

CHAPTER 1

Effective Teachers Make a Difference

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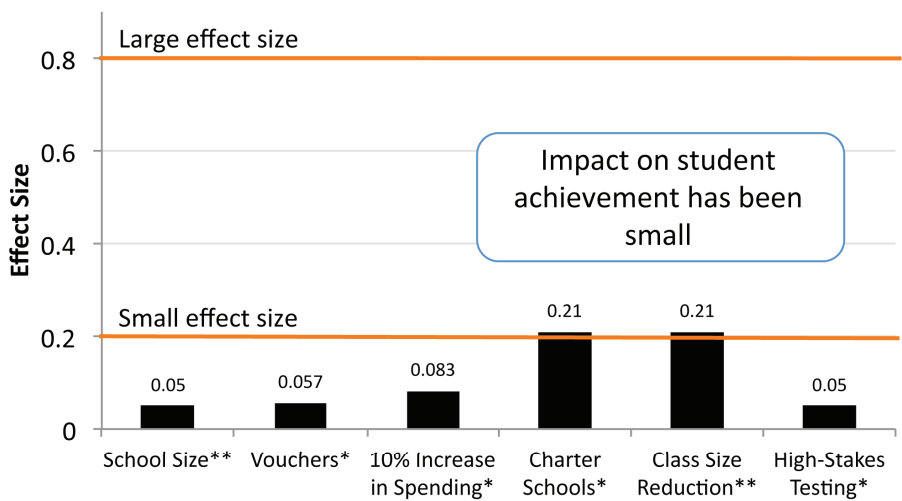
Abstract: The failure of the American education system to meet expectations, as well as the failure of school reform efforts to alter this picture, has increasingly turned the focus of school improvement to teachers. Research supports the important role that teachers play in student achievement. Given the pivotal position of teachers in student success, the question becomes, are teacher preparation programs doing their part to produce quality teachers? This chapter examines the available research on effective teaching, how to impart these skills, and how to best transition teachers from preservice to classroom with an emphasis on improving student achievement. We review current preparation practices and examine the research evidence on how well they are preparing teachers. We are fortunate that sufficient research is available that suggests how teacher training can be improved and successful classroom teachers produced.

There is a commonsense belief that good teachers make a difference in a child's life. This notion is not surprising since most of us have benefited from a teacher who inspired and challenged us. Critical questions need to be asked: Is this impression supported by rigorous research evidence? How much influence does one teacher have in improving student achievement?

In the 1960s, the prevailing wisdom emphasized the importance of home and socio-economic status on student achievement. The impact of school and, in particular, teachers was downplayed (Cochran-Smith & Zeichner, 2005). Since that time, the importance placed on teachers has gained traction. Public policy has directed greater resources to teachers. Improvements in the quality of research are increasingly providing decision makers with a convincing body of evidence on the topic of how to effectively train teachers. This research corroborates what was once only an intuitive notion: A quality teacher

can significantly affect a child’s education and improve student achievement (Sanders & Rivers, 1996). The remainder of this chapter considers this evidence in considerable detail.

Much of school improvement over the past 40 years has been disappointing. Despite clear evidence of the impact that well-prepared teachers have on student achievement, most major reform has not addressed how teachers teach. Figure 1 illustrates that reforms in the guise of structural interventions have had, at best, a minimal impact on achievement as measured by high-stakes tests and graduation rates (Yeh, 2007).



Yeh, 2007*; Hattie, 2009**

Figure 1. Impact of structural reform interventions. Data are drawn from Hattie (2009, Appendix B) and Yeh (2007, p. 431).

As stakeholders in education, we are fortunate to have reliable evidence—to be addressed in the remainder of this chapter—that supports the strategy of improving teacher performance as a cornerstone of future reform efforts. The goal of this strategy is to address deficits in education noted in policy reviews such as *A Nation At Risk* (Gardner et al., 1983), while being consistent with the reform goals delineated in the No Child Left Behind Act of 2001, which calls for improved standards for teacher training and credentialing.

WHAT RESEARCH TELLS US ABOUT THE IMPORTANCE OF TEACHERS

Figuring out what research tells us about the significance of teachers has not been without serious challenges. Prior to the 1980s, qualitative research predominated the field of education, and quantitative research methods were not often applied to examining this issue (Cochran-Smith & Zeichner, 2005). Not until the 1990s was quantitative research commonly seen in the literature or methods such as value-added modeling employed in studies on the importance of teachers. An advantage of this trend toward quantitative measures is that these measures can be used to establish causal relations between interventions and outcomes. The results of these studies can be analyzed for effect size, allowing for reliable comparison of results across studies.

Although qualitative research can be effective in describing phenomena, the results cannot be separated from the individual or case studied, making the data inherently subjective. In contrast, quantitative research relies on measurements of events that can be expressed as a specific quantity or unit and whose results can be generalized to populations, settings, treatment variables, and measurement variables used to predict future events. Quantitative and qualitative methods are valuable tools when used to answer questions for which they were designed.

Table 1
Effect Size

Cohen's d^*	Effect Size
Small	$d=0.2$
Medium	$d=0.5$
Large	$d=0.8$

Note: Effect sizes range from minus to positive. A small effect is commonly defined as $d = 0.2$, medium as $d = 0.5$, and large as $d = 0.8$, but it is not uncommon to see effect sizes that exceed 1.0. The terms “small,” “medium,” and “large” are relative. Researchers accept the risk of using relative terms in the belief that they have more to gain than lose by offering a common conventional frame of reference when no better way to estimate the impact of a practice or intervention is available. Effect sizes in the 0.4 range or smaller are often considered minimal levels for educational purposes (Gersten et al., 2005).

* The accepted benchmark for effect size comes from Jacob Cohen (1988), a U.S. statistician and psychologist.

Among the first to use effect size to address the importance of teachers in improving student achievement were Johnson and Zwick (1990). Using data compiled by the National Assessment of Educational Progress (NAEP), they calculated that teachers had an average effect of 0.24 per year on students ages 9, 13, and 17, in the subject areas of reading, writing, civics, U.S. history, mathematics, and science.

Hattie (2009) worked for 15 years to research and synthesize over 800 meta-analyses on the influences on achievement in school-aged students. He offered an effect size for each of the educational practices and interventions. He also reported that research conducted in New Zealand identified an effect size of 0.35 for teacher effectiveness across three subject areas: reading, mathematics, and writing.

The importance of a teacher’s contribution to student performance was demonstrated in a randomized controlled trial conducted by Nye, Konstantopoulos, and Hedges (2004). The results of this study showed substantial differences among teachers in their capacity to produce achievement gains in students. Simply stated, they found that 7% to 21% of student gains could be attributed to teacher effectiveness.

Together, teacher effect size and percentage of student gains build the case for the importance of teachers in student success.

Another attempt to ascertain a teacher’s impact used value-added modeling. Sanders and Rivers (1996) wanted to understand the effect on students of prolonged exposure to effective teachers compared with prolonged exposure to ineffective teachers (Figure 2).

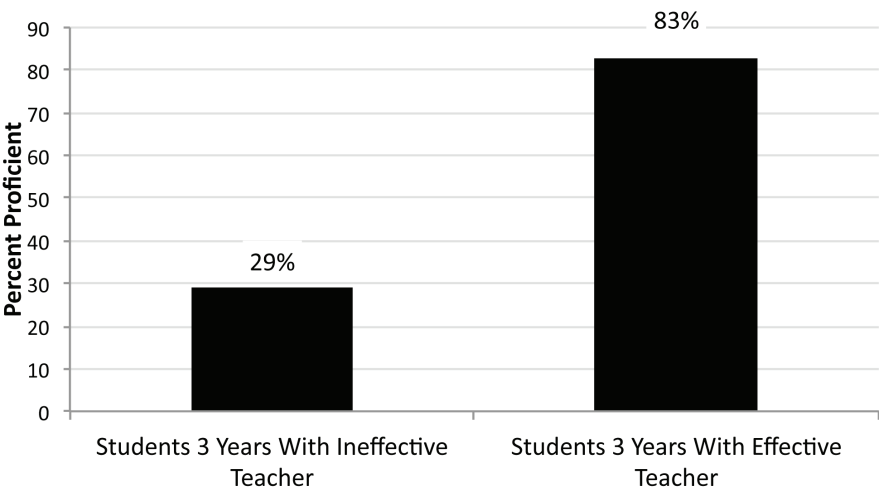


Figure 2. Teacher effectiveness: Gains in 8th-grade math. Data are drawn from Sanders and Rivers (1996, p. 3).

They employed the Tennessee Value-Added Assessment System (TVAAS), designed to determine an individual teacher's influence on the rate of academic growth. The study found that students with similar aptitude and initial achievement scores performed significantly differently depending on the quality of the teachers to whom the students were assigned. The effects of being taught by effective and ineffective teachers were still measurable 2 years after the initial study. The results suggested that the teacher effects on students were additive and cumulative, and offered little evidence that more effective teachers in later grades would make up for years of ineffective instruction.

A study in Texas elementary schools estimated that teachers accounted for 3% of the variance in student achievement (Mendro, Jordan, Gomez, Anderson, & Bembry, 1998). A large-scale U.S. government study reported teacher impact on student test scores between 4% and 18% (Rowan, Correnti, & Miller, 2002). An American Education Research Association (AERA) policy paper on the topic of value-added research on teacher effectiveness, *Teachers Matter: Evidence from Value-Added Assessments* (2004), concluded that "value-added measurement has proven that very good teaching can enhance student learning; that family background does not determine a student's destiny; and that decisions made about teacher hiring, placement, and training make a difference for academic achievement."

In summary, the available research supports the notion that teachers make an important contribution to student success in school. The importance of teachers to student achievement gains offers educators a powerful leverage point in reform efforts. The research further supports vigorously pursuing interventions targeted at what happens in the classroom through improving how teachers teach.

A BRIEF HISTORY OF TEACHER PREPARATION

The need to provide students with qualified teachers has been an issue of concern for well over 150 years. Teacher preparation programs, commonly called "normal schools," provided undergraduate training during the 19th and early 20th centuries. Teaching preparation following this model remained basically unchanged for 100 years. No single model of pedagogy or skills to be taught teachers emerged; each state set its own credential requirements, and preparation programs tended to design their own models of training.

This situation began to change in the 1980s, when disappointment with student test scores coincided with a shortage of trained teachers, reinforcing the belief that the shortage of qualified teachers contributed to the poor performance of schools. The result of the undersupply of fully trained teachers was an increasing dependence on the use of alternatively credentialed teachers

(Constantine et al., 2009).

In 2001, concerns regarding the quality of teachers in classrooms culminated in the landmark intervention of the federal government with legislation titled PL 107–110, No Child Left Behind (NCLB). Among the many issues addressed by NCLB was the insertion of incentives for reducing the use of underqualified teachers. The law required states to provide highly qualified teachers to all students by 2014. The legislation and subsequent regulations were the first national attempts to control the quality of teachers and teacher training. NCLB regulations hold school districts accountable by requiring that their teachers meet the following standards: (a) have a bachelor’s degree, (b) be fully certified and/or licensed by the state in which they teach, and (c) be competent in the subject matter they teach.

The establishment of these higher standards led to predictions of serious shortages of qualified teachers. In spite of the challenges posed in filling positions with fully credentialed personnel, schools have been successful in staffing classrooms with appropriately credentialed teachers. According to Department of Education data, by 2008 more than 95% of public school teachers had acquired the necessary teacher certification (Figure 3). It should be noted that each state has been given the flexibility to establish its own standards for “highly qualified,” so the term does not have a consistent meaning. A teacher who is highly qualified in one state may not meet the standards of another state.

