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NEA NATIONAL EDUCATION ASSOCIATION
Great Public Schools for Every Student

# Toward Increasing Teacher Diversity:

## *Targeting Support and Intervention for Teacher Licensure Candidates*

By Linda Tyler, Educational Testing Service

*With Brooke Whiting, Sarah Ferguson and Segun Eubanks, National Education Association, and Jonathan Steinberg, Linda Scatton and Katherine Bassett, Educational Testing Service*

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# Acknowledgements

We would like to thank many people for their contributions to this report. We recognize the efforts of our collaborators from NEA: Segun Eubanks, Sarah Ferguson, Brooke Whiting and Nesa Chappelle for raising some of the original questions that guided the research, as well as for reviewing and reacting to several drafts. We also acknowledge the contributions of many of our ETS colleagues: Katherine Bassett for her leadership in bringing our two organizations together; Shelby Haberman, Jerry DeLuca, Kevin Larkin, Amy Schmidt, Rick Tannenbaum and Michael Zieky for lending their expertise in reviewing, advising and shaping this report; Cathy Trapani, Darlene Rosero, Waverley VanWinkle, Steven Holtzman, Yunfeng Chen, Tony Chu and Jinny Lieberman for providing various levels of analytical and research support; and Drew Gitomer, Catherine Millett and Dan Eignor for reviewing the report.

Since 2006, the National Education Association (NEA) and Educational Testing Service (ETS) have been working collaboratively to support teacher candidates in preparing for *The Praxis Series*™ of teacher licensure assessments, currently used in 41 states and territories. Our focus has been particularly targeted to assisting minority candidates. This work is foundational to the mission of both of our organizations.

As we embarked upon this work, we realized that we needed stronger research into specific areas of performance gaps on teacher assessments between minority and nonminority candidates. We then jointly conducted research into this issue. The research involved both statistical analyses of *Praxis*™ data and field research, collecting information from faculty and candidates. The purpose of this research was to form a solid foundation of understanding to inform our efforts to support candidates.

In this report, we share the findings of that research, as well as a summary of our efforts, to date, to support teacher candidates. In the report, we focus on the disparate performance between minority and nonminority teacher candidates on licensure tests. The data show that minority teacher candidates score lower on average on their licensure tests. The data also show that minority teacher candidates take licensure tests later in their academic and professional careers, and that the delay correlates with lower test scores and passing rates.

In all, the challenges involved in closing the diversity gap at the head of the classroom are as complex as those involved in closing the achievement gap among students. Yet there is much already in place on which to build. Many colleges and universities, for example, operate extensive intervention and support programs to help minority students through the licensure process. And numerous organizations provide tools and services to help minority teacher candidates gain the knowledge and skills they need for academic and professional success.

The quality of a child's education has an enormous influence on his or her success in life, and on the health and vitality of our communities and our nation. We can only attain those goals by producing a teaching force that is both of the highest professional quality and as diverse as our nation's student body.

ETS and NEA are committed to this work, and we hope you find this report a useful resource. We invite you to join us in our efforts to bring more minority teachers into our nation's public school classrooms.

Best regards,

Kurt M. Landgraf
President and CEO
Educational Testing Service

Dennis Van Roekel
President
National Education Association

# Introduction

The demographic disparity between the U.S. teaching force and the pre-kindergarten through grade 12 (P–12) student population is well known within the education community. In 2007–08, the most recent year for which we have both student and staff data from the National Center for Education Statistics, minority students made up 40.7% of the public school population, while minority teachers made up only 16.5% of the teaching force.[1] Considering both the importance of role models for students and the importance of a teaching force that reflects the country's diversity, this demographic gap needs attention.

In 2007–08, the most recent year for which we have both student and staff data from the National Center for Education Statistics, minority students made up 40.7% of the public school population, while minority teachers made up only 16.5% of the teaching force. Considering both the importance of role models for students and the importance of a teaching force that reflects the country's diversity, this demographic gap needs attention.

Increasing the diversity of the teaching workforce is critical to the NEA's vision of a great public school for every student. While NEA has undertaken numerous initiatives to address this challenge — in the areas of teacher recruitment, preparation, licensure, district hiring, compensation, tenure and other aspects of retention — NEA decided to address the issue of initial teacher licensing and licensure assessments with ETS, an organization that provides teacher licensure assessments to 41 states and territories. NEA and ETS want to better understand why and how minority candidates struggle with teacher licensure assessments in order to improve interventions that could help address the problem.

NEA and ETS decided that the initial phase of research would focus on four key questions:

- What is the extent of the achievement gaps on teacher licensure tests and how do we articulate them?
- Is the gap the same on all of the highest-volume tests?
- What are the characteristics of people who do well or poorly on these tests?
- How and in what ways can ETS and NEA intervene to narrow the gaps?

The research was conducted in two parts: first, an examination of the data for a number of high-volume *Praxis*™ tests over the period of time from 2005 to 2009; and second, in parallel, informal field research, in which NEA and ETS staff conducted faculty and student interviews on a number of campuses.

Both organizations realize that success on teacher licensure assessments is not an isolated phenomenon; it is consistent with the performance or achievement gap that is persistent from early on in the P–12 system in this country. NEA and ETS, however, are committed to improving interventions for prospective teachers — that is, appropriate and systematic intervention in the form of extensive learning programs, not simply last-minute test prep, to help candidates gain knowledge and skills to better prepare them for success on teacher licensure assessments and, more importantly, success in the classroom.

1 National Center for Education Statistics, *Characteristics of Public, Private, and Bureau of Indian Education Elementary and Secondary School Teachers in the United States: Results From the 2007-08 Schools and Staffing Survey* (NCES 2009-324), 2009, Table 2, "Percentage distribution of school teachers by race/ethnicity, school type, and selected school characteristics: 2007–08,"; http://nces.ed.gov/pubs2009/2009324/tables/sass0708_2009324_t12n_02.asp, accessed November 8, 2010; and Table 3, "Percentage distribution of students by sex, race/ethnicity, school type, and selected school characteristics: 2007–08,"; http://nces.ed.gov/pubs2009/2009321/tables/sass0708_2009321_s12n_03.asp, accessed November 8, 2010.

In this report, we summarize the results of the data analysis and interviews to provide insight and direction to intervention, we describe some model intervention programs that have been developed to assist students and we offer commitments and recommendations for the future.

