

Student Achievement *and Passport to Teaching* Certification *in* Elementary Education



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Since its founding in 2001, the American Board for Certification of Teacher Excellence has been the subject of much interest. The launch of ABCTE and its innovative certification program—designed specifically for career changers who want to teach—prompted parents, educators and lawmakers to engage in a national discussion about what makes an excellent teacher.

ABCTE has long held, and continues to believe, that excellent teachers must possess expert levels of knowledge in the subjects they teach. We also believe that new teachers must possess mastery of research-based teaching strategies.

This study, *Student Achievement and Passport to Teaching Certification in Elementary Education*, provides evidence that the ABCTE certification process works. As you will read, the research demonstrates that teachers who would have passed the ABCTE examinations in elementary education and professional teaching knowledge produce higher student learning gains in the classroom than teachers who would have failed.

To ABCTE and its stakeholders, student learning gains are incredibly important. Our certification process is based on measuring what teachers must know to advance student achievement. This study demonstrates that our program is effectively meeting the needs of students, parents, states, school districts and administrators throughout the country.

There are already 2,000 individuals pursuing *Passport to Teaching*SM certification, and ABCTE has developed partnerships with school districts, colleges, business groups and other organizations to increase the pool of talented professionals who seek certification. As the number of certified teachers grows, we remain committed to conducting peer-reviewed research to demonstrate the continued validity of our process.



David W. Saba
President

About the American Board *for* Certification *of* Teacher Excellence

Our mission

The American Board for Certification of Teacher Excellence is committed to recruiting, certifying and supporting excellent teachers essential for achieving student success.

Our vision

The vision of the American Board is that every child has an excellent teacher.

Our history

The American Board for Certification of Teacher Excellence is a nonprofit 501(c)(3) organization based in Washington, DC.

In September 2001, the National Council on Teacher Quality (NCTQ) received a \$5 million, two-year grant from the U.S. Department of Education's (USDOE) Fund for the Improvement of Education to create ABCTE. Less than two years later, ABCTE was officially launched. In 2003, the USDOE awarded ABCTE a \$35 million, five-year grant to continue its work.

ABCTE offers the *Passport to Teaching*SM certification—a national route to teacher certification for knowledgeable and motivated individuals.

All candidates for *Passport to Teaching* certification must hold a bachelor's degree and demonstrate mastery on rigorous examinations of subject area and professional teaching knowledge. Prior to earning certification, candidates must also pass a federal background check.

***Passport to Teaching* is a four-step process that offers individualized preparation.**

1. Candidates enroll in *Passport to Teaching*.
2. Candidates complete an online Self-Assessment survey to identify strengths and weaknesses in their teaching

and content knowledge. Based on the Self-Assessment, certification candidates work with an experienced teacher (Learning Plan Advisor) to develop an Individualized Learning Plan. This plan recommends materials and resources to prepare the candidate for certification. Candidates are not required to take additional college courses but may choose to do so for preparation purposes. (Individuals seeking Pennsylvania certification will be required to complete additional coursework.)

3. To earn the *Passport to Teaching* certification, candidates must demonstrate mastery on computer-based examinations. The examinations are a nationally recognized measure of excellence. The assessments are administered at secure testing centers located throughout the world and must be completed within one year of enrollment.

4. With a *Passport to Teaching* certificate, successful candidates can apply for a teaching license in the states of Florida, Idaho, New Hampshire, Pennsylvania and Utah. ABCTE is also actively working to earn recognition for *Passport to Teaching* in other states. After earning the *Passport to Teaching*, teachers are eligible to participate in ABCTE's mentoring program.

Passport to Teaching certification is available in elementary education (K–6), English (6–12), mathematics (6–12), general science (6–12), biology (6–12), special education (K–12), chemistry (6–12) and physics (6–12). ABCTE also offers a reading endorsement for certified elementary school teachers. The availability of certification areas and specific certification requirements vary by state.

ABCTE is currently developing *Master Teacher*SM certification, a distinction for exceptional teachers.



Executive Summary

Elementary classroom teachers who would have earned *Passport to Teaching*SM certification based on their proficiency in teaching knowledge and subject area expertise produce, on average, much higher student learning gains in all subject areas, particularly math and science, than teachers who would not have earned certification. These findings from a recent study validate the certification process of the American Board for Certification of Teacher Excellence (ABCTE) and suggest ABCTE's tests are a solid predictor of teacher performance in the classroom.

