samples, and analyses of portfolio or performance-assessment entries. Typically, teacher educators engage students in examining both texts produced by other teachers and their own materials; the practice produces a dialogue and multiple points of feedback about their evolving practice as new teachers. It also serves to develop a common language regarding the attributes of good teaching and serious learning.

Some portfolios used to assess the competence of beginning teachers involve student teachers in designing a unit, teaching a set of lessons within the unit, developing an assessment plan, analyzing work samples from students, reflecting on their teaching outcomes, and revising their plans. Evidence suggests that teachers learn a great deal from completing and scoring such portfolios, in part because they focus teachers' reflection on content-specific professional standards that are used for evaluating the portfolio. Teaching practices that are reviewed, revised, and discussed in light of shared standards about teaching and learning help ground and focus the work. Furthermore, the standards serve as public criteria by which performances can be measured.

Researchers have found that portfolios organized around specific standards can support teachers' development of a conceptual framework about teaching, link theoretical learning to classroom practice, and help teachers analyze and refine their practices by providing them with structured opportunities to document and describe their teaching and their learning and to reflect upon what, how, and why they teach.

Analyses of Teaching and Learning

Learning in and from practice is accomplished not only by placing student teachers in classrooms. It can also happen through "strategic documentation of practice" using classroom plans, videotapes, and work samples that can be systematically studied by groups of teachers who focus their analysis on particular ideas or practices.

In addition to the examinations of teaching and learning that are encouraged in portfolios, some scholars of teaching have developed videotape and multimedia tools to study the work of expert teachers

closely. These include extensive videotapes of mathematics teaching and associated artifacts of student work and teacher plans mounted in a hypermedia platform by Deborah Ball and colleagues at the University of Michigan; the Carnegie Foundation's Knowledge Media Lab, which documents the teaching practice of accomplished teachers through Web-based collections of materials organized around their classroom strategies and inquiries; and the videotapes and analyses of teaching developed by James Stigler and Harold Stevenson as part of the Third International Mathematics and Science Study. Such efforts to document teaching have produced rich materials that teacher educators can now access for joint viewing, reviewing, and analysis with students.

Analyzing teaching artifacts in these ways has at least three advantages:

- It provides an opportunity for new teachers to think about the complexity of the classroom by studying the work of expert veterans who have shared their practice and their reasoning, as well as evidence of their students' achievement.
- It can help new teachers and teacher educators develop a shared understanding and common language about teaching.
- It enables new teachers time for reflection and re-viewing (which is impossible in real-time observations of the classroom) while still using the real materials of practice.

Importantly, such materials can also support the analysis of learning and reinforce the teaching-learning connection. Using student work samples and other evidence of performance (videotapes of students working through problems, aggregated data about test performance), analyses of learning can focus on numerous issues that arise in the teaching and learning process, from challenges of student engagement, student understanding, and assessment, to questions about how to frame the subject-matter curriculum. Research on the use of videotapes of teaching and learning suggests that when groups of teachers repeatedly analyze these kinds of materials, their analysis and conversation gradually shift from a focus on the teacher and what she is doing to a focus on student thinking and learning and how to support it.

Case Methods

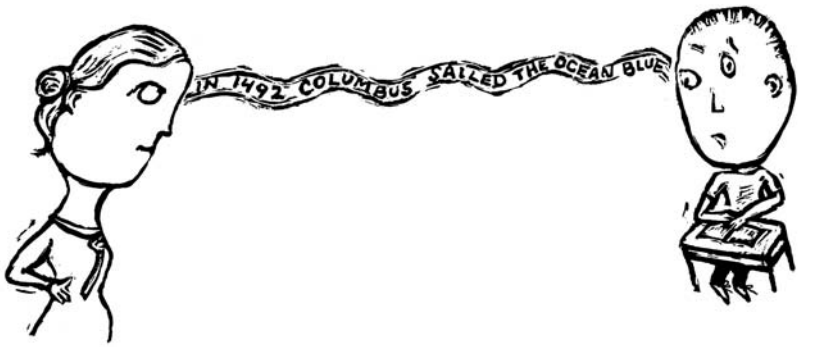
As in other professions, including law, medicine, and business, engaging prospective teachers in reading and writing cases can help candidates bridge the gap between theory and practice and develop skills of reflection and close analysis. Cases can allow for the exploration of dilemmas as they occur in real classrooms, creating a bridge between

learning from particular contexts and from more generalized theory about teaching and learning.

Typically, cases are accounts of teaching and learning that pose dilemmas, provide careful descriptions of contexts, and share evidence or data about outcomes of classroom situations. In teacher-education programs, student teachers can read and analyze cases, discern and reason through dilemmas, and propose strategies to respond to problems. Students can also write cases, learning to represent their experiences and analyze them through the lens of theory, so that they and others can learn from these examples. There are a number of perspectives that cases may take: some focus on subject matter, probing how teachers design instruction to help students master content; some focus on students, developing teachers' ability to observe and analyze evidence of learning and development; and still others focus on contexts or culture, helping prepare teachers to teach students from diverse backgrounds and communities.