The report contains four sections:

- **Findings from Data Analysis** — We describe and explore the performance differences between minority- and nonminority-teacher candidates based on available licensure assessment data. First, we focus on tests of academic skills and then on tests of specialty areas and pedagogy.
- **Findings from Campus Interviews** — NEA and ETS interviewed faculty involved in teacher programs that graduate large numbers of minority students to better understand the challenges their students face and how support can be provided. We summarize six major findings from these interviews.
- **Examples of Intervention for Prospective Teachers** — We describe several efforts where significant intervention is being offered for prospective and in-service teachers, some on academic skills and some in the areas of content and pedagogy. We also describe intervention, preparation efforts and tools offered by NEA and ETS.
- **Next Steps and Conclusion** — We discuss NEA's and ETS's commitments to increasing teacher diversity and lay out the next steps for both organizations, recognizing the need for more collaborators to help improve intervention efforts.

# Findings from Data Analysis

This section summarizes the results of research and analysis designed to answer the questions posed in the introduction. The full results of this research can be found in a free technical research report available for download on the ETS website.[2]

The analyses were based on the records of more than 300,000 test takers from the *Praxis* database who took a paper-based test.

The analyses were based on the records of more than 300,000 test takers from the *Praxis* database who took a paper-based test. The teacher candidates took either a *Praxis I*® test (for program entrance or for licensure) or a *Praxis II*® test (for licensure) from *The Praxis Series*™ between November 2005 and November 2009. During that period, there were 20 test administrations for the *Praxis I* tests and 29 for the *Praxis II* tests. Only first-time test takers were included; if a candidate repeated a test, the performance on the second (or third or subsequent) attempt was not included.

We also used selected biographical factors that the *Praxis* program routinely collects from all test takers. These background data are self-reported by test takers. The characteristics collected include the following:

- Race/ethnicity
- Best language of communication
- Language(s) first learned as a child
- Language other than English in which the test taker is proficient
- Highest education level the test taker has attained
- Type of teacher preparation program
- The number of years it has been since the test taker attended college or graduate school
- Cumulative undergraduate grade point average to date
- Whether the test taker has ever been enrolled in a teacher education program
- The test taker's current teaching status
- The test taker's intention to teach in the same state as the one in which they are taking the assessment
- The kind of geographic area in which the test taker is most likely to teach next year

It should be noted that all background information is self-reported by the test takers. If candidates from one racial/ethnic group, for example, were less likely than others to identify their racial/ethnic background on the Biographical Information Questionnaire that accompanies each *Praxis* test, our analyses by race/ethnicity could be skewed. There is no feasible way to identify erroneous background information.

It also should be noted that we present many of our results in terms of average scores for various demographic subgroups. While this is a useful way to reveal overall gaps, these averages do not mean that all members of particular subgroups performed at the mean performance level of their subgroups. In fact, there is wide variability in all subgroups' performances, and there are high and low performers in every subgroup, regardless of the overall performance of the demographic subgroup.

2 Michael T. Nettles, Linda H. Scatton, Jonathan H. Steinberg and Linda L. Tyler, *Performance and Passing Rate Differences of African American and White Prospective Teachers on Praxis Examinations* (A Joint Project of the National Education Association and the Educational Testing Service), ETS Research Report, forthcoming 2011.

We have included performance data of minority subgroups as numbers allow. For several of the more fine-grained analyses, there were adequate data for only African-American and White test takers.

## Praxis I *Tests of Academic Skills*

Our analysis first addressed the *Praxis I* Pre-Professional Skills Tests (PPST®) in Mathematics, Reading and Writing. Many colleges and universities use these tests to evaluate individuals for entry into teacher education programs, and in some states, the tests are required for licensure. The Writing test contains a 30-minute essay; all other questions on the test are multiple-choice. The Mathematics test focuses on the key concepts of Mathematics and on the ability to solve problems in a quantitative context; the level is equivalent to that of the first two years of high school Mathematics. The Reading test features Reading passages of a variety of lengths and on a variety of subjects, accompanied by questions that address literal, critical and inferential comprehension. All of the content and skills in the three *Praxis I* tests are expected to have been mastered in P–12 education, are covered in all states' P–12 standards and in the Common Core Standards and, therefore, cover skills that do not exceed a high school level.

***Performance gaps.*** The results from our analyses were consistent with results from similar tests of academic skills, such as the SAT® and ACT®. That is, we found significant differences in average scores between test takers of different racial/ethnic subgroups. Table 1 shows the average scores of test takers[3] for each of the *Praxis I* tests broken out by race/ethnicity and the standardized differences between each minority group and White test takers.[4]

Note that the scale of each test has a range of 150-190. While the three tests use the same scale, the scales are not related to each other. For example, a score of 170 on the *Praxis I* Mathematics test does not indicate the same level of performance as a score of 170 on the *Praxis I* Reading test.

Note also that in some states, candidates who score above a state-selected score on the SAT, ACT and/or GRE® tests are exempt from taking the *Praxis I* tests. This means that some of the best-prepared students in all subgroups are not included in the data in Table 1.

The standardized difference for each minority group is shown in parentheses in the chart.[5] The standardized difference statistic is a helpful way of representing the difference between two subgroups because it provides a common way of looking at disparities across tests with different score scales. If there were no differences between the subgroups, the standardized difference would be zero. Most assessment experts consider a standardized difference of 1.0 or greater to be large, representing a significant disparity in performance between the two subgroups.

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3 More complete descriptive statistics can be found in the Nettles, et al., research report forthcoming 2011.

4 Approximate sample sizes by racial/ethnic group were: 65,400 White test takers, 8,200 African-American test takers, 1,900 Hispanic test takers, 2,200 Asian test takers, and 450 Native-American test takers.

5 The standardized difference between two subgroups on a test represents how much greater or smaller the difference between subgroups is compared to the standard deviation of the test and is calculated by dividing the score gap by that test's standard deviation. (The standard deviation for a test is a measure of the variability among scores on a test, that is, how widely spread out the performances are across the score scale.)

**Table 1**

*Group means on* Praxis I *tests by ethnicity and race, and standardized differences between White and minority subgroups*

| Race/Ethnicity | *Praxis I* Tests | | |
|---|---|---|---|
| | Mathematics | Reading | Writing |
| White test takers | 178.59 | 178.03 | 175.96 |
| African-American test takers | 170.56 (-1.16) | 171.61 (-1.14) | 171.97 (-0.95) |
| Hispanic test takers | 174.02 (-0.66) | 175.06 (-0.54) | 173.71 (-0.54) |
| Asian test takers | 177.99 (-0.09) | 174.09 (-0.71) | 173.82 (-0.51) |
| Native-American test takers | 174.51 (-0.59) | 175.33 (-0.50) | 173.69 (-0.54) |

The gaps shown in Table 1 are not uniform across tests or race/ethnicity subgroups. For example, for African-American test takers, Mathematics and Reading show the largest gaps, followed by Writing. In the case of Hispanic test takers, the gap is largest in Mathematics, followed by Reading and Writing. Asian test takers have the largest gap between their average performance and White test takers' average performance in the area of Reading, followed by Writing, and then Mathematics, which has the smallest gap (less than 1 scale score point or 0.09 of a standard deviation). The largest gaps in the tables are in the area of Mathematics, where the average mean scores of the African-American test takers are over 8 scale score points or 1.16 standard deviations lower than the average mean score of the White test takers.