Teacher quality is a key determinant of student achievement, more important than any other societal or demographic factor. An effective and efficient teacher certification process, such as the one offered by ABCTE, is critical to meeting the challenge of ensuring an adequate supply of qualified teachers for the nation's schools. This challenge has become even more formidable since the enactment of the 2001 No Child Left Behind Act.

ABCTE conducted its validity study to determine whether there is a correlation between scores on ABCTE's exams for elementary education certification and teachers' student learning gains as reported on their latest individual Tennessee-

Value-Added Assessment System (TVAAS) report. Tennessee has had considerable experience in matching students to teachers to measure the progress of teachers' students and also has extensive databases. The ABCTE study is the first study to validate a licensure examination by the criterion of how much each teacher's students learn.

All study participants took ABCTE's computer-based Professional Teaching Knowledge exam and Multiple Subject Exam and submitted a copy of their most recent TVAAS report. Seventy-seven of the participating teachers taught at the elementary level; of these, 55 taught in self-contained classrooms in which the teachers taught all subjects.

The results of the validity study confirm that teachers achieving certification through the alternate *Passport to Teaching* route could produce student outcomes equal to or greater than those of teachers achieving certification through traditional programs. The study stands alongside nearly two decades of research and experience that show the potential of alternative certification to help fill the need for qualified teachers. Further studies with larger sample sizes seem likely to corroborate the evidence compiled in this study, and ABCTE plans to conduct similar studies of its other teacher certification exams.

Study Context

If an assessment is used to make decisions affecting any candidate's employability, opportunities, or compensation, then the licensure organization has an obligation to prove that the certification examinations (or the criteria) used to judge the professionals are valid. There is one way to prove validity—show that people who pass the examinations can perform at a higher level than those who fail. Certification examinations are valid when scores correlate positively with people's ability to perform the job.¹

Teacher quality has a greater effect on student achievement than any other societal or demographic factor.² A vital function of the American Board for Certification of Teacher Excellence is to develop and provide an effective and efficient teacher certification process that enhances teacher quality. *Passport to Teaching* is the national teacher certification program offered by ABCTE. Currently, certifications are available in elementary education (K–6), English (6–12), mathematics (6–12), general science (6–12), biology (6–12), special education (K–12), physics (6–12) and chemistry (6–12). ABCTE also offers a reading endorsement for certified elementary education teachers.

Determining whether an association exists between student achievement and earning *Passport to Teaching* certification is important to ensure a high-quality teacher certification process. ABCTE conducted a study in three major Tennessee school districts to determine whether such an association exists. A technical advisory committee of distinguished university professors guided the study's design and data analysis (see Appendix A).

First Empirical Validation Based on Value-Added Student Achievement

Although performance on teacher licensing examinations should correlate with student achievement, no study has determined whether teachers' higher scores on teacher licensing examinations such as the Praxis series are associated with their students' learning.³ Among the initial teacher licensure examinations in use nationwide, this study is the first designed to validate a licensure examination by the criterion of how much each teacher's students learn.

Importance of Teacher Subject Area and Professional Teaching Knowledge

Teachers' academic competence in general and in specific subject areas consistently correlates with measurable student learning gains.⁴ Careful examination of the results of the National Educational Longitudinal Study of 1988, as well as those of the more recent 1998 survey, similarly shows a consistent relationship between mathematics teachers who are well trained in their subject area and higher student scores on standardized mathematics tests.⁵



Teaching practice research also notes that well-ordered classrooms and carefully structured instruction tend to produce greater learning gains.⁶ Moreover, positive disciplinary climates are linked directly to student learning.⁷

Effectiveness of Alternatively Certified Teachers

Nearly two decades of experience and research show the potential of alternative certification to help fill the need for qualified teachers. For example, in Connecticut, most supervisors found alternate route teachers superior to teachers from traditional preparation programs.⁸ Studies by the New Jersey Department of Education found that teachers who came through alternative routes had higher licensure exam scores and were more likely to remain in teaching beyond the second year than were their peers from conventional teacher-training education programs.⁹

A 2005 study by the National Bureau for Economic Research, Inc., analyzed more than 6,000 teachers completing one of several alternate route programs. In the long term, no difference could be ascertained in the results of students educated by teachers who entered the profession through an alternate route.¹⁰

Several other recent reports validate that teachers certified through alternate routes produce student outcomes equal to or greater than those of teachers certified through traditional



programs. For example, a 2004 report from Mathematica Policy Research, Inc., concluded that teachers who participated in the alternate route Teach For America program produced higher levels of student learning in mathematics and equivalent levels of student learning in reading than traditionally certified new and veteran teachers.¹¹

These studies provide supporting evidence that teachers who enter the profession through rigorous alternative certification programs possess the qualities needed to produce higher student achievement. Alternate route programs often select teachers based on their subject mastery rather than on their completion of a lengthy practicum and numerous education courses, which can take up to 18 months.