Case studies of children, frequently used in courses on human development, engage teachers in collecting and analyzing data through interviews and observation in order to better understand student learning, developmental progress, special needs, and the influences of school, home, and community contexts. Case analyses of curriculum and teaching focus on the development of instruction and the dilemmas in teaching particular concepts or ideas, in order to review the relationship between teachers' intentions and students' learning and how teaching has mediated the two. Cases involving dilemmas are often used to illustrate long-time teaching challenges—such as moral dilemmas, interpersonal difficulties, or cultural differences—and to engage teachers in deliberating, problem-solving, and analyzing these challenges.

Research has found that well-taught cases can help teachers develop reasoning skills and move toward more expert and student-focused thinking—looking more systematically at the different influences on learning and understanding how theory relates to specific practices and, in turn, to outcomes. Not all uses of case methods result in these outcomes, how-



ever. As some researchers point out: "Without learning opportunities that develop insights, raise other perspectives into view, and create bridges between theory and practice, cases may add up to interesting but uninstructive teaching stories that reinforce idiosyncratic or uniformed views of teaching."[10]

Instruction that helps case readers and writers increase their understanding includes connections between events in the classroom and discussions and readings about principles of teaching and learning; guidance regarding how to collect and analyze data about students' thinking and learning; and specific, concrete feedback on candidates' interpretations of what influenced learning. The feedback calls attention to principles of development, learning theory, teaching strategies, student factors, and context variables, ensuring that research informs candidates' explanations of how learning occurs.

Inquiry and Action Research

Preparing teachers to learn from teaching throughout their careers requires a set of tools that develop the skills and practices of systematic, purposeful inquiry, and critical reflection. Many teacher educators develop these abilities by engaging student teachers in systematic research in their classrooms and schools. Such experiences not only can help teachers deal with the complexity of practice but also help overcome some of the limitations of their preconceived notions about teaching.

The process of practitioner inquiry includes all aspects of a research or inquiry process: identifying questions of compelling interest (which may focus upon specific issues of teaching and learning as well as broader issues of schooling and society); pursuing those questions through data collection (which may include observations of children, classroom, or other observational field notes; interviews with children, parents or other teachers; analysis of learning outcomes; or library research); and reflecting upon the questions through written work (journal entries, research memos) and discussion with peers, instructors, and master teachers.

Practitioner research has been found to support teachers in developing the habits of reflection and analysis along with the important skills of data collection, observation, analysis, and reflection. It can also help teachers learn how to watch students carefully and regularly evaluate what seems to be working or not working in the classroom, while giving them the tools to test their hypotheses so that they can adjust their practice. Finally, these kinds of inquiries frequently inspire teachers to engage in additional learning as they encounter new areas of knowledge through their research.

In Sum

These pedagogies of teacher education—student teaching, performance assessments and portfolios, analyses of teaching and learning, case methods, and practitioner inquiry—are intended to support teachers' abilities to learn in and from practice. In different ways, each approach helps to build the vision, knowledge, tools, practices, and dispositions of new teachers to reflect on and analyze their practice. The interrelationship among these pedagogies is also important. It is likely that they work more powerfully as complements to one another—and some pedagogies (such as case study) may be particularly useful early in programs while others (such as classroom research) may be best engaged once student teachers have had opportunities to critically examine their own experiences of schooling. It is important to note that the pedagogies can be used in the development of beginning teachers whether they come through traditional teacher-education or alternative routes to certification.

Of course, these approaches to teaching teachers are only as useful as the content they convey. Candidates cannot become competent and skillful by reflecting in the abstract—they need a solid body of knowledge to provide a foundation for the judgment and analytic ability they are developing. Assembling the appropriate content for teacher education in ways that make it vital, usable, and useful requires considering all the components of preparation in tandem: ensuring that courses cohere and build on one another in sequence, that critical concepts are taught not only by "mention" but also by serious examination and repeated application, and that opportunities for clinical practice are tightly tied to the learning of important constructs. Teacher educators—whether they are university- or school-based—must construct integrated learning experiences, model the practices they want candidates to adopt, provide clear examples and standards that reflect what good teaching looks like and consists of, and help candidates hone their practice by carefully assessing candidates' learning and providing continuous intensive feedback. Expert teaching of teachers takes time, effort, and support—and its success depends on a supportive policy environment.