Table 2 presents a different view of the gaps, this time in terms of the pass rate gap, the difference between the proportions of each subgroup that passed the test. "Passing" is defined as meeting the cut score set by whichever state the candidate has designated as the state in which he or she wants to teach.

**Table 2**

*Differences in pass rates on* Praxis I *tests by race and ethnicity*

| Race/Ethnicity | *Praxis I* Tests | | |
|---|---|---|---|
| | Mathematics | Reading | Writing |
| Gap between African-American and White test takers | -41.4% | -40.8% | -35.3% |
| Gap between Hispanic and White test takers | -21.0% | -16.8% | -16.5% |
| Gap between Asian and White test takers | -7.0% | -24.3% | -16.3% |
| Gap between Native-American and White test takers | -18.7% | -16.4% | -22.2% |

The largest differences exist for African-American test takers, with passing rates that are lower than White test takers by 35% or more. Native-American candidates have the next highest pass rate differences with White test takers, ranging from 16.4% lower on the Reading test to 22.2% on the Writing test. Asian test takers have the greatest range of differences, from 7.0% on the Mathematics test to 24.3% on the Reading test.

An additional analysis was undertaken to check whether these differences would change significantly if we did not include the first-time score of all candidates, but instead, the subsequent performance for those who did not pass initially and took it a second time. We found that retaking a test did not make a significant difference. When candidates who passed the test after taking it a second time are included, the pass rates increase slightly more for African-American and Native-American candidates than for White, Hispanic or Asian candidates. The greatest gains in passing rates across the groups occurred on the Reading test (from a 1.8% gain for Asian test takers to 3.1% for Native-American test takers), with lower gains on the Writing test (gains of 1.3–2.5%) and the Mathematics test (gains of 0.7–1.6%).

As previously mentioned, the standardized performance differences found on the *Praxis I* tests of basic academic competencies are similar to those found on the SAT, ACT and GRE tests and similar assessments used for admissions purposes. In their 1999 study on group differences on standardized admissions tests and other indicators of educational achievement, Wayne Camara and Amy Schmidt from the College Board® provided the information shown in Table 3, expressed in terms of standardized differences, on the performance gaps between race/ethnicity subgroups.[6]

**Table 3**

*Standardized performance differences on various standardized admissions tests by race and ethnicity*

| Admissions Test | African-American–White Gap | Hispanic–White Gap | Asian–White Gap |
|---|---|---|---|
| SAT Verbal | -0.83 | -0.63 | -0.25 |
| SAT Math | -0.92 | -0.61 | -0.02 |
| ACT English | -0.89 | -0.61 | -0.13 |
| ACT Mathematics | -0.88 | -0.47 | 0.39 |
| ACT Reading | -0.82 | -0.50 | -0.13 |
| GRE Verbal | -0.96 | -0.53 | -0.07 |
| GRE Quantitative | -0.98 | -0.46 | 0.46 |
| GRE Analytical | -1.11 | -0.62 | -0.06 |
| GMAT® Total | -1.03 | -0.35 | 0.02 |
| LSAT | -1.14 | -0.88 | -0.08 |
| MCAT® Verbal Reasoning | -0.96 | -1.00 | -0.29 |

Some stakeholders in the preparation and licensure process have questioned the value of the *Praxis I* tests. Sometimes the tests are seen as needless hurdles to a teaching career that can trip up candidates who would otherwise become effective teachers. But the importance of passing the *Praxis I* tests is borne out by a recent study by ETS researchers Drew Gitomer, Terran Brown and John Bonett. The study offers an important piece of good news in the discussion of differences in subgroup performances on the *Praxis I* and *Praxis II* tests.[7] Gitomer, Brown and Bonett posed the question of whether the *Praxis I* tests are an unwarranted obstacle to pursuing a teaching career or whether they are measures of content and skills that

6 W.J. Camara and A.E Schmidt, *Group differences in standardized testing and social stratification*, College Board Report No. 99-5, New York: College Board, 1999. No data for Native-American test takers were included in this report.

7 D.H. Gitomer, T. Brown and J. Bonett, "Useful signal or unnecessary obstacle? The role of basic skills tests in teacher preparation." Paper prepared for Association for Public Policy Analysis and Management Conference. Los Angeles, Calif., 2008.

Undertaking a rigorous analysis of three years of performance data, the researchers found that candidates who successfully passed the *Praxis I* tests on their first try had a much better chance of passing their *Praxis II* content tests than those who required more than one attempt to pass the *Praxis I* tests.

are important for success in teacher preparation, particularly as shown by the ability to pass the required *Praxis II* tests. Undertaking a rigorous analysis of three years of performance data, the researchers found that candidates who successfully passed the *Praxis I* tests on their first try had a much better chance of passing their *Praxis II* content tests than those who required more than one attempt to pass the *Praxis I* tests. The researchers reported their results not just for test takers in the aggregate, but also by subgroup. Their results showed that African-American test takers who passed the *Praxis I* tests successfully on their first try were nearly as likely to pass their *Praxis II* tests as were White test takers with similar success on the *Praxis I* tests and similar undergraduate grade point averages. (Adequate data were available for White and African-American subgroups only.) These results strongly suggest that when African-American students come into their programs with a strong skill base and do not struggle to pass the *Praxis I* tests, the gaps around program success and *Praxis II* performance virtually disappear.

One common perception in the field is that non-White subgroups struggle more with constructed-response (essay) questions than with multiple-choice questions. The data show that this is not universally the case and that an intervention program based solely on that belief would miss the need to address other, sometimes larger, opportunities for improvement.

### *Opportunities for* Praxis I *Intervention*

One common perception in the field is that non-White subgroups struggle more with constructed-response (essay) questions than with multiple-choice questions. The data show that this is not universally the case and that an intervention program based solely on that belief would miss the need to address other, sometimes larger, opportunities for improvement.