Value-Added Measures of Teacher Effectiveness

The federal No Child Left Behind Act requires “the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities,” including teacher effectiveness.¹² Taking a value-added approach to assessing teacher performance is the best way to meet that requirement.

Value-added models focus on student learning gains to examine the impact of the teacher on the student’s achievement. Value-added calculations are designed to minimize outside influences by controlling for factors such as race, family background and socioeconomic status.

Value-added achievement measures the learning progress (i.e., achievement gains over a year or another period). Because value-added approaches are more fair and objective than other methods, they are increasingly employed and widely recognized. For example, the Teaching Commission, a bipartisan group chaired by former IBM Chairman and CEO Louis V. Gerstner Jr. and composed of former governors and business executives, concluded in its 2004 report that value-added approaches, such as the model developed by William Sanders in Tennessee, can be used to gauge an individual teacher’s effect on student learning. The data from the model show how each student performs on a year-to-year basis, compared with his or her “expected score,” which is calculated on the basis of the pupil’s results on prior tests.¹³

Study Methodology

William Sanders first called national attention to value-added calculations in Tennessee, and the state has had considerable experience in matching students to teachers to measure the progress of the teachers' students. For this reason and because the state retains extensive databases, Tennessee was chosen for the validity study.

Description of Teacher Sample

A sample of 77 teachers in elementary school grades 4 through 6 participated in the study by completing the two ABCTE certification examinations needed for elementary education certification: the Professional Teaching Knowledge exam and the Multiple Subject Exam. (See Appendix B for additional characteristics of the study participants.)

The participants taught in three major urban Tennessee districts. These school districts have a combined student population that is 62.6 percent minority and 63.4 percent economically disadvantaged.¹⁴ The participants agreed to submit their Tennessee Value-Added Assessment System student achievement reports with the understanding that the results would remain confidential. To encourage maximum effort on the exams, participants were compensated at a base level plus an additional sum that depended on their exam performance relative to the mean.



The amount of time study participants had to prepare for the exams was not the same as actual ABCTE candidates. The pass rates for study participants compared similarly to teachers who serve as field test participants for ABCTE exams before these tests become operational. Given the opportunity to study specifically for the exams, participants might have scored higher. However, the study is still valid because it takes a snapshot of the knowledge base of a teacher at the time of the student achievement results.

Student Achievement Calculations

The value-added student achievement scores were obtained from the Tennessee Value-Added Assessment System based on the mixed-methods model developed by William Sanders. They are expressed as normal curve equivalent (NCE) scores. Teachers were ascribed average student learning gain scores by subject area and year.

An NCE score of zero means that the average student of a teacher gained one year's growth in achievement during a school year. A positive score indicates that the teacher's students achieved above-average growth, compared with students in the rest of the state. In other words, they gained more than a normal year's achievement while taught by a particular teacher. A negative NCE score means the teacher's students attained less than one year's growth in achievement. NCE scores for the four subject areas—math, reading, science and social studies—typically range two or three NCE points from "exceptional" to "deficient" (see Appendix C).

Self-Contained Elementary Classroom Teachers versus All Elementary Classroom Teachers

Of the 77 elementary classroom teachers who participated in the validity study, 55 had TVAAS student result reports for all four subject areas, indicating they were teaching in a self-contained classroom and were responsible for teaching their students all subject areas in the Tennessee Comprehensive Assessment Program. Because their students were tested in the same subject areas covered by ABCTE's Multiple Subject Exam, this set of teachers is the most relevant for assessing the validity of the *Passport to Teaching* certification in elementary education. (See Appendix D for more on ABCTE's teacher licensure examinations.) The 22 teachers not in self-contained classroom settings were not included in the analysis because they do not have a valid comparison group. Those teachers did not teach all subject areas, so they could spend more time on one or more subjects.