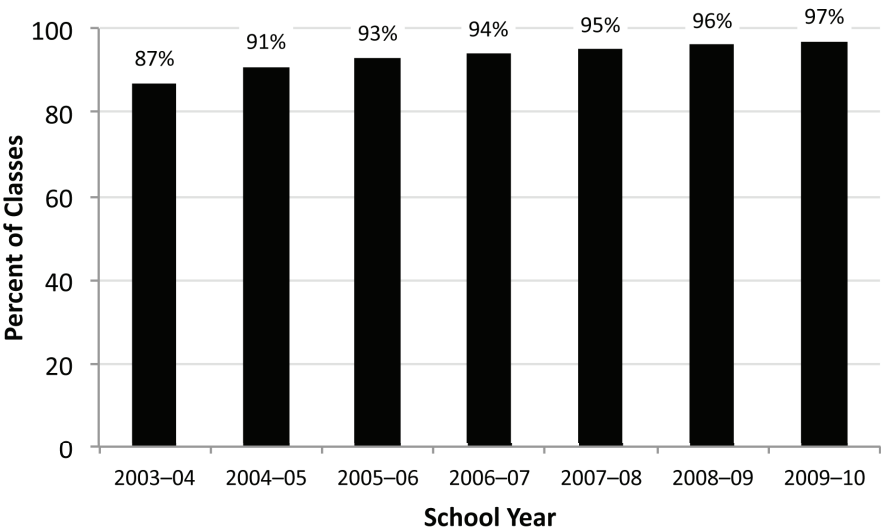


Figure 3. Core academic classes taught by highly qualified teachers. Data are drawn from ED Data Express (U.S. Department of Education, 2011).

Stiffer credential standards were not the only change in teacher education over the past 40 years, a period that witnessed a major increase in teacher education levels. In 1971, the majority of teachers, 70%, possessed a bachelor's degree, and fewer than 30% held a master's or higher degree. Today the trend has reversed itself, and now a majority of teachers, 56%, hold a master's degree (National Education Association [NEA], 2003) (Figure 4). This reversal represents a significant increase in the formal education of teachers.

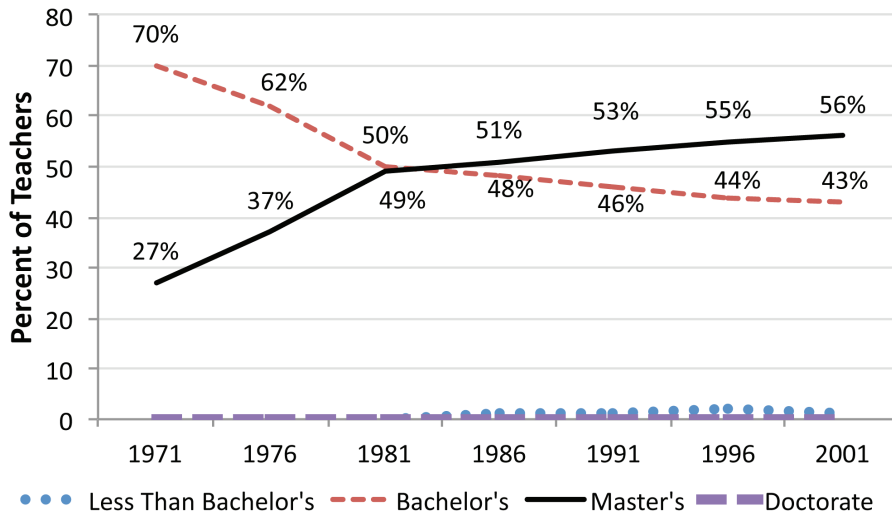


Figure 4. Public school teachers: Highest degree held. Data are drawn from the National Education Association (2003, p. 5).

Most research conducted before 2000 on the importance of education level of teachers on student achievement is correlational or qualitative. Unfortunately, much of the impetus for the shift toward post-bachelor's degree teacher education was driven by a desire to make preparation programs appear more professional, because of a lack of respect often accorded the programs rather than a desire to improve the pedagogy or teacher training models (Zeichner & Conklin, 2005).

In spite of the significant increase in the number of teachers with master's degrees, little improvement in critical student outcomes, such as test scores or graduation rates, was evident in the data from 1971 through 2001 (National Assessment of Educational Progress [NAEP], 2009).

During this time, the NAEP test scores have remained essentially unchanged

across all grade levels. It is clear we have missed something critical in our attempts to improve teacher training. Mandating that teachers have credentials and increasing their time spent in higher education have not improved student performance.

The problem with reform efforts such as mandating credentials and a shift toward higher education is fundamental. The interventions were designed as simple structural modifications that did not address how teachers teach. They offered a change in the facade of teacher preparation, but not the substance of the interactions between teachers and students. To make a difference, as discussed earlier, teacher preparation reform must make changes to practices and pedagogy: what we teach teachers and how we teach them. Until practices with a strong evidence base for effectiveness are adopted and student teachers are given the opportunity to master them by working with real students, we should not be surprised when reform efforts fail. An emerging body of knowledge about what works will help to build how to teach teachers will help to build a new model of teacher education (Brophy, 2004; Joyce & Showers, 2002).

WHAT WE SHOULD TEACH: TEACHER SKILLS

If we want to provide teachers with the skills that offer the best chance for success in the classroom, we must start with the premise that the skills we teach should derive from the best available evidence on what works. Education literature is full of recommendations for what teachers should be taught. Unfortunately, much of what we have been teaching in preparation programs is based on fad, folk wisdom, and shoddy research methodology (Kauffman, 2010). Snider (2006) described the typical experience of many teacher preparation students: “I learned very little in my undergraduate teacher education program about how to teach... I knew very little about curriculum, effective teaching, or principals of classroom management...” Anecdotal evidence indicates that many teachers feel their training experience was similar. Some say they felt lost when they began teaching. They were poorly prepared to handle student conduct, assess student performance, or effectively implement teaching strategies (Cochran-Smith & Zeichner, 2005).

An excellent place to start a discussion of what works for students is the research of Wang, Haertel, and Walberg (1997), which identifies 28 categories of variables that influence student learning. By combining the effect size of different practices derived from research along with a content analysis and a survey of educational experts, Wang and her colleagues established a weighted score for each category. All three data sources produced sufficient agreement that the variables could be ranked according to impact on student learning. In Figure 5, the domains of effective instruction and the relative impact of each are summarized.

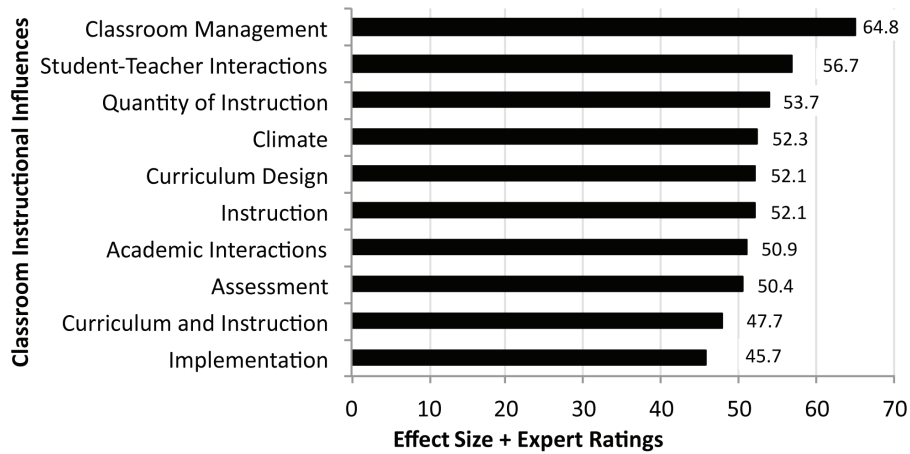


Figure 5. Impact of instructional influences on learning. Data are drawn from Wang, Haertel, and Walberg (1997, p. 201).

These findings are supported in two subsequent meta-analyses, (Hattie, 2009; Kavale, 2005), each of which corroborates the Wang et al. 1997 study. These meta-analyses build a case for the importance of assessment, classroom management, teaching strategies, and well-designed curriculum. In Figure 6, the effect sizes for different instructional practices are presented. All of the effect sizes are in the range to be considered clinically or socially significant (Gersten et al., 2005).

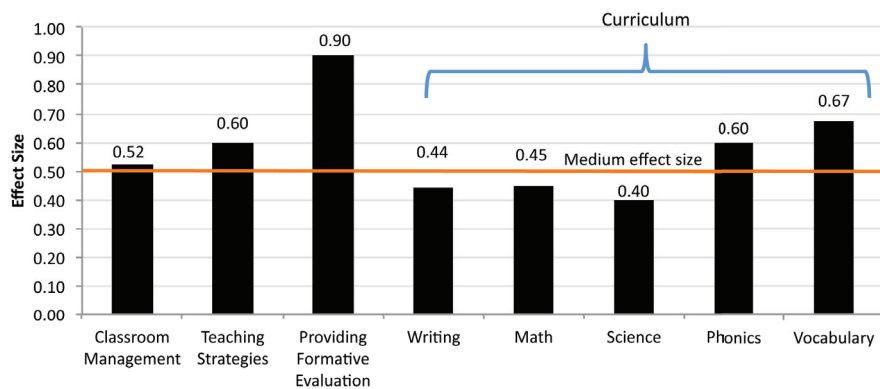


Figure 6. Impact of effective classroom interventions. Data are drawn from Hattie (2009, Appendix B).

Formative Assessment

When it comes to critical skills for teachers, few are as important or powerful as formative assessment. Also known as progress monitoring, formative assessment is frequent ongoing assessment of student performance. Research consistently ranks formative assessment in the top tier of variables that make a difference in improving student achievement (Hattie, 2009; Marzano, 1998). It is not surprising that approaches such as Response to Intervention (RtI), Data-Based Decision Making (DBDM), and Positive Behavior Interventions and Supports (PBIS) depend heavily on frequent progress monitoring.

A meta-analysis by Fuchs and Fuchs (1986) demonstrated the impact of formative assessment on student performance (Figure 7). The study provided evidence for monitoring student progress through the systematic collection of performance data. The effects of progress monitoring were found to be significantly enhanced when the data were collected weekly and when teachers interacted with this information by graphing the data and analyzing the information using set decision rules.

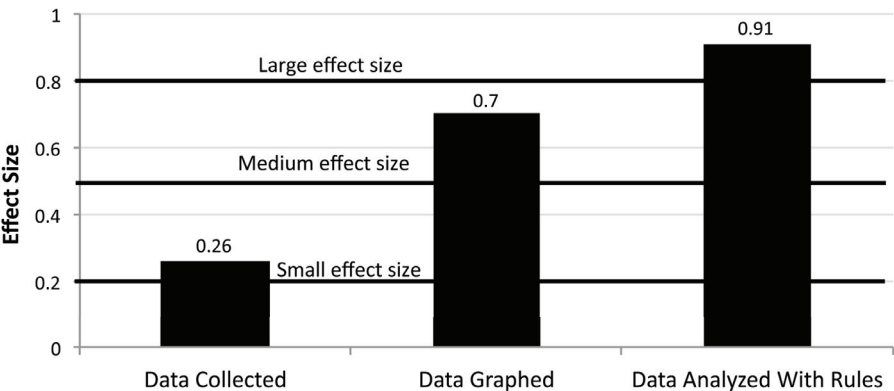


Figure 7. Impact of formative assessment (progress monitoring) on student achievement. Data are drawn from Fuchs and Fuchs (1986, p. 204).