The *Praxis I* Writing test contains a 30-minute essay to assess Writing proficiency, in addition to 38 multiple-choice questions. As Table 4 shows the gaps between White and non-White test takers are smaller on average for the essay than for the multiple-choice questions. All race/ethnicity subgroups perform better on the constructed-response item than the multiple-choice questions. From this perspective, the greatest area of opportunity for improvement in the *Praxis I* Writing test is the multiple-choice section, which covers Grammatical Relationships, Structural Relationships and Word Choice and Mechanics.

**Table 4**

*Differences in percent correct on multiple-choice questions and percent of the highest possible score on the constructed-response question, with standardized differences, on the* Praxis I *Writing test by race/ethnicity*

| Race/Ethnicity | Item Type | |
|---|---|---|
| | Multiple Choice | Constructed Response |
| White test takers | 61.8% | 65.8% |
| African-American test takers | 48.5% | 59.8% |
| **Gap between White and African-American test takers** | **-0.27** | **-0.12** |
| Hispanic test takers | 54.5% | 62.0% |
| **Gap between White and Hispanic test takers** | **-0.15** | **-0.08** |
| Asian test takers | 55.6% | 61.5% |
| **Gap between White and Asian test takers** | **-0.13** | **-0.09** |
| Native-American test takers | 54.5% | 62.3% |
| **Gap between White and Native-American test takers** | **-0.15** | **-0.07** |

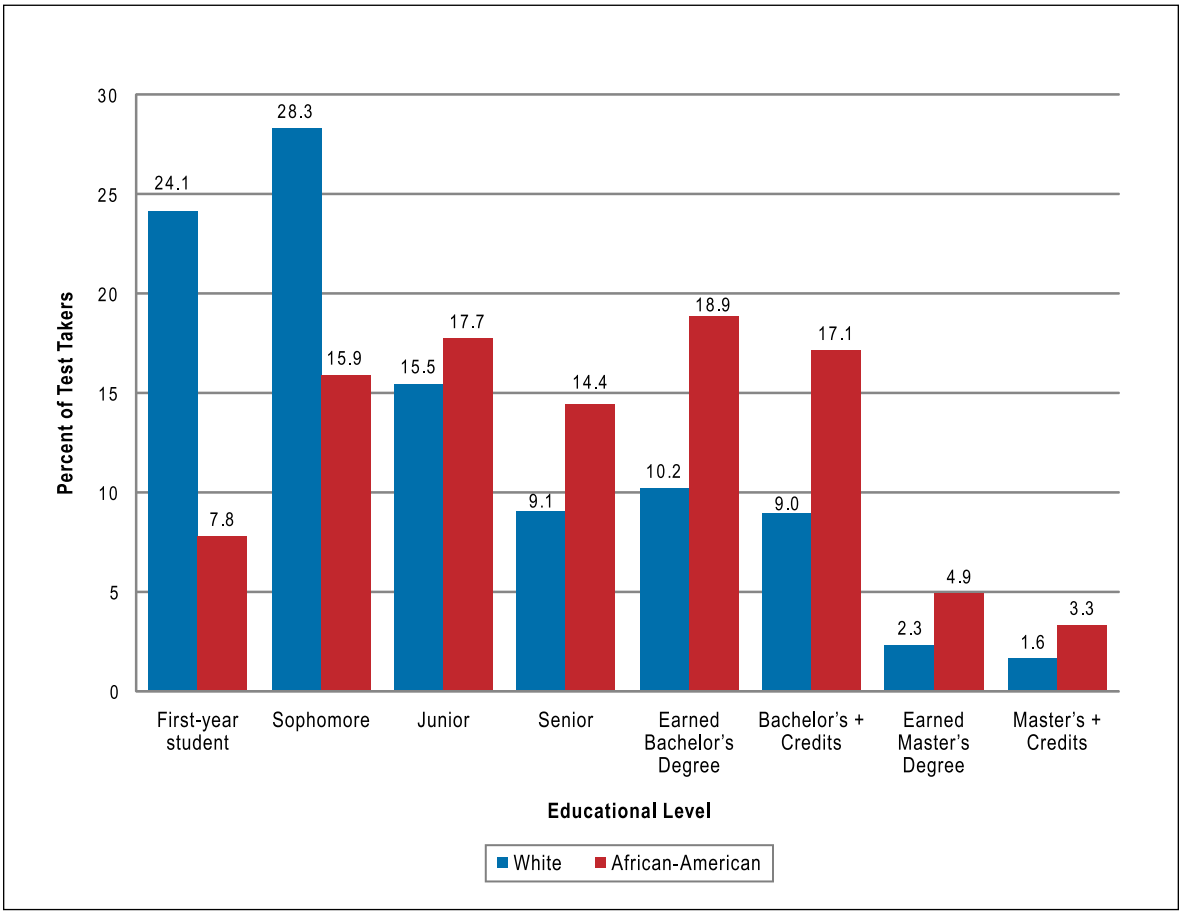
Our data analysis uncovered several other significant findings that may assist institutions and organizations in their work on intervention programs to build the academic skills of prospective teachers. The first finding relates to candidates' education levels when they took the *Praxis I* tests for the first time. (Sufficiently reliable data were available for White and African-American candidates only.)

Figure 1 shows that African-American test takers in significant numbers took the *Praxis I* tests at later stages in their college careers than did White test takers. White candidates tended to be in their first two years of college when taking the *Praxis I* tests, while African-American candidates tended to be further along in their schooling or careers.

Slightly over half of the White test takers (51.0%), as compared with slightly more than one-fifth of the African-American test takers (20.4%), were either first-year students or sophomores when they took the *Praxis I* tests. Test performance is, on average, higher for candidates in their first two years of college, as compared with later stages of their education or careers. For White candidates, first-year students and sophomores scored about one to two points higher on the *Praxis I* Mathematics test, for example, than those taking the test as juniors or seniors. For African-American test takers, first-year students and sophomores scored about one to three points higher on the *Praxis I* tests than those at all other educational levels. Available data explain neither why African-American candidates were more likely to take the *Praxis I* tests later in their careers than White candidates, nor why first-year students and sophomores score higher on average than those at later educational or career stages.

**Figure 1**

*Distribution of White and African-American test takers by education level when taking the* Praxis I *tests*




Although these results raise more questions than the program's biographical data can answer and demand more investigation, the findings can inform colleges and universities assisting prospective teachers in their preparation programs. Students who express an interest in teaching may benefit from taking the *Praxis I* tests earlier in their college careers rather than waiting. If they need intervention to build their academic skills, it should be started as early in their college careers as possible.