Study Findings

The analysis contrasts all self-contained elementary classroom teachers whose examination scores would qualify them for ABCTE certification with those who would not receive certification. This is the comparison of interest for policymakers wanting to use the *Passport to Teaching* credential as an indication of elementary teacher quality. To pass, ABCTE candidates must demonstrate proficiency on both the Professional Teaching Knowledge (PTK) exam and the Multiple Subject Exam (MSE).

The 13 teachers scoring at the proficient level on both certification examinations, therefore meeting the certification criteria, are referred to as “passing” teachers. The other 42 teachers, failing one or both of the examinations and, therefore, not meeting the certification qualifications, are referred to as “failing” teachers.

Students of passing teachers had substantial overall improvement in achievement, compared with students of failing teachers. Passing teachers also had positive student learning gains in each subject area, while failing teachers showed below-average student learning gains in every subject area except reading (see Table 1). This suggests that ABCTE certification in elementary education is a valid indicator of teacher effectiveness in a self-contained classroom.

Overall improvement in students’ achievement is a combined average of student performance in all four subject areas tested by Tennessee. Students of passing teachers made positive gains in relation to their peers, while students of failing teachers did not make as much progress. The difference in student achievement between passing and failing teachers is a statistically significant 1.04 NCE gain advantage for students of passing teachers. (Statistical significance is based on results from a two-tailed t-test.)

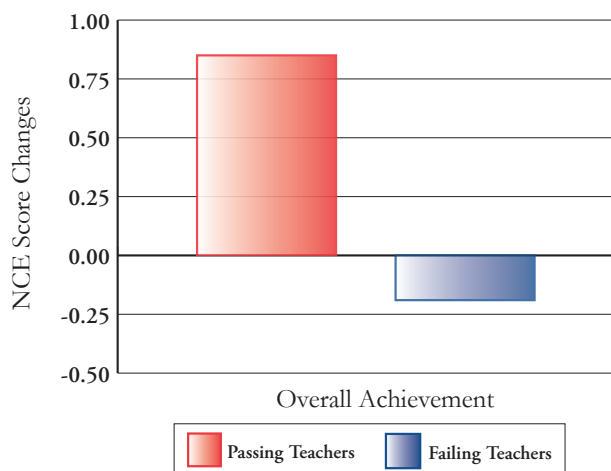
Teachers who met the ABCTE certification requirements for elementary education produced greater academic achievement from their students than teachers who did not meet the requirements. The greatest difference in student learning gains by individual subject area was in mathematics; passing teachers’ students had a statistically significant 2.38 NCE gain advantage. In addition, the students of passing teachers showed higher learning gains in science and social studies.

The average learning gains of the students of passing teachers were all above zero, indicating that passing teachers’ students exceeded one year’s progress in all subjects. Except in reading, failing teachers’ students made less than one year of progress, compared with their peers.

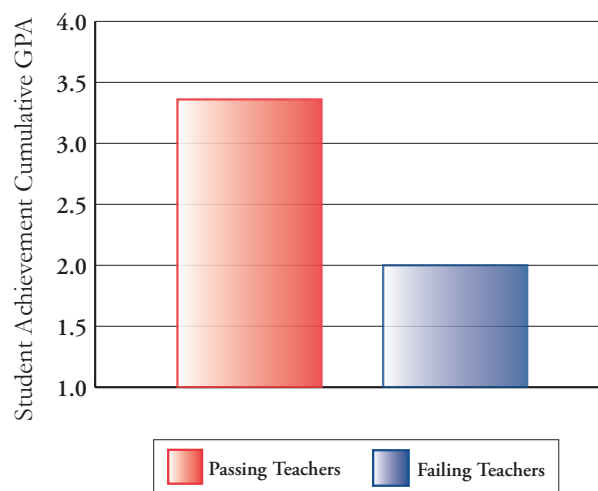
Size of Student Learning Gains

The 2004 TVAAS Report Card scale offers another way to compare the magnitude of the student NCE changes (see Appendix C). The report card expresses the scores as conventional academic grade points based on ranges of NCE changes. From these a grade point value was assigned, based on the typical 4.0-point scale, for each subject area’s student learning gain level. A grade point average (GPA) was then computed for the students of each group of teachers.