Subsequent research (Table 2) has built a persuasive body of knowledge supporting the early work by Fuchs and Fuchs (1986) in this area. Formative assessment provides indicators to verify and maintain student progress and can

act as an important diagnostic tool pointing to when and how to adjust instruction. The take-home message is that formative assessment coupled with graphing and following rules for analyzing and responding to data can be a powerful educational intervention.

Table 2
Effect size for formative assessment

Study	Average Effect Size
Black and Wiliam, 1998	0.4–0.7
Bloom, 1976	0.54
Haller, Child, and Walberg, 1998	0.71
Hattie, 2009	0.90
Fuchs and Fuchs, 1986	0.90
Kavale, 2005	0.70
Kumar, 1991	1.31
Scheerens and Bosker, 1997	1.09
Walberg, 1999	0.94

Classroom Management

When surveyed, principals and teachers cited classroom management and student conduct near the top of the list of issues impeding the effective running of a classroom. Hattie (2009) ranked classroom management fifth among school issues affecting student performance. Classroom conduct problems have a debilitating effect on schools, impacting staff morale as well as contributing to lower student achievement (Marzano, Marzano, & Pickering, 2003). Major educational interventions such as PBIS and the Good Behavior Game (GBG) were designed specifically to mitigate the impact of misconduct by reducing behavior problems and indirectly student academic performance.

Marzano et al. (2003) conducted a meta-analysis that included 134 effect sizes derived from 100 studies on the topic of behavior management. The results from this meta-analysis are presented in Figure 8. The overall impact on student achievement in this study was an effect size of 0.521. The study reported a 20% increase in achievement when systematic rules and procedures were implemented. In the original report, the effect sizes were reported as negative numbers because the measures were a reduction of behavior problems relative

to comparison conditions. For ease of understanding, the effect sizes here are reported as positives to more clearly communicate the benefits of effective classroom practices. The values remain the same.

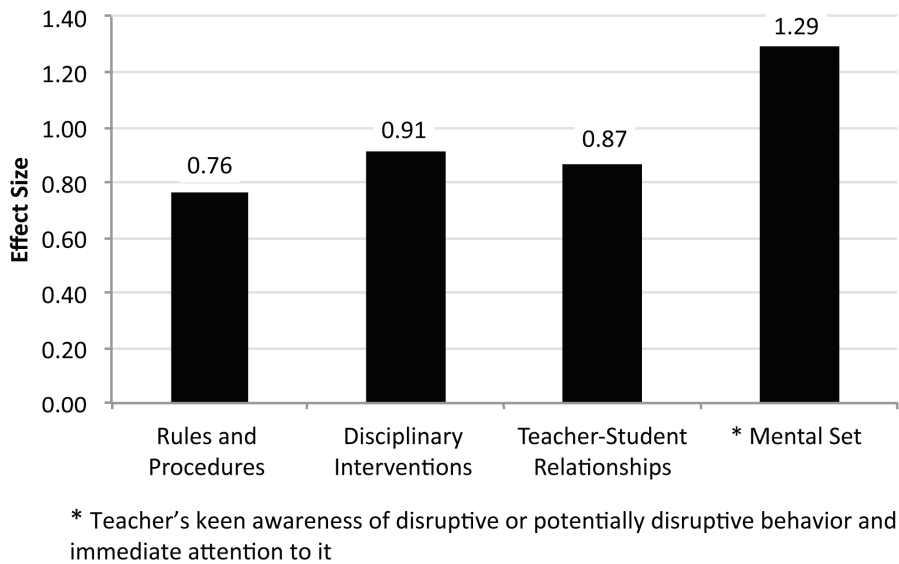


Figure 8. Impact of behavior management factors on student achievement. Data are drawn from Marzano, Marzano, and Pickering (2003, p. 8).

Teaching Strategies

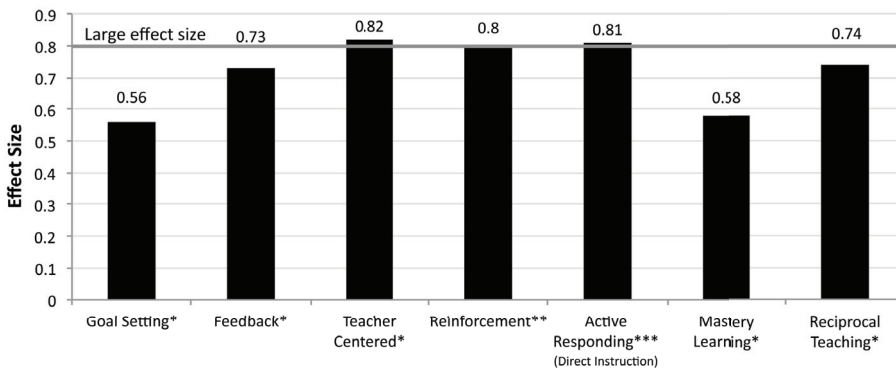
What do some teachers do that makes them better teachers? This section examines the importance of teaching strategies that make a significant difference in student learning. Hattie (2009) reviewed 14 meta-analyses of 5,667 studies to derive an effect size of 0.60 for teaching strategies. In his meta-analysis, Marzano (1998) arrived at a similar effect size of 0.52 for teaching strategies.

Unfortunately, it is not enough to know that teaching strategies make a difference. As educators, we need to know what strategies work and under what conditions they are effective. To do this, we must create a knowledge base that identifies specific interventions as well as the core strategies from which these interventions have been constructed.

For example, Swanson and Hoskyn (1998) emphasized sequencing, drill repetition, and strategy cues as effective teaching strategies. In particular, they found that reading skills (i.e., comprehension, vocabulary, and creativity) were

responsive to this approach and produced large effect sizes above 0.8. If we want to increase the success of student reading, we must build reading programs based on proven core strategies described in the report of the National Reading Panel (National Institute of Child Health and Human Development [NICHD], 2000).

Unfortunately, existing research has not made the task of constructing a list of key strategies simple. We are hampered in this effort for a number of reasons. Different meta-analyses define “strategies” differently. Also, strategies are often combined in ways that make direct comparisons difficult. The teaching strategy chart below (Figure 9) offers a side-by-side look at some of the important strategies with medium to large effect sizes that teachers should master.



Hattie*, 2009; Marzano, 2003 **; White, 1998 ***

Figure 9. Impact of teaching strategies on student achievement. Data are drawn from Hattie (2009, Appendix B), Marzano, Marzano, and Pickering (2003, p. 8), and White (1988, p. 368).

Teaching Strategy Definitions (Hattie, 2009; Marzano et al., 2003; White, 1988)

Goal setting: The process of establishing a direction for learning.

Feedback: Information provided to teachers on student performance as well as information provided to students on their own performance that functions to correct or maintain performance.

Teacher centered: Having teachers establish the learning plan and criteria for successful completion, making expectations clear, demonstrating skills, checking students for skills acquisition, and having students demonstrate skill fluency over time.

Reinforcement: Rewarding student effort and providing recognition for desirable performance.

Active responding: Requiring students to talk, write, solve problems, or otherwise respond rather than sit and listen. Active responding allows students to receive more frequent and immediate feedback.

Mastery learning: Ensuring that each student masters prerequisite materials before moving on to more complex or advanced materials. One way to do this is by breaking down material into manageable units.

Reciprocal teaching: Requiring students to summarize, answer questions, clarify points of confusion, and predict what to anticipate in future lessons. The teacher and students take turns assuming the role of teacher in leading this dialogue.

Curriculum

What role does the curriculum play in fostering student achievement? Gauging the influence is often difficult. A curriculum is generally more than one teaching strategy, and studies look at the impact of the curriculum as a whole and not at each strategy and practice on its own. An examination shows that many learning strategies are shared across curricula, whether the subject matter is reading, math, science, or history.

There is a growing body of research available to educators through resources such as What Works Clearinghouse on what curricula are and are not effective. Training teachers in the use of effective curricula is challenging since different districts use different curricula. It is impossible for a teacher preparation program to train new teachers to effectively implement all of the possible curricula they may be required to use. To facilitate the process of training teachers to be effective, it may be wise to train teachers in the common, shared strategies. Below is an extended discussion of effective teaching strategies across a number of different content areas or skills.

Skills: Reading

A substantial body of research exists on how to teach reading, a fortunate circumstance because reading is pivotal to success in most subjects taught in school. Research shows that students who are poor readers in the early years are likely to continue to fall behind in future years (Juel & Leavell, 1988; Chard & Kameenui, 2000).

In 1997, Congress asked the director of the National Institute of Child Health and Human Development to convene a panel to assess the status of research-based knowledge on reading. The report of the National Reading Panel (NICHD, 2000) identified five areas with a sufficient evidence base for inclusion in reading programs. Figure 10 describes effect sizes associated with each component and compares them with effect sizes from Hattie (2009). The data from these two sources strongly suggest the importance of these components of reading: phonemic awareness, phonics instruction, fluency, vocabulary, and exposure to reading comprehension strategies. An effective reading curriculum should contain these elements, although the elements alone are not sufficient to ensure that the curriculum will be effective. It is all a matter of how the elements are combined and how the instruction is conducted.

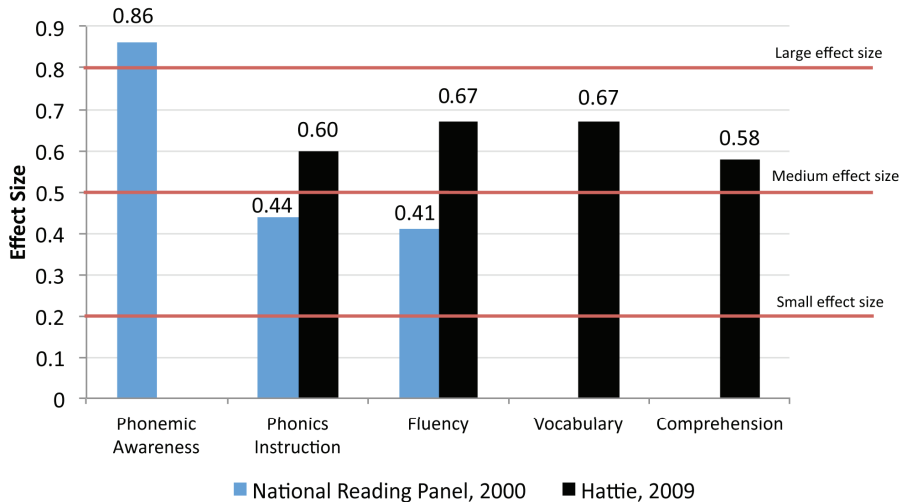


Figure 10. Effect size for components of reading. Data are drawn from Hattie (2009, Appendix B) and National Institute of Child Health and Human Development (2000, pp. 2–3, 2–112, 3–16).

Skills: Other

The evidence is not as clear for guiding curriculum selection in subject areas other than reading. Research by subject area reveals effect sizes that are generally in the medium range (Hattie, 2009; Marzano, Pickering, & Pollack, 2001). On the other hand, the available research does provide compelling evidence that certain approaches are unlikely to be effective. Perceptual motor training and

whole language are examples of practices with a small effect size (Figure 11).