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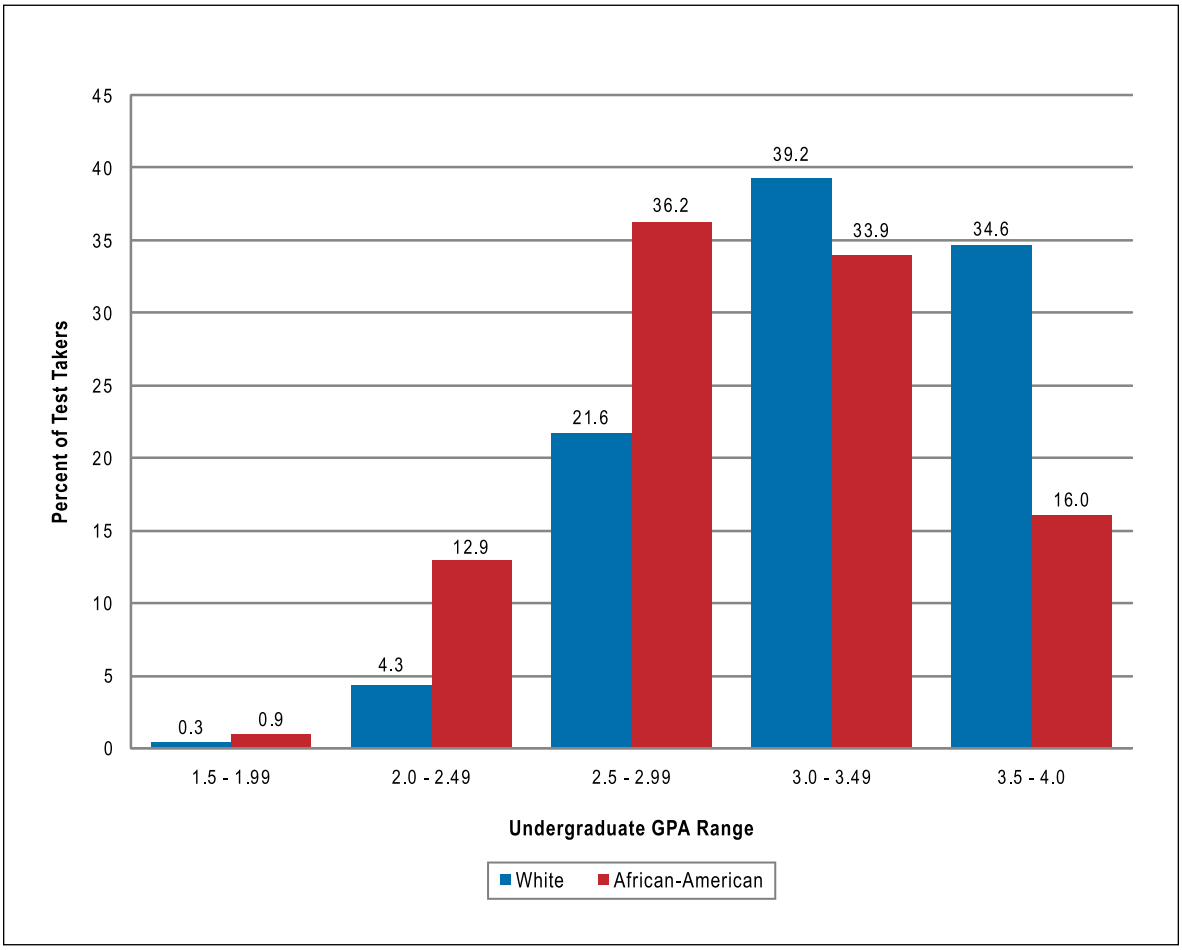
The second most relevant factor in our exploration of test-taker characteristics was undergraduate grade point average (UGPA). Figure 2 compares the UGPAs of African-American and White *Praxis I* test takers in five ranges, 3.5–4.0, 3.0–3.49, 2.5–2.99, 2.0–2.49 and 1.5–1.99. It is important to note that UGPAs are self-reported and confounded with other factors, such as school selectivity and choice of major (i.e., it may be easier to get better grades at some colleges and in some majors). Just under three-quarters of the White test takers had UGPAs in the two highest ranges, as compared with about half of the African-American test takers. A larger share of African-American test takers had UGPAs in the 2.5–2.99 range and the two ranges below 2.5 than did their White counterparts.

**Figure 2**

*Distribution of White and African-American* Praxis I *test takers by undergraduate grade point average*




The difference in UGPA matters because, on average, scores on the *Praxis I* tests increased as UGPA increased. This was true for White and African-American candidates. On the *Praxis I* Reading test, the difference in average score for White candidates from the lowest to the highest UGPA interval was 6.4 points and 3.9 points for African-American candidates. A very similar pattern was found with the *Praxis I* Mathematics (White candidates = 4.3 points; African-American candidates = 2.5 points) and Writing (White candidates = 5.0 points; African-American candidates = 2.9 points) tests.

While the finding about the correlation between UGPA and *Praxis I* scores is intuitive, there are implications for programs that are actively assisting their students to prepare for entry and licensure tests. UGPA should generally be a useful gauge of students' readiness to test and a measure of the depth of intervention needed. If a student is achieving a C average or less, his or her chances of passing the required licensure tests are significantly lower than a student with an A or B average. The students with lower UGPAs may benefit from taking targeted diagnostic tests and receiving help in relevant academic areas before taking their official tests.

UGPA should generally be a useful gauge of students' readiness to test and a measure of the depth of intervention needed.

## Praxis II *Specialty Area and Pedagogy Tests*

The *Praxis II* tests are designed to measure knowledge of content, general pedagogy and content-specific pedagogy and are used to satisfy state licensure requirements. Over 140 *Praxis II* test titles are offered, covering the entire range of content-specialty areas and pedagogy domains. Various types of test questions, with multiple-choice and constructed-response questions being the most prevalent, are used on the tests. The pedagogy tests with the highest testing volumes are the Principles of Learning and Teaching (PLT) tests.

For our analysis, we examined the 12 assessments in the *Praxis II* series that had the highest testing volumes. First, we looked at the total scores. We found that, as with the *Praxis I* assessments, there were significant performance differences among subgroups.

For our analysis, we examined the 12 assessments in the *Praxis II* series that had the highest testing volumes. First, we looked at the total scores. We found that, as with the *Praxis I* assessments, there were significant performance differences among subgroups. Table 5 shows performances of African-American, Hispanic, Asian, Native-American and White test takers in terms of the average scaled scores and the standardized differences between the White and minority subgroups.

It is important to note that while all 12 test titles use a score scale with the same range (100–200), the scales are not related to each other. For example, a score of 150 on the Mathematics: Content Knowledge test does not indicate a level of performance comparable to that indicated by a score of 150 on the PLT: K–6 test.