Passing teachers’ students received an average B+, or 3.36 GPA, while failing teachers’ students achieved an average C, or 2.0 GPA (see Figure 2). Results based on teachers passing the individual certification examinations also are shown in Table 2. Figure 1 shows the importance of both exams in determining licensure because of the impact of passing both ABCTE exams on student achievement.

Figure 1: Achievement of Students of Self-Contained Classroom Teachers

Note: This bar graph shows the positive impact on student achievement of teachers who passed both certification exams; 13 teachers passed both exams and 42 teachers failed one or both exams.

Figure 2: Grade Point Average of the Students of Self-Contained Classroom Teachers

Note: This bar graph uses a cumulative student learning gain GPA based on the 2004 TVAAS Report Card for student NCE change levels in math, reading, science and social studies. The combined weight is based on the same subject-area weights for ABCTE's Multiple Subject Exam.

Tables 1 and 2 provide detailed, numerical results that were used to create Figures 1 and 2, respectively. The average NCE change for students of each group of teachers, passing and failing, is reported in Table 1. Table 2 contains the corresponding grades according to the Tennessee Report Card scale of student NCE changes (see Appendix C).

Table 1: Normal Curve Equivalent Scores for Students of Passing And Failing Teachers

	Passing	Failing
Number of Teachers	13	42
Overall Student Achievement	0.85*	-0.19
Mathematics	2.12**	-0.26
Reading	0.17	0.18
Science	0.44	-0.49
Social Studies	0.59	-0.38

Notes:

* The difference in student achievement between passing and failing teachers is statistically significant to the 5 percent level.

** The difference in student achievement between passing and failing teachers is statistically significant to the 1 percent level.

Table 2: Grades of Students of Passing and Failing Teachers

Level of Gains (based on 2004 TVAAS Report Card)	Passing	Failing
Mathematics	A	C
Reading	C	C
Science	A	C
Social Studies	A	C
Cumulative GPA	3.36	2.0

Next Steps

The promising data collected by the American Board for Certification of Teacher Excellence to validate its *Passport to Teaching* certification in elementary education is the first step in ABCTE's commitment to stringent validity studies that include measures of student learning gains. ABCTE's confidence in the *Passport to Teaching* certification program leads it to believe that further studies with larger sample sizes will confirm the data compiled in this study and other planned studies of ABCTE examinations.

Although student learning gains are essential to demonstrate examination validity, ABCTE also plans to continuously review its products so as to maintain the reliability and rigor of its examinations. ABCTE has commissioned Mathematica Policy Research, Inc., to conduct a survey of principals

and a longitudinal study of current teachers with *Passport to Teaching* certification. These and other studies will examine the strengths of ABCTE-certified teachers, compared with teachers certified through other routes.

ABCTE pledges to help states and school districts select high-quality teachers by examining subject matter mastery and knowledge of research-based teaching methods. These two criteria can predict teaching success, according to the research. This study shows that ABCTE examinations correctly predict teachers' impact on their students' achievement. State and district education leaders who are recruiting and selecting new teachers can employ teachers certified through the *Passport to Teaching* process to help improve their students' achievement levels.



Appendix A: Technical Advisory Committee

Several individuals made significant contributions to the design of this validity study and the analysis of its findings.

Michael Podgursky
University of Missouri

Jay P. Greene
Manhattan Institute

Y. M. Thum
Michigan State University

Herbert J. Walberg
Stanford University

Stephen Rollin
Florida State University

Appendix B: Characteristics of the Study Participants

Study participants had different teaching experience, education and licensing backgrounds. Most of the teachers held a professional license. The student learning gain average for all study participants was a normal curve equivalent of 0.06. Across the entire population of Tennessee's teachers, an average of zero is expected; therefore, participants in this study are a representative population of teachers in terms of their impact on student achievement.

The table below shows the breakdown of participants in terms of years of teaching, highest degree attained and licensure level. The data show that passing and failing ABCTE certification requirements had no bias toward one type of teacher.

Characteristic	Passing Teachers	Failing Teachers
Years of Teaching	16.8	13.8
Bachelor's Degree	44.4%	41.7%
Master's Degree	55.6%	52.8%
Doctorate Degree	0.0%	5.6%
Apprentice License	11.1%	2.8%
Professional License	88.9%	97.2%

Appendix C: 2004 Tennessee Value-Added Assessment System/Value-Added Grade Scale

The table below shows the grade scale used by Tennessee to give a reference point for the levels of normal curve equivalent (NCE) gains made by schools and districts. Generally the top 20 percent of schools and districts would receive “exceptional” status based on their students’ improvement in that subject area. The next 20 percent of schools and districts would receive an “exceeds state growth standard” status, and so on. Considering each group of participants in the same manner yields a better understanding of their collective magnitude of NCE gains.