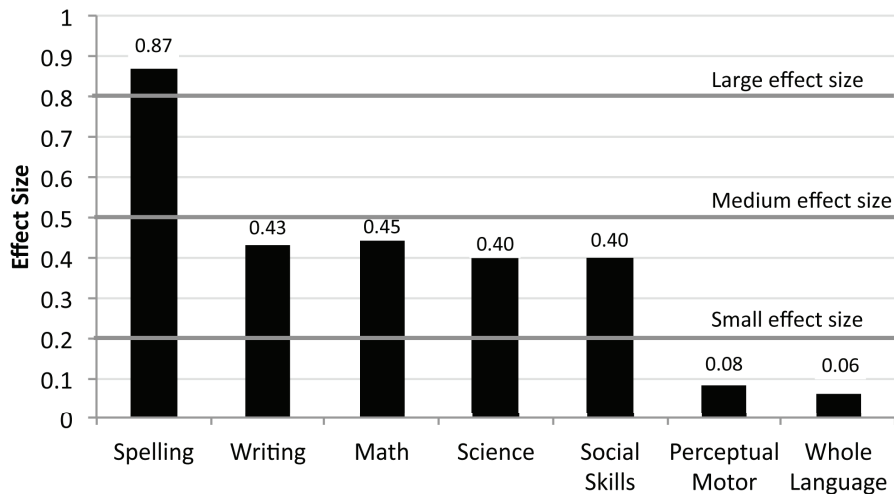


Figure 11. Effect size for curriculum other than reading. Data are drawn from Hattie (2009, Appendix B).

Subject Matter Expertise

This section looks at the evidence supporting subject matter training as a requirement of teacher preparation. Subject matter expertise is frequently identified as essential training for teachers, and a great deal of emphasis has been placed on ensuring that teachers have adequate training in the subject areas they teach. NCLB lists “knowledge of subject matter area” as one of only three critical features of a highly qualified teacher. Given the limited training time available in teacher preparation programs, is subject matter important?

The Education Commission of the States (Allen, 2000) found little evidence to support subject matter training as critical to effective teacher preparation. Wilson and Floden (2003) and Floden and Meniketti (2005) found little data supporting subject matter training as significant in producing successful teachers. Two comprehensive studies, by Ahn and Choi (2004) and Hattie (2009), looking at the effect size of teacher subject matter training on student achievement, found the impact to be no greater than 0.09 for all subjects (Figure 12). The greatest effect size was in math, and even then the impact was only 0.12, still below what is considered a small effect size of 0.2.

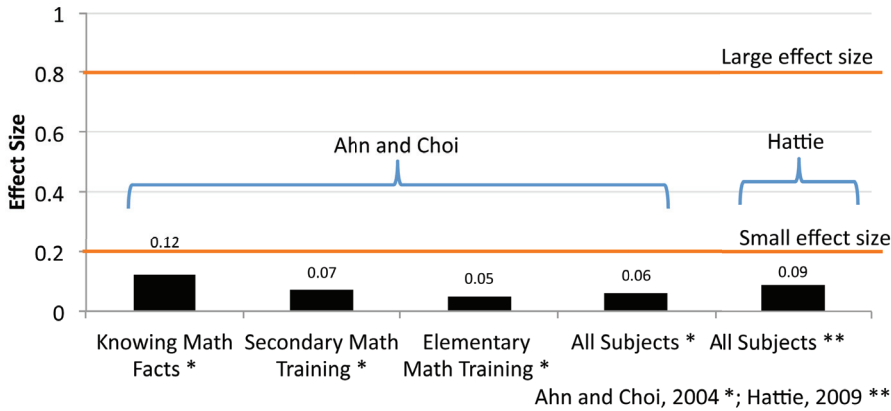


Figure 12. The impact of subject matter training on student achievement. Data are drawn from Hattie (2009, p. 297) and Ahn and Choi (2004, p. 30).

WHAT SKILLS TEACHER PREPARATION PROGRAMS TEACH

Knowing to what extent teacher preparation programs are teaching formative assessment, classroom management, teaching strategies, and curriculum is important to determine if these programs are equipping teachers with the training they most need. Each state certifies teachers within that state and operates training independently of the other states. No national standards exist for teacher preparation. There are two national organizations whose mission is to improve programs through accreditation: the National Council for the Accreditation of Teacher Education (NCATE) and Teacher Education Accreditation Council (TEAC). NCATE and TEAC established standards for programs, which include requiring schools to complete an audit consisting of paper compliance and site visits. Unfortunately, neither has looked at the effectiveness of graduate teachers from universities that NCATE or TEAC approved and the achievement of the students they instruct. Furthermore, accreditation is not mandatory for preparation programs. NCATE accredits fewer than half of the programs in the nation (650 of the over 1,500 programs). TEAC has a little over 200 accredited members.

Another way to discover what preparation programs are teaching is to survey teachers about their programs. It is important to note, survey data of this type have their limitations. In this instance, it is what teachers said about their programs, not what the programs did. When asked to describe their satisfaction with the preparation program they had completed, teachers often gave contra-

dictory responses. General questions regarding satisfaction elicited positive responses, but queries about specific areas of training drew answers that were not always as affirmative (Figure 13).

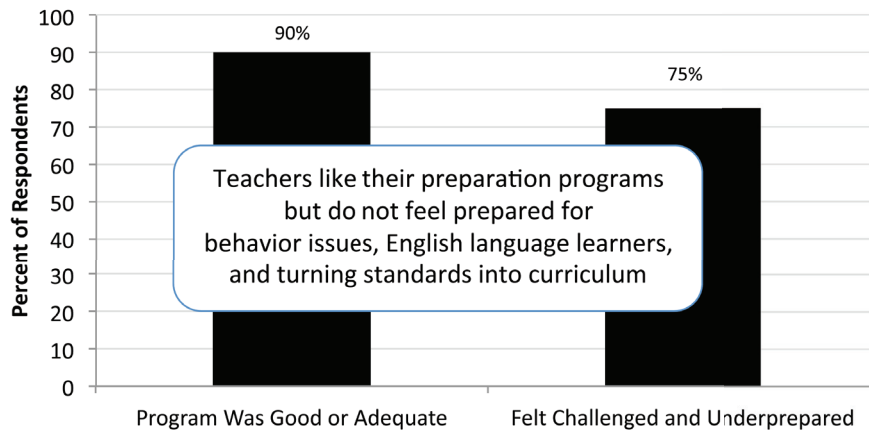


Figure 13. Teacher survey of preparedness. Data are drawn from Hart Research Associates (2010, p. 5).

Reading

Given the importance of reading for students, knowing what preparation programs are doing to prepare teachers to teach reading is crucial. One study that examined preparation programs surveyed course syllabi from a representative sample of 72 U.S. teacher preparation programs about what they offered prospective teachers in reading training (Walsh, Glaser, & Wilcox, 2006). Despite 60 years of rigorous research into what works in teaching reading, many teacher preparation schools fail to teach the fundamental components of reading.

As noted earlier in this chapter, the National Reading Panel report (NICHD, 2000) substantiated the need for phonemic awareness, phonics, fluency, vocabulary building, and exposure to reading comprehension strategies. The report found that only 15% of the sampled schools provided training in all the components. Figure 14 describes the number of components these schools taught. The fact that NCATE accredited a program did not increase the likelihood the school would teach scientifically based reading. The teaching of phonics was the most frequently taught component of reading, but much of reading instruction did not make use of the other critical components. The study found that teacher preparation faculty often portrayed scientifically based reading instruction as one of many approaches no more valid than others.

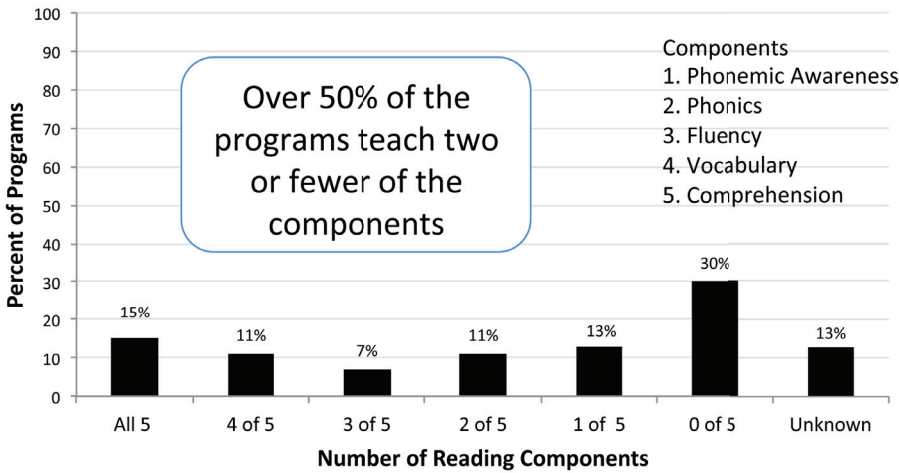


Figure 14. Percent of teacher preparation programs teaching evidence-based components of reading. Data are drawn from Walsh, Glaser, and Wilcox (2006, p. 24).

Formative Assessment

Earlier in this chapter we described the importance of formative assessment in improving outcomes for students. It is therefore vital to know how well teacher preparation programs are doing in training future teachers about formative assessment. Spear-Swerling (2008) surveyed 13 teacher preparation schools in Connecticut to find out whether they were teaching formative assessment. She identified the frequency of the term “formative assessment” (or comparable terms “progress monitoring,” “rapid assessment,” or “ongoing assessment”) in course descriptions.

Despite formative assessment’s great potential for improving student achievement scores, teacher preparation programs surveyed in Connecticut did not emphasize this powerful tool. The Spear-Swerling study found only 14.3% of the preparation programs surveyed included formative assessment and none incorporated Dynamic Indicators of Basic Early Literacy Skills (DIBELS), a program that relies heavily on formative assessment, into their syllabi (Figure 15).

If what occurred in Connecticut can be generalized to other states and other preparation programs, inadequate training in formative assessment has the potential to undermine major reform efforts such as Response to Intervention (RtI) built around ongoing assessment of students. Limited training in formative assessment risks the inadequate education of a generation of teachers who are increasingly held accountable for the failure of students.

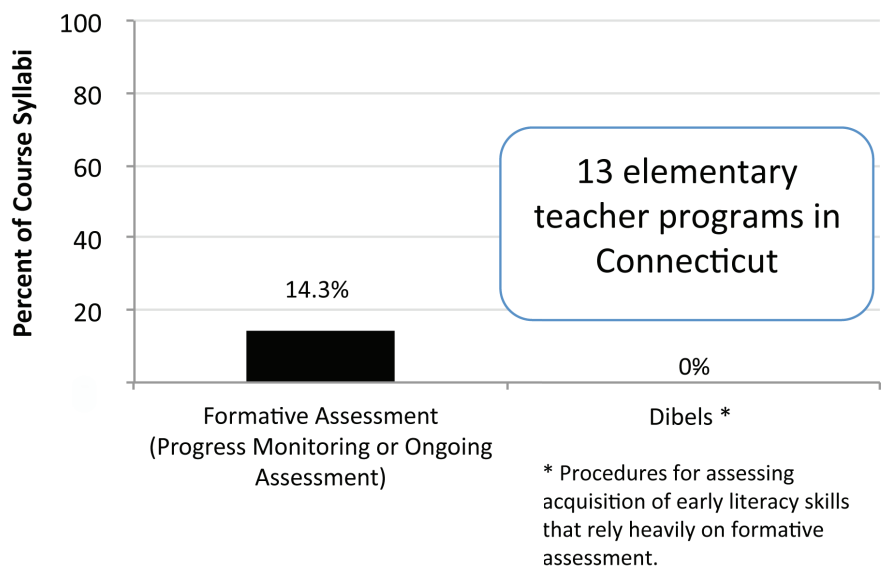


Figure 15. Survey of courses teaching formative assessment. Data are drawn from Spear-Swerling (2008, p. 285).