Notes

1. The parent volume includes the research on which it is based. See Linda Darling-Hammond and John Bransford, in collaboration with Pamela LePage, Karen Hammerness, and Helen Duffy, eds., *Preparing Teachers for a Changing World: What Teachers Should Learn and Be Able to Do* (San Francisco: Jossey-Bass Publishers, 2005). It is accompanied by a companion volume, also sponsored by the National Academy of Education, that focuses on how beginning teachers should be prepared to teach reading. See Catherine Snow, ed., *Knowledge to Support the Teaching of Reading: Preparing Teachers for Changing World* (San Francisco: Jossey-Bass, 2005).

2. Daniel Lortie called this the "apprenticeship of observation." D. C. Lortie, *Schoolteacher: A Sociological Study* (Chicago: University of Chicago Press, 2005).

3. Mary Kennedy, "The Role of Preservice Teacher Education," in *Teaching as the Learning Profession: Handbook of Policy and Practice*, ed. L. Darling-Hammond and G. Sykes (San Francisco, Calif.: Jossey-Bass Publishers, 1999), 54–85.

4. See, for example, P. Chin and T. Russell, Structure and Coherence in a Teacher Education Program, paper presented at the annual meeting of the Canadian Society for the Study of Education (Montreal, Canada, 1995); J. J. Denton, "Early Field Experience Influence on Performance in Subsequent Coursework," *Journal of Teacher Education* 33 (2) (1982): 19–23; J. J. Denton and L. J. Lacina, "Quantity of Professional Education Coursework Linked with Process Measures of Student Teaching," *Teacher Education and Practice* (1984): 39–64; J. J. Denton, J. E. Morris, and D. J. Tooke, "The Influence of Academic Characteristics of Student Teachers on the Cognitive Attainment of Learners," *Educational and Psychological Research* 2 (1) (1982): 15–29; D. J. Sumara and R. Luce-Kapler, "(Un)becoming a Teacher: Negotiating Identities While Learning to Teach," *Canadian Journal of Education* 21 (1) (1996): 65–83.

5. Joseph P. McDonald, *Teaching: Making Sense of an Uncertain Craft* (New York: Teachers College Press), 1.

6. L. Darling-Hammond, ed., *Studies of Excellence in Teacher Education*, 3 vols. (Washington, D.C.: American Association of Colleges for Teacher Education, 2000).

7. E. Feistritzer, *Alternative Certification* (Washington, D.C.: National Center for Education Information, 2004); J. W. Miller, M. C. McKenna, and B. A. McKenna, "A Comparison of Alternatively and Traditionally Prepared Teachers," *Journal of Teacher Education* 49 (3) (1998): 165–176; S. M. Wilson, R. E. Floden, and J. Ferrini-Mundy, *Teacher Preparation Research: Current Knowledge, Gaps, and Recommendation* (Seattle: Center for the Study of Teaching and Policy, 2001).

8. See, for example, National Commission on Teaching and America's Future, *What Matters Most*, 1996; J. Snyder, *New Haven Unified School District: A Teaching Quality System for Excellence and Equity* (Washington, D.C.: National Commission on Teaching and America's Future, 1999).

9. See, for example, N. Frey, "Literacy Achievement in an Urban Middle-level Professional Development School: A Learning Community at Work," *Reading Improvement* 39 (1) (2002): 3–13; B. Gill and A. Hove, *The Benedum Collaborative Model of Teacher Education: A Preliminary Evaluation* (Santa Monica: The RAND Corporation, 1999); B. C. Glaeser, B. D. Karge, J. Smith, and C. Weatherill, "Paradigm Pioneers: A Professional Development School Collaborative for Special Education Teacher Education Candidates," in I. N. Guadarrama, J. Ramsey, and J. L. Nath, eds., *Forging Alliances in Community and Thought: Research in Professional Development Schools,* 125–152 (Greenwich, Conn.: Information Age Publishing, 2002); C. Mantle-Bromley, "The Status of Early Theories of Professional Development School Potential," in Guadarrama, Ramsey, and Nath, eds., *Forging Alliances*, 3–30; G. Nuebert and J. Binko, "Professional Development Schools—The Proof Is in the Performance," *Educational Leadership* 55 (5) (1998): 44–46; J. H. Sandholz and S. H. Dadlez, "Professional Development School Trade-offs in Teacher Preparation and Renewal," *Teacher Education Quarterly* 27 (1) (2000): 7–37; G. M. Shroyer, E. L. Wright, and L. Ramey-Gasser, "An Innovative Model for Collaborative Reform in Elementary School Science Teaching," *Journal of Science Teacher Education* 7 (3) (1996): 151–168; J. Stallings, J. Bossung, and A. Martin, "Houston Teaching Academy: Partnership in Developing Teachers," *Teaching and Teacher Education* 6 (4) (1990): 355–365; R. Trachtman, *The NCATE Professional Development School Study: A Survey of 28 PDS Sites* (Washington, D.C.: National Council for the Accreditation of

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10. L. Darling-Hammond and K. Hammerness, "Toward a Pedagogy of Cases in Teacher Education," *Teaching Education* 13 (2) (2002): 132.

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