Grade	Status	Normal Curve Equivalent Mean Gain Range			
		Reading/Language Arts	Mathematics	Social Studies	Science
A	Exceptional	> 1.2	> 1.5	> 0.4	> 0.6
B	Exceeds State Growth Standard	0.7 to 1.2	0.5 to 1.5	-0.1 to 0.4	-0.2 to 0.6
C	Maintains State Growth Standard	-0.1 to 0.6	-0.5 to 0.4	-0.8 to -0.2	-1.1 to -0.3
D	Below State Growth Standard	-0.6 to -0.2	-1.9 to -0.6	-1.6 to -0.9	-1.9 to -1.2
F	Deficient	< -0.6	< -1.9	< -1.6	< -1.9

Source: *Tennessee 2004 Report Card* [online]. Available at: <<http://www.k-12.state.tn.us/rptcrd04/gradescale.htm>>.

Appendix D: American Board for Certification of Teacher Excellence Examinations

American Board for Certification of Teacher Excellence (ABCTE) examinations are developed using the same methodology for each subject area. The assessments are criterion-referenced by design and are based on ABCTE’s standards, test blueprints, performance objectives and test/item specifications. All ABCTE assessments are developed so that their scores have a high degree of internal consistency (reliability) and are valid measures of an individual candidate’s knowledge of the subject area(s) assessed.

“Validity refers to the degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of tests. Validity is, therefore, the most fundamental consideration in developing and evaluating tests.”¹⁵ Validity has been at the forefront of ABCTE’s test development processes, starting with the development of content standards for each test and continuing through test specifications (blueprints), item writing and reviewing, field testing, statistical analysis, operational forms assembly and equating and standard setting.

Examination development involves subject matter experts (e.g., scholars, teachers, principals, administrators, teacher educators and curriculum developers) in the appropriate content area at each step of the process. These test development activities are led by ABCTE personnel and third-party contractors.

Notes

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- ⁴ Grover J. Whitehurst, *Teacher Recruitment, Preparation and Development* (Washington, D.C., U.S. Department of Education, April 24, 2002).
- ⁵ D. D. Goldhaber and D. J. Brewer, *Better Teachers, Better Schools*, ed. M. Kanstoroom and C. E. Finn Jr. (Washington, D.C.: The Thomas B. Fordham Foundation, 1999), 83–102.
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- ⁷ P. E. Barton, R. J. Coley, and H. Weglinsky, *Order in the Classroom: Violence, Discipline, and Student Achievement* (Princeton, N.J.: Policy Information Center, Educational Testing Service, 1998).
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- ¹⁰ D. Boyd, P. Grossman, H. Lankford, S. Loeb, and J. Wyckoff, *How Changes in Entry Requirements Alter the Teacher Workforce and Affect Student Achievement* (Cambridge, Mass.: National Bureau of Economic Research, 2005). Available at: <<http://www.nber.org/papers/W11844>>.
- ¹¹ P. Decker, D. Mayer, and S. Glazerman, *The Effects of Teach For America on Students: Findings from a National Evaluation* (Princeton, N.J.: Mathematica Policy Research, Inc., June 2004). Available at: <<http://www.teachforamerica.org/documents>>.
- ¹² Public Law 107-110, 107th Congress, 2d sess. (8 January 2002), *No Child Left Behind Act of 2001*. Available at: <<http://www.ed.gov/policy/elsec/leg/esea02/107-110.pdf>>.
- ¹³ The Teaching Commission, *Teaching at Risk: A Call to Action* (Washington, D.C.: The Teaching Commission, 2004). Available at: <http://www.theteachingcommission.org/press/FINAL_Report.pdf>.
- ¹⁴ Data taken from the *Tennessee 2004 Report Card*. Available at: <<http://www.k-12.state.tn.us/rptcrd04/index.asp>>.
- ¹⁵ American Educational Research Association, American Psychological Association, and National Council on Measurement in Education, *Standards for Educational and Psychological Testing* (Washington, D.C.: American Educational Research Association), 9.

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