Behavior Management

Instruction in behavior management has been shown to have a significant impact on student achievement (Marzano et al., 2003), although qualitative reports from teachers suggest they are unprepared to handle conduct problems when they begin teaching (Hart Research Associates, 2010).

More rigorous methods designed to get at this issue have been difficult to find. One study (Begeny & Martens, 2006) does provide insight into this area. It looked at teacher course work and applied training in behavior management practices for elementary, secondary, and special education students in six teacher preparation programs in the Northeast. A major finding was that students received “little training in behavioral instruction concepts, strategies, programs, and assessment practices.” Participants reported “no training” for 43% of the behavioral items surveyed in the study.

HOW TEACHER PREPARATION PROGRAMS PREPARE TEACHERS

Discussions of teacher preparation generally focus on the content teachers should be taught rather than on how best to instruct teachers. The way we prepare teachers has varied little over the past 100 years. We rely on lectures provided by professors in university settings along with a traditional 8 weeks of student teaching, which generally happens at the end of the preparation process. In recent years, there have been calls to change this model. A report commissioned by NCATE (2011) proposed a radical departure from the university-based model to a clinically based approach that emphasizes field experience over didactic training. In this section, we will examine research on approaches to teaching teachers that increase the likelihood that skills learned in the preparation setting will be mastered and used when the new teacher enters the classroom.

Didactic Presentation (Lecturing)

Lecturing prospective teachers is the most common form of instruction found in teacher preparation. This method remains in use for a number of important reasons: It is efficient and flexible, it gives instructors greater control of the material to be presented to students, and it offers easy methods—tests and papers—to assess mastery of the material (Friesen, 2011). Unfortunately, there are also disadvantages associated with lectures (Heward, 2004). Among these is the fact that listening to a lecture is a passive experience. Research suggests that requiring frequent responses during instruction is the most effective way to improve student performance (Heward, 2008). If this is true for schoolchildren, it may also hold true for prospective teachers. More importantly, answering questions during a lecture is a far cry from being able to demonstrate effective use of a skill in the field.

Coaching

Joyce and Showers (2002) looked at the question of how best to train teachers so that new knowledge is transferred to classrooms. Their research examined four methods of training teachers.

1. Discussion: Theories, facts, and information presented through discussion, readings, or lectures.
2. Demonstration: Modeling a skill for the persons being trained.

- 3. Practice and feedback: Using a skill under simulated conditions.
- 4. Coaching: Collaborative work between trainer and trainee to solve problems or answer questions that arise in the classroom.

The traditional lecture method did not result in teachers applying newly acquired skills in the classroom. The introduction of skill demonstrations by the trainer was insufficient to ensure the transfer of the skill from the demonstrator to the trainee. Even the introduction of practice was not enough to see the skill put into use in the classroom. Only when coaching was added did a significant transfer of skills to the classroom occur (Figure 16).

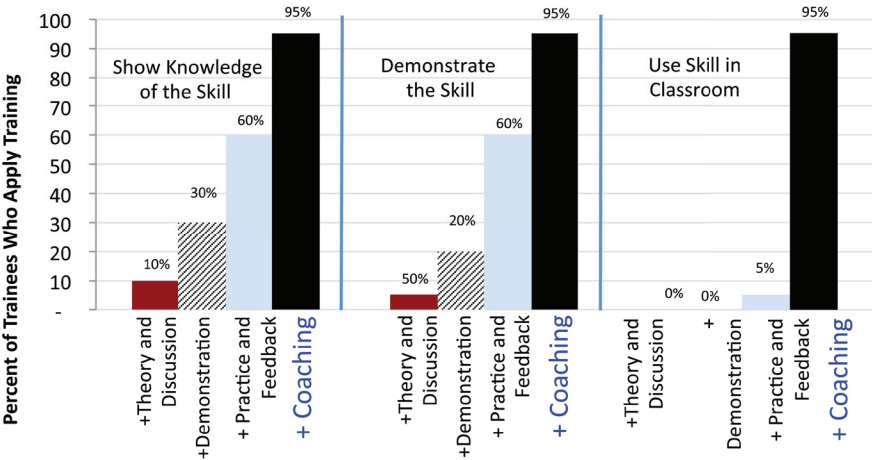


Figure 16. Coaching: Teacher training method producing the best results. Data are drawn from Joyce and Showers (2002, p. 78).

This study shows how critical it is that teacher preparation programs balance the traditional university-based training with effective field experience to give new teachers the necessary skills to be successful.

Field Experience

The question is, what types of field experience result in the best skill acquisition by teachers in training? Field experience (student teaching) is a set of training experiences occurring in actual school settings or in a clinical or laboratory environment. It is designed to bridge the gap between the university setting

and actual classroom teaching and to integrate educational theory, knowledge, and skills in practice under the direction of a qualified supervisor. While the Joyce and Showers data (2002) suggest that coaching used in teacher training is critical for ensuring that new skills are actually used in the classroom, it is not enough to argue that all field experience techniques are effective.

Student teachers directly observe teaching, participate in teaching, and independently teach students. They are meant to work with a mentor teacher from an active K–12 classroom and/or preparation program faculty in order to receive feedback designed to hone skills previously taught in the university setting. Effective field experience requires a high level of coordination between the K–12 placement site and the preparation program. Unfortunately, such coordination requires substantial time and effort. In practice, insufficient time and resources are allocated to field experience, and teachers often receive inadequate coaching and are left to fend for themselves.

The importance that educators place on field experience is evidenced by the ubiquitous presence of the practice throughout teacher preparation. In spite of the acceptance of the need for field experience, there is little agreement on methodology, frequency, duration, and supervision of field experience placements (Clift & Brady, 2005). The lack of agreement on this practice is borne out by the different state standards for the amount of field experience states require of new teachers (American Association of Colleges for Teacher Education [AACTE], 2010) (Figure 17).

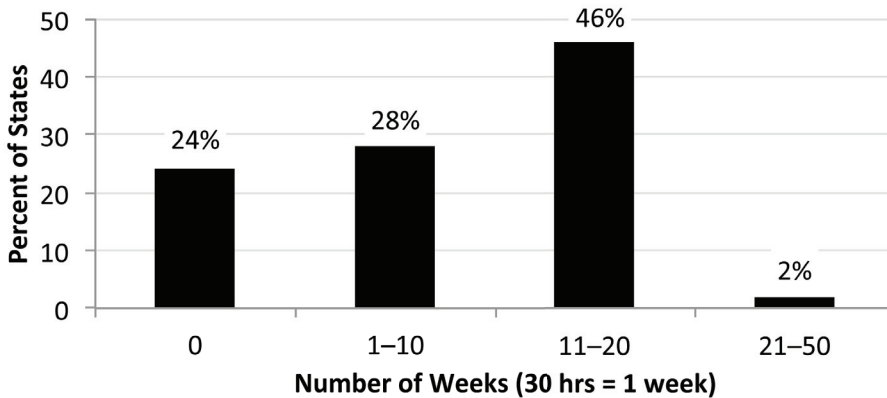


Figure 17. State field experience requirements (student teaching and clinical experience). Data are from American Association of Colleges for Teacher Education (2010, p. 10).

Microteaching

Microteaching is a technique used in field experience training in which the student teacher along with a supervising faculty or mentor teacher reviews video of lessons the student taught. The coach or instructor provides the student teacher with specific feedback on the implementation of the lessons taught, what worked, and corrective feedback on how to improve performance. This method, used in laboratory settings or in real classrooms, can be an effective technique to enhance field experiences. Microteaching is helpful both in improving the teacher’s performance and increasing student achievement. Hattie (2009) found an effect size of 0.88 for microteaching (Figure 18).

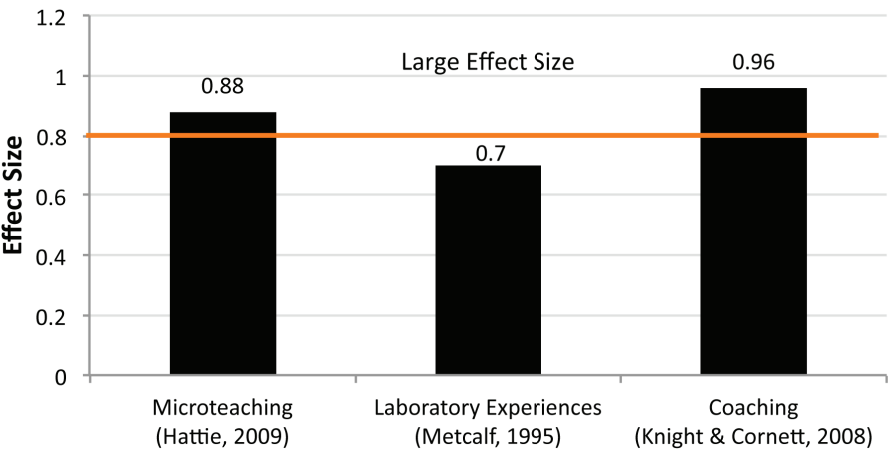


Figure 18. Impact of teacher training methods. Data are drawn from Hattie (2009, Appendix B), Metcalf (1995, p. 12), and Knight and Cornett (2008, p. 13).

Overall, the evidence in support of the current approach to field experience in teacher preparation is inadequate. There are not enough studies, and few of those were experimental or used rigorous methodologies. A summary of studies by Floden and Meniketti (2005) found them to be overwhelmingly qualitative, with the vast majority focused on the teacher’s attitude change or perception of the field experience rather than on critical outcomes such as the effect of field experience on student achievement (Figure 19).

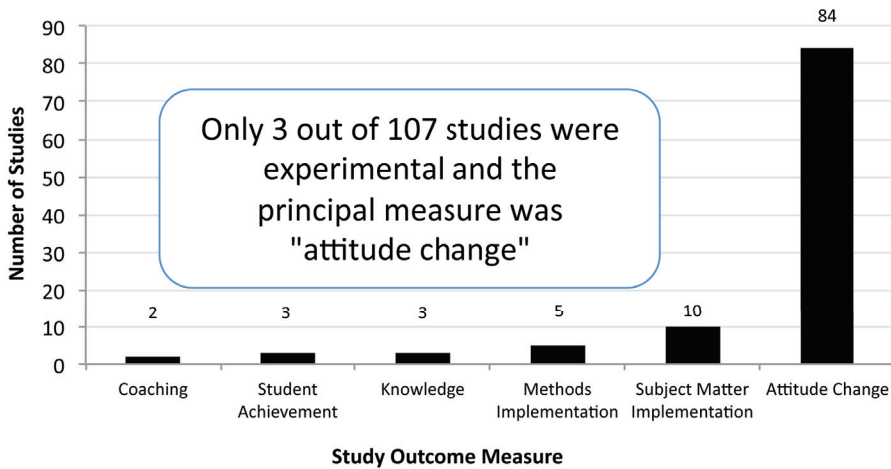


Figure 19. Survey of field experience research topics. Data are drawn from Floden and Meniketti (2005, p. 288).

WHAT WE KNOW ABOUT TEACHER PREPARATION MODELS

Substantial time and resources have been allocated to producing state and national standards for teacher preparation in order to create a model of teacher preparation that can reliably produce teachers who make a difference. What does research tell us about the evidence supporting these different approaches to training teachers?

Teacher preparation models generally fall into three categories: (a) 4-year bachelor's degree credential, (b) 5-year post-bachelor's degree credential, and (c) alternative credential.

Four-Year Bachelor's Degree Credential

This undergraduate model requires the student to spend 4 years obtaining a bachelor's degree built around a prescribed course of education study. The requirements for a 4-year credential model vary by state. This credential was founded on the "normal school" model with a focus on teaching subject matter and methodology of education.