**Table 5**

*Group means and standardized differences on* Praxis II *tests by race and ethnicity*[8]

| ***Praxis II* Tests** | **Race/Ethnicity** | | | | |
|---|---|---|---|---|---|
| | **White test takers** | **African-American test takers** | **Hispanic test takers** | **Asian test takers** | **Native-American test takers** |
| ***Elementary Education*** | | | | | |
| Elementary Education: Curriculum, Instruction, and Assessment | 176.75 | 159.72 (-1.25) | 168.93 (-0.58) | 171.10 (-0.42) | 168.07 (-0.65) |
| Elementary Education: Content Area Exercises | 158.58 | 152.05 (-0.74) | 154.08 (-0.51) | 155.41 (-0.36) | 154.03 (-0.52) |
| Elementary Education: Content Knowledge | 166.48 | 146.60 (-1.27) | 154.33 (-0.78) | 161.89 (-0.29) | 159.67 (-0.44) |
| ***Subject Specific*** | | | | | |
| English Language, Literature, and Composition: Content Knowledge | 178.23 | 157.90 (-1.41) | 171.68 (-0.46) | 172.50 (-0.40) | 173.18 (-0.36) |
| Mathematics: Content Knowledge | 147.36 | 121.45 (-1.19) | 136.33 (-0.50) | 143.09 (-0.19) | 138.15 (-0.42) |

*table continued on next page*

8 The testing volumes of these 12 titles vary overall and by race/ethnicity. Higher volumes tended to occur with Elementary Education and Pedagogy exams (approximately 53,000–120,000 test takers), while lower volumes tended to occur with the content-area tests, particularly Sciences (approximately 5,000–15,000 test takers). By race/ethnicity across tests, approximate volumes ranged from 4,200 to 100,000 among White test takers, from 350 to 11,000 among African-American test takers, from 100 to 4,000 among Hispanic test takers, from 230 to 2,550 among Asian test takers and from 100 to 700 among Native-American test takers.

**Table 5** *(continued)*

| *Praxis II* Tests | Race/Ethnicity | | | | |
|---|---|---|---|---|---|
| | White test takers | African-American test takers | Hispanic test takers | Asian test takers | Native-American test takers |
| Middle School Mathematics | 165.43 | 148.74 (-0.96) | 156.82 (-0.49) | 162.95 (-0.14) | 157.42 (-0.46) |
| Social Studies: Content Knowledge | 168.43 | 152.27 (-1.10) | 164.00 (-0.30) | 162.95 (-0.38) | 165.19 (-0.22) |
| Chemistry: Content Knowledge | 161.70 | 141.30 (-1.00) | * | 159.67 (-0.10) | * |
| General Science: Content Knowledge | 166.74 | 141.59 (-1.37) | 159.29 (-0.41) | 163.74 (-0.16) | * |
| Middle School Science | 159.01 | 143.16 (-0.97) | 152.58 (-0.39) | 158.67 (-0.02) | * |
| ***Pedagogy*** | | | | | |
| Principles of Learning and Teaching: Grades K–6 | 174.89 | 162.62 (-1.06) | 169.65 (-0.47) | 169.90 (-0.44) | 167.00 (-0.70) |
| Principles of Learning and Teaching: Grades 7–12 | 174.09 | 162.60 (-1.08) | 167.21 (-0.66) | 168.72 (-0.51) | 168.92 (-0.50) |

** Insufficient sample size*

As Table 5 reveals, the largest gaps existed between the White and African-American subgroups, with a gap of 1.0 standard deviation or larger for nine of the 12 tests. For Hispanic candidates, the gap with White test takers was largest on the Elementary tests, Mathematics tests and the PLT: 7–12 test. For Asian and Native-American test takers, the PLT and Elementary tests presented the largest gaps.

Table 6 displays the differences in pass rates for the same *Praxis II* tests. The passing rates were not entirely predictable from the score gaps and standardized differences found in Table 5. The passing standard in each state may be relatively high or low in relation to the performance gap and the distribution of scores for the test; depending on the test and subgroup performance, the cut-score level could have a larger or smaller effect on the percent passing within a subgroup and the pass rate gaps between subgroups. For example, the standardized difference in scores between White and African-American candidates for the Social Studies: Content Knowledge test was -1.10, similar to that for the PLT: 7–12 test. But the pass rate gaps were not as similar, as evidenced by a 36.3% gap for Social Studies and a 28.3% gap for PLT: 7–12.

**Table 6**

*Differences in pass rates on selected* Praxis II *tests by race/ethnicity*

| *Praxis II* Tests | Gap Between White Test Takers and … | | | |
|---|---|---|---|---|
| | African-American test takers | Hispanic test takers | Asian test takers | Native-American test takers |
| ***Elementary Education*** | | | | |
| Elementary Education: Curriculum, Instruction, and Assessment | -34.8% | -14.0% | -11.1% | -13.7% |
| Elementary Education: Content Area Exercises | -19.6% | -5.6% | -2.3% | -7.1% |
| Elementary Education: Content Knowledge | -35.0% | -18.6% | -9.8% | -13.6% |
| ***Subject-Specific*** | | | | |
| English Language, Literature, and Composition: Content Knowledge | -42.3% | -10.9% | -11.9% | -8.2% |
| Mathematics: Content Knowledge | -47.3% | -21.1% | -11.8% | -15.0% |
| Middle School Mathematics | -31.8% | -16.8% | -5.0% | -14.4% |
| Social Studies: Content Knowledge | -36.3% | -10.4% | -11.9% | -2.9% |
| Chemistry: Content Knowledge | -38.2% | * | -5.3% | * |
| General Science: Content Knowledge | -49.1% | -14.4% | -6.3% | * |
| Middle School Science | -34.9% | -14.3% | -4.6% | * |
| ***Pedagogy*** | | | | |
| Principles of Learning and Teaching: Grades K–6 | -25.1% | -13.0% | -12.8% | -15.5% |
| Principles of Learning and Teaching: Grades 7–12 | -28.3% | -18.4% | -10.1% | -12.5% |

** Insufficient sample size*

The largest pass rate gaps between White and African-American test takers were found on the subject-specific tests in English, Mathematics, Social Studies and Science. For Hispanic test takers, the gaps were fairly similar across test types. For Asian candidates, among the subject-specific tests, the gap on Science tests was particularly small, as was the Middle School Mathematics gap, while the gaps on the Pedagogy and one of the Elementary Education tests were larger. For Native-American test takers, Elementary Education, Mathematics and Pedagogy were areas with the largest pass rate gaps compared with White test takers.