Five-Year Degree Credential

A relatively modern concept that gained momentum in the 1960s, the 5-year credential model requires teacher candidates to obtain a bachelor’s degree before beginning a course of education study. The driving force behind the adoption of the model was a belief prevalent in the education community that teachers were not respected (Zeichner & Conklin, 2005). It was assumed that making teacher certification a post-bachelor and/or graduate degree model would confer greater esteem on the profession of teaching. The trend was widely embraced by teacher preparation programs across the nation, as well as being adopted by a number of states including California.

By the mid-1980s, organizations such as the American Association of Colleges for Teacher Education and the Carnegie Forum on Education and the Economy were actively advocating the 5-year program as a solution to unsatisfactory student achievement. It has been estimated that upward of 25% of American teachers receive credentials from post-baccalaureate programs (Zeichner & Conklin, 2005). Evidence supporting the efficacy remains weak. The most extensive research comparing the effectiveness of 4-year and 5-year credential teacher programs was conducted by Andrew (1990) and Andrew and Schwab (1995). These two studies reached similar findings. Unfortunately, this research did not directly examine student achievement or teacher performance but instead relied heavily on surveys (Figure 20).

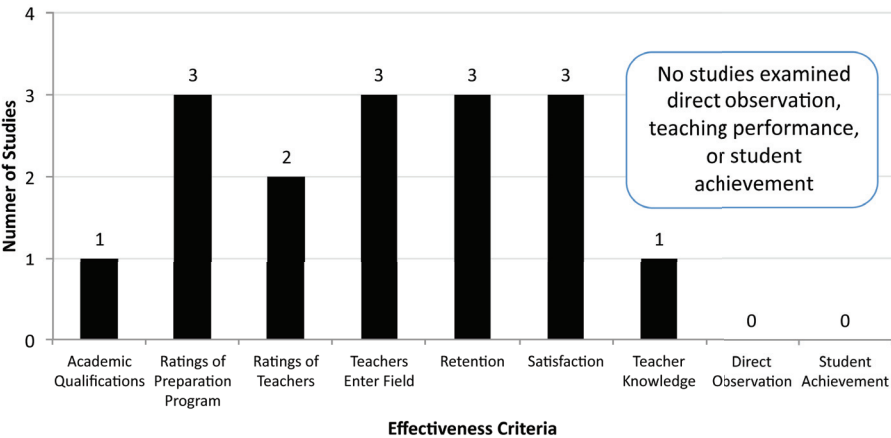


Figure 20. Outcome measures used in studies evaluating 4-year and 5-year teacher preparation programs. Data are drawn from Zeichner and Conklin (2005, p. 705)

The take-home message is that without examining student achievement, current research on the effectiveness of 5-year programs cannot answer the important question of whether the benefits of the additional year outweigh the costs.

Comparing Traditional Credentials (Tc) And Alternative Credentials (Ac)

To fill a critical teacher shortage in the 1980s, schools began to hire teachers enrolled in alternative credential programs. The alternative credential proved very popular, and the number of teachers with this type of credential increased substantially during the 1980s (Constantine et al., 2009). The principal distinction between the TC and AC models is that TC teachers complete the credential program before being hired to teach students, whereas AC teachers are enrolled in programs that provide formal teacher preparation coursework while those teachers are already employed in the classroom. A prime example of this approach is Teach For America. The program places over 8,000 recent college graduates or professionals in classrooms in low-income communities for 2 or more years. The goal is to provide underperforming schools with teachers who are motivated to make a difference and willing to be trained while on the job.

The issue has been a lightning rod for those concerned with the stagnant performance of schools as measured by NAEP scores and high dropout rates. Those resistant to the AC route are generally opposed on the basis that putting untrained personnel in classrooms will result in lower student performance (Constantine et al., 2009). These concerns prompted changes in regulations across the country, culminating in the NCLB mandate requiring teachers to hold full state certification. Unfortunately, when the regulation was ordered, an important question was left unanswered: Does full credentialing actually increase student achievement?

Constantine et al. (2009) shed light on the issue with the results of their 2-year randomized controlled study funded by the Institute of Education Sciences (IES). The study concluded that there was no statistically significant difference in performance between students of TC and AC teachers (Figure 21). Variation in student achievement was not strongly linked to the teacher's chosen preparation route or to other measured teacher characteristics. The study found no meaningful difference in the performance of teachers when it came to student achievement in mathematics and reading. Neither route to certification was found to be superior.

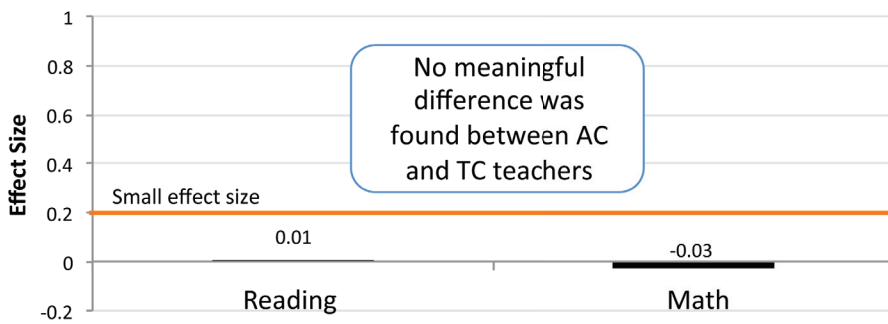


Figure 21. Difference in achievement of alternative credentialed (AC) teachers compared with traditional credentialed (TC) teachers. Data are drawn from Constantine et al. (2009, Appendix A: exhibit A.7)

WHAT WE KNOW ABOUT TEACHER PREPARATION STANDARDS

National Teacher Certification

National Board for Professional Teaching Standards was established in 1987 to foster “high and rigorous standards for what accomplished teachers should know and be able to do” (NBPTS mission statement). As a voluntary national system, NBPTS certifies that a teacher has taught for at least 3 years, has submitted a teaching portfolio that includes video recordings of classroom teaching, and has successfully responded to essay questions assessing pedagogical knowledge. The process requires teachers to pay a substantial fee and can take from 3 months to several years to complete. With the advent of NCLB and greater accountability, school districts have come to view the process as a way to improve student achievement, allocating scarce resources in the form of performance compensation to encourage teachers who acquire certification.

Cantrell, Fullerton, Kane, and Staiger (2008) examined whether the certification by NBPTS correlated with teacher impact on student achievement. The study reviewed the available literature on the topic, including the performance of NBPTS-certified teachers and the role certification played in improving student achievement. The analysis provided a summary of effect sizes from six studies between 2004 and 2006. There were no statistically significant differences between the math and reading test scores of students assigned to NBPTS-certified teachers and those of students assigned to teachers who did not apply for NBPTS certification. It also provided results from recent research that looked for a correlation between NBPTS certification and teachers with the largest estimated impact on student achievement. The research generally found very small effect size differences of 0.05 to 0.1 between the impact on student achievement of certified teachers and applicants who failed to obtain certifica-

tion. Cantrell et al. found no studies with an effect size above 0.1 (Figure 22). This research offers little to recommend NBPTS certification as an effective strategy for improving teacher effects on student performance.

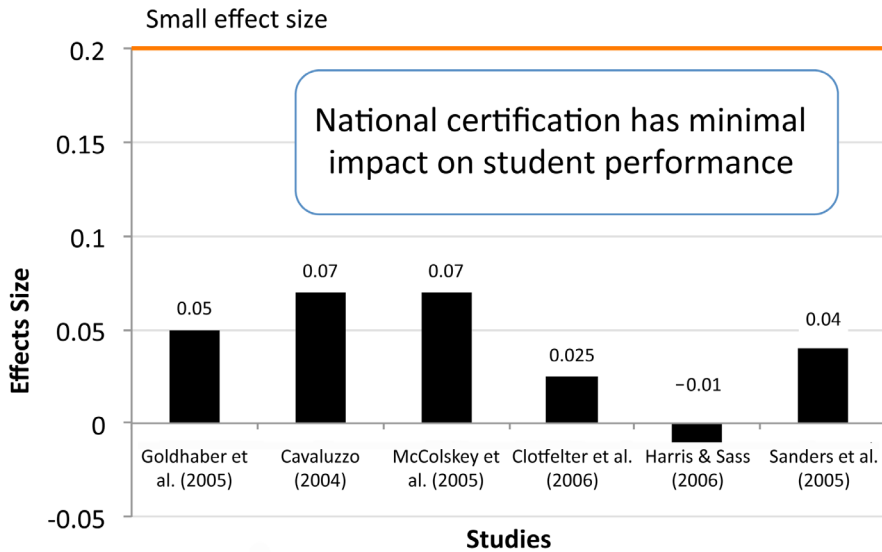


Figure 22. Comparison of NBPTS-certified teachers with non-certified teachers on student math achievement Data are drawn from Cantrell, Fullerton, Kane and Staiger (2008, Table 3).

Program Accreditation

Program accreditation is a common quality control practice used in higher education as a means of holding colleges and universities accountable to standards of excellence. The National Council for the Accreditation of Teacher Education (NCATE), founded in 1954, and the Teacher Education Accreditation Council (TEAC), founded in 1997, have a mission to improve teacher education through accrediting preparation programs. NCATE accredits fewer than half of the programs in the nation, just 650 of the over 1,500 programs. TEAC has a little over 200 accredited members.

Both work to improve quality by requiring preparation programs to meet best practices standards through compliance procedures and periodic site visits. Neither organization includes in its mission statement that the goal of accreditation is to improve schoolchildren's performance. Despite the best attempts of both bodies to improve the quality of teachers entering the workforce, there is

little research to support that the programs are having a significant impact on the quality of teachers. The research found on the organizations’ websites offers little evidence that teachers graduating from accredited programs are any more effective than teachers coming from unaccredited institutions (ncate.org; teac.org).

A primary study by Gitomer, Latham, and Ziomek (1999) on the NCATE website promoting accreditation effectiveness showed that graduates of NCATE-accredited colleges of education passed Education Testing Service (ETS) content examinations for teacher licensing at a higher rate than did graduates of unaccredited colleges. The results of this study are described in Figure 23. There are two issues of concern regarding the study. First, it does not offer evidence that passing the Praxis II, a teacher certification exam, makes for better teachers in the classroom as measured by student academic outcomes. Second, we do not know if the 8% difference in the scores between NCATE-trained teachers and non-NCATE teachers is statistically or socially significant.

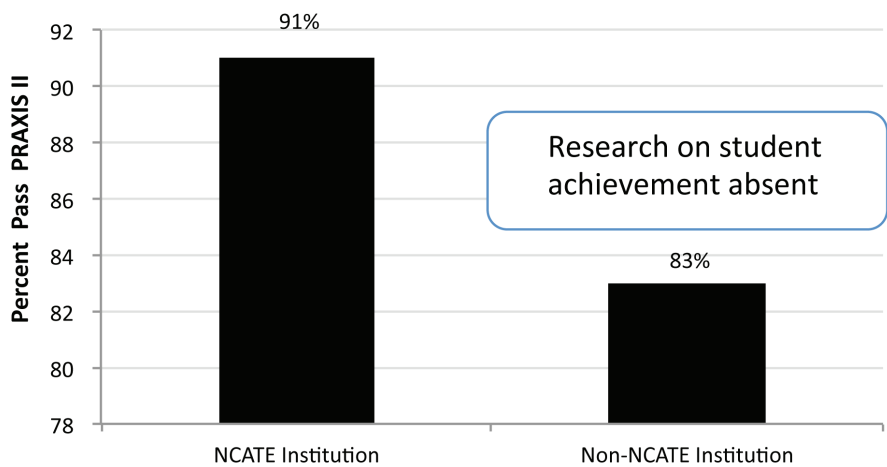


Figure 23. Comparison of NCATE-trained teachers and non-NCATE teachers passing the Praxis II. Data are drawn from Gitomer, Latham, and Ziomek. (1999, p. 25).

Unfortunately, too few studies have been done on the subject, and the research that has been conducted offers insufficient evidence to know whether being accredited by either NCATE or TEAC will result in preparation programs producing teachers who can make a difference in the lives of students.

WHAT WE KNOW ABOUT PREPARATION PROGRAM EFFECTIVENESS RESEARCH

We previously examined the importance of assessment of students as an essential strategy to improve student performance. Assessing graduates of teacher preparation programs and their impact on student achievement is another important strategy for improving the performance of the education system. To date, few studies have been conducted linking preparation programs and the quality of preparation program graduates. Until recently, few incentives or contingencies were placed on preparation program administrators by regulators, funding sources, or consumers to conduct this type of research.

School administrators and those involved in the hiring of teachers would benefit greatly by knowing which preparation programs produce the best teachers. It would help all involved to know which preparation programs incorporate evidence-based practices in their required course work. Correlating teachers' course of study to outcome performance data would be crucial in expanding our knowledge base and assisting other preparation programs to improve performance. This would prove invaluable in determining which course of study produced teachers whose students had the best outcomes and to use that program's curriculum as a template for other preparation programs. Information about what works and what practices to avoid is sorely needed as pressure has increased for greater accountability for preparation programs.

The studies evaluating preparation programs over the past 30 years have typically been qualitative and provide little information that can inform stakeholders which preparation programs produce the best results. In the past, we did not have the tools to conduct the research we require. Now, tools such as value-added modeling are being more widely used to answer these questions. Researchers are attempting to answer questions such as which preparation programs are the best at producing teachers who raise student achievement scores, as Noell and Burns (2006) did in their study of preparation programs in Louisiana. Their analysis suggest that it may be possible to use achievement and educational personnel databases to assess the effectiveness of teacher preparation programs.

WHAT WE KNOW ABOUT TEACHER INDUCTION

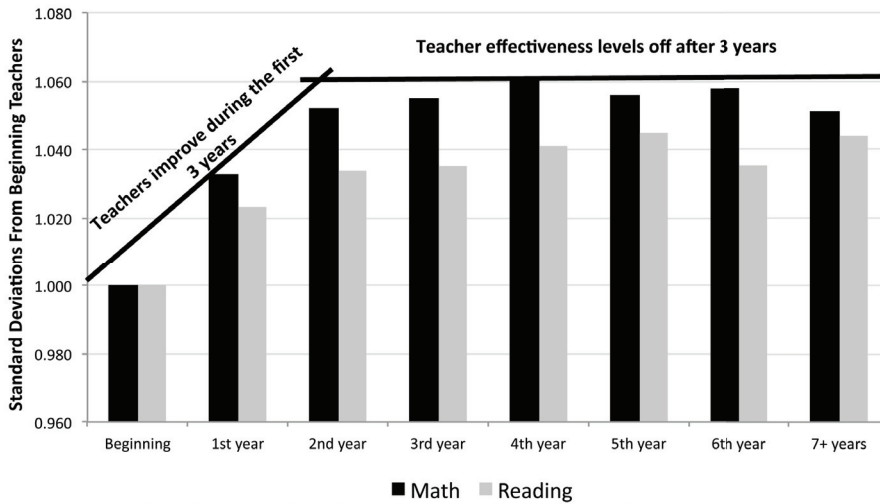
Before induction was introduced in the 1980s, after teachers completed preservice training they would be dropped into an education system that emphasized independence in deciding how to run their own classrooms. The traditional preparation model offered new teachers approximately 8 weeks of field experience in a real classroom to get them ready for this day (American

Association of State Colleges and Universities [AASCU], 2010). New teachers were provided a few hours of orientation and then given control of the classroom.

By the 1980s, this picture began to change. Stagnant student graduation rates and declining test scores elicited concerns from educators and the public (Maheady & Jabot, in press, this volume). In the education literature, terms such as “preservice training,” “in-service teacher training,” “induction,” and “mentoring” increasingly appeared as a way to improve teacher performance. By 2000, over 80% of public school teachers received some form of formal induction training (Smith & Ingersoll, 2004). Induction consists of practices that help new and beginning teachers become competent and effective classroom professionals who also understand school and community cultures (AACTE, 2010).

Maheady and Jabot (in press, this volume) provide a thorough look at teacher induction and the remarkable growth of the practice. They make a compelling case for induction services. They also analyze the available research on current models and offer solutions to remediate problems evident in today’s comprehensive teacher induction services.

To begin a discussion of induction, it is reasonable to ask one key question: Are new teachers less effective than veteran teachers? Research on the preparedness of new teachers, not surprisingly, supports the common wisdom of the existence of a “rookie” phenomenon (Kane, Rockoff, & Staiger, 2006;) (Figure 24). The rookie is an inexperienced teacher who requires on-the-job training before mastering the skills needed to be effective. Even though the data in Figure 24 capture the effect of additional years of experience, it is important to note that the difference between a beginning teacher and a second-year teacher is only .06 of a standard deviation, which is not a very large effect.

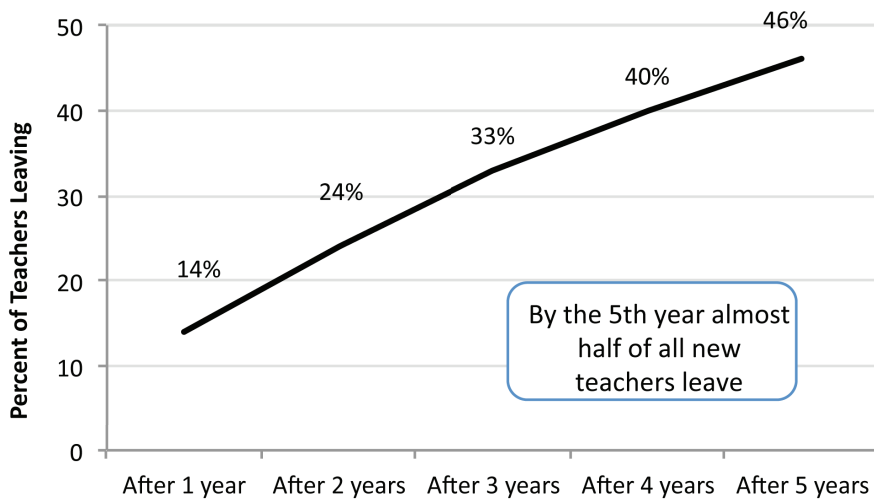


Note: The scale of data display was adjusted to emphasize the difference between beginning and 3rd-year teachers

Figure 24. Value-added returns with years of experience. Data are drawn from Kane, Rockoff, and Staiger (2006, Table 10).

Research offers insight into how long it takes to get new teachers up to speed. An analysis of math and reading scores, when correlated with teacher experience, provides credence to the notion that time in the classroom makes for better teachers. The data support the following facts: Students of first-year teachers, on the whole, produce lower test scores; improvement in teacher performance happens over the first 3 years; and additional experience does not result in continuing improvement after the third year. It is also important to note that the impact on student achievement is small, as measured by an effect size of 0.2 or less.

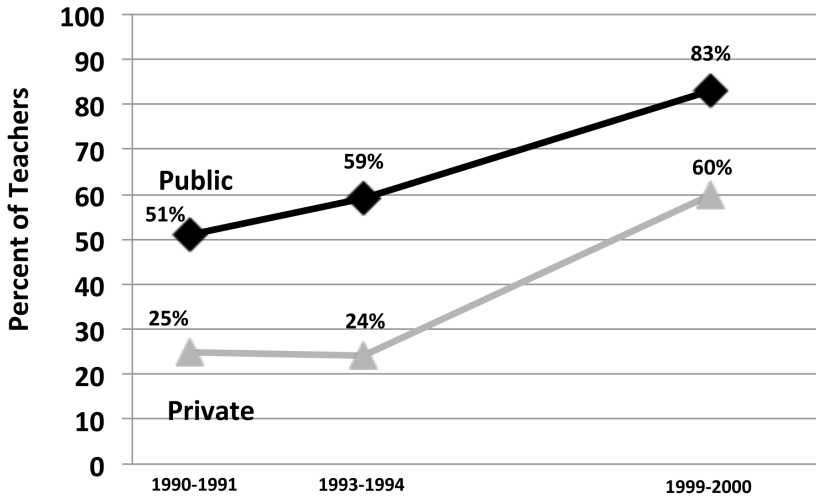
When first proposed, teacher induction was offered as an answer to stagnant student achievement scores and as a way to stem the loss of teachers through turnover. Chronic shortages of qualified teachers in the 1980s made the issue of turnover even more important, as it contributed to the number of new and undertrained teachers entering the workforce. Astonishingly, by the fifth year of teaching, almost 50% of new teachers leave the profession (Ingersoll, 2003) (Figure 25). If the trend is to be reversed, understanding why so many teachers leave in the first few years might lead to a solution. If induction could make teachers feel better prepared and increase job satisfaction, the practice might possibly reduce turnover (Hart Research Associates, 2010).



*Figure 25. Teachers leaving the profession. Adapted from “Is there really a teacher shortage?,” by R.M. Ingersoll, 2003, *A research report co-sponsored by the Center for the Study of Teaching and Policy and the Consortium for Policy Research in Education*, p. 14. Copyright 2003 by the Center for the Study of Teaching and Policy. Adapted with permission.*

The first large-scale induction program in the United States was established in Florida in 1980. Induction offered a way for schools to systematically deliver instruction to orient new personnel, train staff to the standards unique to a specific school, and use veteran teachers to mentor and coach beginning teachers. Proponents of the practice suggested other valuable benefits from induction, notably, improved morale and enhanced communication between administrators and teachers, problems that affected most school systems (Ingersoll & Kralik, 2004).

Representing a possible solution to multiple problems, induction had great appeal. The attraction was so compelling that over the next 10 years most states followed the example of Florida and established induction models. Induction in one form or another rapidly grew from a relatively unknown niche service to involving over 80% of public school teachers by 2000, and it is expected to soon engage 90% of all beginning teachers (Smith & Ingersoll, 2004; Maheady & Jabot, in press, this volume). Figure 26 describes the growth of teacher participation in induction programs between 1990 and 2000.



*Figure 26: Percent of teachers participating in induction programs in public and private schools. Adapted from “What Are the Effects of Induction and Mentoring on Beginning Teacher Turnover?”, by T. M. Smith and R. Ingersoll, 2004, *American Educational Research Journal*, 41, p. 691. Copyright 2004 by the American Educational Research Association. Adapted with permission.*

Despite its promise, induction poses many challenges. It is one of the more complex interventions attempted over the past 30 years. As a systemic approach to school reform, induction necessitates added investments in resources, time, and money to ensure the intervention sustains over time. Successful induction involves significant changes in the school practices, including hiring, preparation of a curriculum specific to the school, an orientation procedure, protected initial assignments, mentor and other support, frequent coaching, and ongoing evaluation (Cherian & Daniel, 2008; New Teacher Center, 2006).

The question should be asked, is the practice a smart use of scarce resources? It has been estimated that the annual cost of induction in California and Connecticut is, on average, \$4,000 per trained teacher (Alliance for Excellent Education, 2004). A cost effectiveness ratio analysis (Yeh, 2007) suggests that induction, as implemented in a recently released randomized controlled study (Glazerman et al., 2008), is not a cost-effective intervention (Figure 27). When induction, structural interventions (e.g. class size reduction, charter schools, increased spending, and high-stakes testing), and an instruction intervention (i.e., formative assessment) were compared, induction along with the structural interventions compared poorly with formative assessment.