## *Opportunities for* Praxis II *Intervention*

While overall performance results provide guidance on what subject areas may need the most intervention, we also conducted a more fine-grained analysis, where possible, for additional information. Data from the PLT tests, for example, suggested that areas covered by the constructed-response questions provide the greatest opportunity for intervention. For the PLT: K–6 test, as Table 7 shows, the gap between White test takers and minority test takers was greater for the constructed-response questions than the multiple-choice questions, the opposite of what was found in the *Praxis I* Writing test. In addition, all subgroup averages were lower for the constructed-response questions than the multiple-choice questions, including White test takers. This was unlike the

Data from the PLT tests, for example, suggested that areas covered by the constructed-response questions provide the greatest opportunity for intervention.

*Praxis I* Writing test, where all subgroup averages were higher for constructed response than for multiple choice. The opportunity for improvement for PLT tests appears largest, on average, in the constructed-response questions. These constructed-response questions are linked to the case-study portion of the test and cover the following content: Students as Learners, Instruction and Assessment, Communication Techniques and Teacher Professionalism.

**Table 7**

*Differences in percent correct on multiple-choice questions and percent of the highest possible score on constructed-response questions, with standardized differences, on the Principles of Learning and Teaching: Grades K–6 test by race/ethnicity*

| Race/Ethnicity | Principles of Learning and Teaching: Grades K–6 | |
|---|---|---|
| | Multiple Choice | Constructed Response |
| White test takers | 76.0% | 74.6% |
| African-American test takers | 67.3% | 61.5% |
| **Gap between White and African-American test takers** | **-0.19** | **-0.28** |
| Hispanic test takers | 73.5% | 68.0% |
| **Gap between White and Hispanic test takers** | **-0.06** | **-0.15** |
| Asian test takers | 72.9% | 68.9% |
| **Gap between White and Asian test takers** | **-0.07** | **-0.13** |
| Native-American test takers | 71.2% | 65.8% |
| **Gap between White and Native-American test takers** | **-0.11** | **-0.19** |

The final breakdown that may assist with intervention priorities for the *Praxis II* tests is from the Elementary Education: Content Knowledge test. As Table 8 reveals, for three of the non-White subgroups — African Americans, Hispanics and Native Americans — the gap with White test takers was the largest in the Mathematics section. However, in terms of percent correct in each category, several sections show opportunity for improvement, not just Mathematics. For example, Social Studies, Science and Mathematics for African-American test takers, with average percent-correct levels of 53.2, 54.7 and 55.0, respectively, all represent areas where improvement could yield a significant gain in performance. There is less opportunity for gain in the Language Arts section because, while the gap with White test takers was still significant, all subgroups were scoring at relatively high levels compared with the other subject areas.

**Table 8**

*Differences in percent correct in standardized terms on sections of the* Praxis II *Elementary Education: Content Knowledge test by race/ethnicity*

| Race/Ethnicity | Language Arts | Mathematics | Social Studies | Science |
|---|---|---|---|---|
| White test takers | 79.9% | 73.1% | 63.6% | 68.8% |
| African-American test takers | 70.0% | 55.0% | 53.2% | 54.7% |
| **Gap between White and African-American test takers** | **-0.23** | **-0.38** | **-0.21** | **-0.29** |
| Hispanic test takers | 73.0% | 62.8% | 57.3% | 60.2% |
| **Gap between White and Hispanic test takers** | **-0.16** | **-0.22** | **-0.13** | **-0.18** |
| Asian test takers | 75.3% | 71.8% | 60.4% | 65.9% |
| **Gap between White and Asian test takers** | **-0.11** | **-0.03** | **-0.07** | **-0.06** |
| Native-American test takers | 75.4% | 65.7% | 61.4% | 64.7% |
| **Gap between White and Native-American test takers** | **-0.11** | **-0.16** | **-0.05** | **-0.09** |

# Findings from Campus Interviews

In addition to data analysis, NEA and ETS representatives conducted campus-based interviews in 2006 to ask the faculty and students questions about student preparation for licensure tests and intervention strategies utilized by the institution. The interview guide used for these one-day visits focused on the approaches the faculty used to address the need for intervention and major hurdles faced in efforts to close achievement gaps on teacher licensure tests.

This fieldwork design was qualitative and the sample was small. While we cannot generalize from our findings, the design represents a useful model for conversing with college and university faculty and administrators about the challenges their students face and how institutions provide support.

In order to focus attention on the African-American, Hispanic and Native-American candidates who are likely to experience the greatest challenges, we identified a small sample of higher education institutions that serve mainly these populations. We included three Historically Black Colleges and Universities (HBCUs), two Hispanic-Serving Institutions (HSIs), one majority institution with a large Native-American enrollment and one urban-majority institution with a diverse minority population.

The interview guide used for these one-day visits focused on the approaches the faculty used to address the need for intervention and major hurdles faced in efforts to close achievement gaps on teacher licensure tests.

Six major findings resulted from the interviews.

- Faculty struggled with students' deficiencies in Mathematics, Reading Comprehension and Writing stemming from poor preparation in P–12.

  Chief among the comments from faculty were those that focused on students' high school academic deficiencies. It was clear to the faculty members that many of their students left the P–12 system without the skills that should have been mastered before high school graduation.

- Familiarity of the education faculty with teacher licensure tests varies widely.

  The degree to which teacher education faculty had direct experience with licensure tests varied widely. One institution actively urged its faculty to take the tests by setting aside funds to support the activity. Others merely encouraged it, with varying degrees of success. Those faculty members who took the tests reported that they gained a better understanding of what was expected of their students; several of them also commented that they had incorporated licensure-test-like items into their own classroom tests as a way to prepare students. On one campus, the faculty interviewed objected to the idea of any direct test preparation in their classrooms; they chose instead a standards-based approach to improve the preparation of their teacher candidates.

- Close cooperation between Arts and Sciences (A&S) faculty and Teacher Education faculty is recognized as a goal but not always achieved.

  Close cooperation between A&S faculty and Teacher Education faculty was seen as critical for teacher education programs, particularly in the secondary certification disciplines, which relate more to content-area performance than to academic skills performance. Most schools reported some degree of cooperation, but it was uneven, with some A&S departments actively participating and others less so. For example, the nature of the cooperation ranged from one joint faculty meeting per year to a licensure assessment-coordinating group across the academic divisions. Some faculty reported working together with A&S colleagues on grants and team-teaching courses. When significant cooperation with A&S faculty was achieved, the Schools of Education reported improvements in test scores and higher passing rates.

- Two models of licensure assessment support emerged as prevalent, though there were no consistent models.