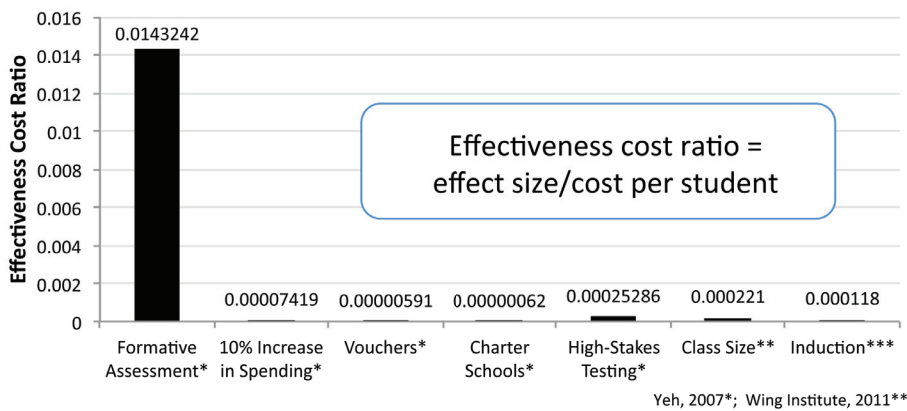


Figure 27. Cost benefit of educational interventions. Data are drawn from Yeh (2007, p. 431). Data from columns with ** were calculated by the Wing Institute based on Yeh's formula for effectiveness cost ratio.

Unfortunately, this massive paradigm shift, along with a commitment of substantial time and resources, happened despite the lack of rigorous research to guide school systems in what works and what to avoid in induction. Given the considerable costs, it would seem wise for education stakeholders to design induction programs based on the best available research.

What Research Reveals About Induction

Most of the available research on the impact of induction either lacks rigor or is inconclusive (Maheady & Jabot, in press, this volume). The exception is the Institute of Education Sciences (IES) report summarizing the results of a randomized controlled study on induction (Glazerman et al., 2008). The study examined the effects of induction programs on student achievement for second through sixth graders in mathematics and reading. The study also looked at the effects of induction on teacher practices and teacher retention. The comprehensive induction model studied included (a) yearlong intensive and structured support for beginning teachers, (b) weekly meetings for new teachers with trained mentors, (c) ongoing classroom observations and constructive feedback, and (d) monthly professional development sessions. The outcomes of this large-scale randomized clinical trial suggest that comprehensive induction has very little, if any, statistically positive impact on beginning teacher effectiveness, satisfaction, or teacher turnover. Unfortunately, issues with the implementation of the study such as a failure to measure treatment integrity,

limited time allocated to classroom observation, and the control and experimental groups' similar exposure to mentoring provide sufficient reasons to question the results of the study.

A major weakness in the Glazerman study is the lack of a control group that received no form of induction training. The preponderance of induction training in American schools resulted in both the control group and the experimental group receiving a form of induction. It is always a more stringent test of an intervention to compare it with an alternative intervention rather than treatment as usual. If we are to really identify what works, then the proper comparison will need to be with alternative forms of induction, but only after determining the efficacy of the practice against no treatment. As yet, the data do not support the assertion that induction is more effective than providing no induction services.

Another problem with the study is the imprecise definition for mentoring and the drift in the mentoring experience resulting from ineffective safeguards for treatment integrity. The actual mentoring of the induction group varied significantly among teachers within the group. The number of minutes on average a group member received was ultimately not significantly greater than what was provided the control group. Given the quality control issues with the induction services provided the control group and the experimental group along with fundamentally little difference in the induction experience, it is not surprising that the effect sizes for reading and math for both groups differed little and were found to be small (Figure 28).

Manuals can be valuable tools for defining practices and setting expectations for alternate forms of induction (Kauffman, in press, this volume). Only when a model is implemented consistently and with integrity can the real effectiveness of the intervention be assessed. Otherwise, it is impossible to know if the intervention is effective or not and whether poor implementation accounts for a poor outcome. Even efficacious practices are likely to produce poor results when treatment integrity is neglected.

Student Outcomes

Glazerman et al., (2010) found no significant effects of induction on student reading or math achievement scores. The overall average effect size across all grades after 3 years was 0.11 for reading (Figure 28). Students who were taught by teachers receiving comprehensive induction demonstrated no improvement in either the first or second years of reading or math scores. It was not until the third year that gains occurred, but at no time did these effect sizes climb above 0.2, a small effect.

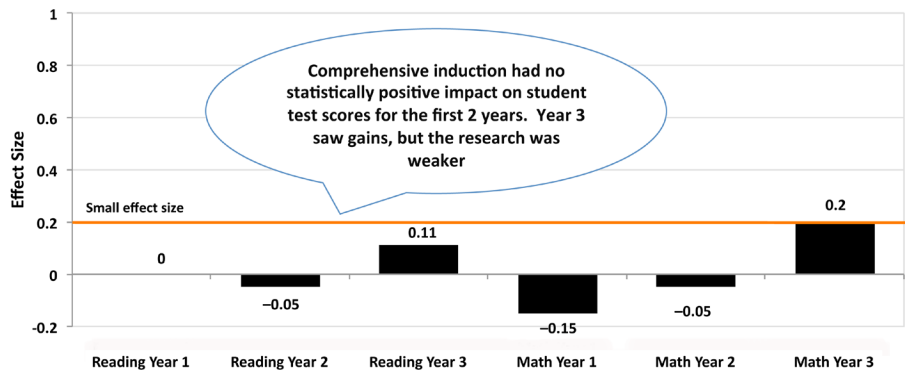


Figure 28. Impact of comprehensive induction on student reading and math test scores. Data are drawn from Isenberg et al. (2009, p.99) and Glazerman et al. (2010, p. 93).

Teacher Outcomes

Glazerman et al. (2010) found no statistically significant effect on teacher retention rates after the first year. On average, only 70% of the induction and control group teachers returned to teach a second year. There was no effect on the proportion of teachers still employed in the profession after 1 year, and no practical difference in the amount of time the control and the induction groups remained (Figure 29).

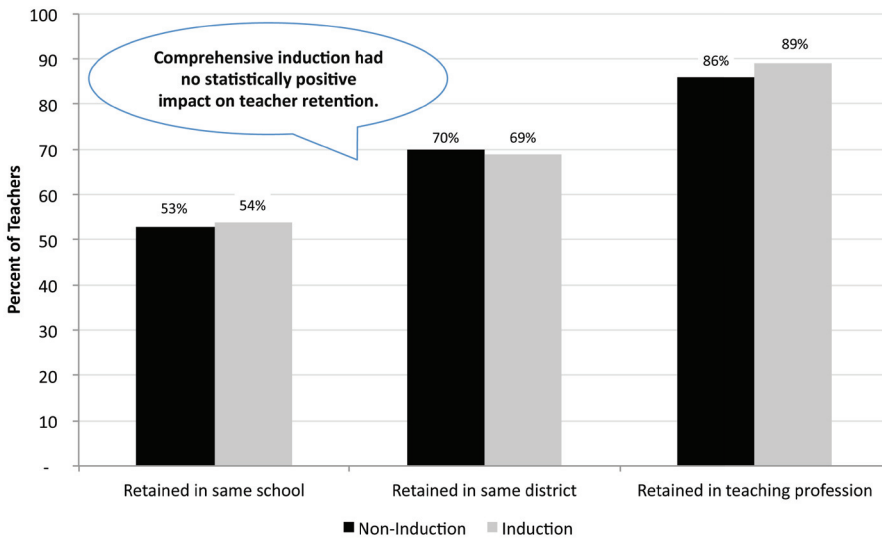


Figure 29. Impact of comprehensive induction on teacher retention. Data are drawn from Glazerman et al. (2010, p. D-11, Table D.9).

The results of the Glazerman study are disappointing when considering the substantial costs in time and money invested nationally in induction services. There are few quantitative studies on induction, and the results of this randomized controlled trial had been eagerly awaited. The conclusions from the study offer little to suggest that induction is having a significant impact on the two key outcome measures: student achievement and teacher turnover. At first glance, the results suggest induction as just another education fad that didn't work, to be pushed aside and then forgotten.

However, there may be reasons for the study's failure to find evidence to support induction as an effective intervention. Closer examination of the study highlights the difficulty encountered in implementing a complex intervention in real-world settings. Specific problems with implementation included trouble in objectively defining the intervention and the control group practices, overreliance on surveys to obtain data, infrequent data collection, and poorly designed measurement tools.

Induction Summary

The variability in results from induction at this time is not surprising. Our limited knowledge of what works and what does not impedes our ability to state what components of induction are effective. It may be too soon in the study of

induction to expect a standard model.

The models in use vary significantly in purpose, duration, intensity, activities, assessment, content, and use of mentoring (Maheady & Jabot, in press, this volume). These impediments make it very difficult to draw conclusions about comprehensive induction and its impact.

The Maheady and Jabot chapter (in press, this volume) examines induction thoroughly and insightfully. It provides a history of induction and a summary of the available research on the topic, and discusses the issues impacting implementation of induction programs. Finally, it presents guidelines for overcoming obstacles, emphasizing the importance of building critical partnerships between teacher preparation programs and receiving K–12 schools. Induction has the potential to be a significant force in improving student achievement, strengthening teacher morale, and reducing unwanted teacher defections. However, additional research must be conducted to better understand how to overcome serious problems in the design of current models and practices.

SUMMARY: EFFECTIVE TEACHERS MAKE A DIFFERENCE

The recently released Programme for International Student Assessment (PISA) international 2009 test scores found that the United States ranked 14th in reading, 17th in science, and 23rd in mathematics. The continued disappointing performance, which shows scores changing little over 30 years, has the potential to place the United States at a serious competitive disadvantage in the coming decades. To reverse the trend, American educators must look to new solutions. We must look beyond the structural interventions of the past such as class size reduction, charter schools, or smaller schools that have failed to produce results and begin to read the available evidence on what works.

Over the past 30 years, the process of building a science of education for teachers has been underway. We have accumulated a significant knowledge base of strategies and practices that do make a difference. We also have over 100 years of data on various teacher preparation models (Cochran-Smith & Zeichner, 2005). We are gathering valuable information on what works as well as what to avoid, to help schools avoid repeating past failures. When asked what essential skills teachers need to be successful, we can provide a list of skills, based on increasingly rigorous research, that improve student achievement.

We know with increasing confidence that formative assessment, effective classroom management, and effective teaching strategies improve student achievement. We can answer questions regarding the role subject matter plays in making a good teacher. Unfortunately, subject matter exposure makes very little difference. We continue to acquire knowledge of the most effective pedagogical strategies for teaching teachers. We need to balance past overreliance

on didactic instruction with effectively coached in-class training and field experiences for new teachers. We also need to assess the performance of teacher preparation programs to identify which schools can act as models for other programs. Finally, we need to provide teachers with support that offers feedback on a timely and regular basis. Ultimately, it all comes down to effective implementation. The best teachers can lose their edge if not provided effective supervision and feedback.

All too often stakeholders punish teachers for not meeting expectations. Until teachers are trained in the correct skills and supported in using those skills, it is difficult to hold them accountable for underperforming. Teaching is a very challenging job requiring the mastery of many skills. It is important to remember teachers are only one important piece of the puzzle. The remaining pieces include effective management practices, parental support, the selection of and implementation of evidence-based practices, and sound leadership.

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