  Each institution had developed its own licensure assessment-support program in accordance with its own traditions, perspectives and structures. The programs fell into two general categories. In the first category, licensure assessment content was integrated directly into the course work for the program degree. For example, one campus described how professors in Science Education required students to practice constructing and responding to licensure-test-like questions in Science Education courses. This model seemed more prevalent for content-area support and, to a lesser extent, for academic skills. The second model was to provide freestanding licensure assessment preparation, whether in the form of a test preparation course or longer-term clinics. This type of licensure assessment support varied from a comprehensive approach, often in the form of a course, to a more independent study arrangement. Math and Writing tutors and clinics are available on most of the campuses. In addition, some institutions provide test-specific tutorials, including Saturday workshops. The primary tools used on the seven campuses to help students prepare for the *Praxis* tests are PLATO® (an online tutorial for the *Praxis I* tests developed by PLATO® Learning), ETS Test at a Glance materials (downloadable test descriptions), and ETS study guides and retired tests. Many programs are set up to offer help to anyone interested in becoming a teacher pass the first hurdle, the *Praxis I* tests, and continue into the program.

In spite of the fact that many students arrive with educational deficiencies, they often have to be pushed to go to the labs and devote the necessary time to do the work required to pass the tests.

- Motivating students to use the university's preparation services is a challenge.

  All of the schools mentioned the serious challenge of providing licensure assessment support and making sure that students take full advantage of services offered. In spite of the fact that many students arrive with educational deficiencies, they often have to be pushed to go to the labs and devote the necessary time to do the work required to pass the tests.

- Faculty members want the test to have more questions relevant to the minority experience.

  A number of faculty members of color who were interviewed expressed a belief that an increase in test items with relevance to the minority experience could help to close the gaps. They believed that this could be accomplished through greater involvement of minority educators in the test development process, both as item writers and reviewers.[9]

  Findings from our conversations with faculty during our campus visits, as well as the testing results discussed earlier, point to the specific need for interventions to compensate for academic deficiencies. A reported lack of alignment and articulation between area high schools and teacher preparation institutions seems to be a particularly disturbing deficit and needs attention.

A reported lack of alignment and articulation between area high schools and teacher preparation institutions seems to be a particularly disturbing deficit and needs attention.

9 In the case of the *Praxis* assessments, ETS requires all programs to meet four requirements related to producing tests that reflect the multicultural nature of society and treat diverse populations with respect:
- All assessment materials and informational materials must be evaluated for their sensitivity to and awareness of the contributions of various groups to society. This fairness review also verifies that our assessments do not use stereotyping or language, symbols, words or examples that are sexist, racist or otherwise offensive, inappropriate or negative toward any group.
- All multiple-choice assessments with sufficient numbers of examinees must apply a procedure called differential item functioning to check whether each test item performs comparably across candidates, regardless of their sex, race or ethnicity.
- Programs with people-related test questions must include appropriate specifications for the number and types of minority-related questions to be included on all forms of their tests.
- Programs must use external experts from a variety of backgrounds to write and review items and tests.

## *Examples of Preparation and Intervention*

Many colleges and universities — including all of the institutions that NEA and ETS visited for the campus-based interviews — have developed extensive programs to support their students through the licensure assessment process, many with significant programs for academic intervention. In addition, numerous organizations have contributed tools and services to help candidates gain the knowledge and skills they need for success in their programs and success in teaching. In this section, we provide a summary of a few representative programs.

- A university program developed to assist candidates in preparing for their teacher licensure assessments
- A professional development project in Tennessee to help practicing and preservice elementary teachers develop their Mathematics knowledge and Mathematics teaching skills
- Courses developed and delivered by NEA for licensure assessment preparation
- Tools and services available from ETS

***University of Maryland-Eastern Shore (UMES).*** Faculty at UMES make clear to their students that they expect them to prepare for their licensure exams in a similar way to students preparing for licensure in professions such as law, medicine or social work.

The university's key tool for *Praxis I* preparation is the Learning Plus System (LPS), an online system developed by ETS in the 1990s.[10] LPS provides a set of computer-based diagnostic tests, practice tests and more than 35 hours of instruction in each of the three content areas to help college students and other learners improve these basic academic skills.

Dr. Michael Nugent, *Praxis* Coordinator for UMES, used *Praxis I* preparation as the basis for his dissertation, "Effects of a *Praxis I* Preparation Program on *Praxis I* Test Scores Among Students Attending an Historically Black University."[11] His goal was to identify the impact of a *Praxis I* preparation program on *Praxis I* Mathematics, Reading and Writing scores among 82 teacher education candidates at UMES.

Dr. Nugent examined the *Praxis I* pretest and posttest scores for two groups of candidates: those who prepared for their tests in a structured (instructor-directed) environment and those who prepared in an unstructured (student-directed) environment. Overall, both groups of students scored higher on *Praxis* posttest scores than pretest scores in Mathematics, Reading and Writing. Analysis also revealed that students who prepared for *Praxis I* tests in the structured classroom settings scored significantly higher on the *Praxis I* Mathematics section than on the Reading and Writing sections, suggesting that the Mathematics knowledge was a more limited set of knowledge and skills that could be mastered (or re-mastered) in the course of study represented by the LPS. Dr. Nugent suggested that the *Praxis I* Reading and Writing domains, because they span more general academic skills, require the

Analysis also revealed that students who prepared for *Praxis I* tests in the structured classroom settings scored significantly higher on the *Praxis I* Mathematics section than on the Reading and Writing sections, suggesting that the Mathematics knowledge was a more limited set of knowledge and skills that could be mastered (or re-mastered) in the course of study represented by the LPS.

10 Sales of Learning Plus were discontinued by ETS in June 2002 because of the prohibitive cost of converting it into an Internet-based service. Several universities maintain the system using their own technology support services.

11 Michael A. Nugent, Effects of a *Praxis I* preparation program on *Praxis I* test scores among students attending an historically Black university, Dissertation at University of Maryland Eastern Shore, 2005.

kind of skill development and practice that could not be adequately provided in a short span of test preparation.

***SITES-M Project.*** The Strengthening Instruction in Tennessee Elementary Schools – Focus on Mathematics (SITES-M) project in Tennessee is an effort to help practicing and preservice elementary teachers improve their knowledge, skills and confidence in Mathematics and Mathematics teaching. In July 2007, ETS and Tennessee State University formed a consortium of Tennessee HBCUs to participate in a five-year professional development program focusing on Mathematics instruction at the elementary school level. Participating campuses are: Fisk University, Knoxville College, Lane College, LeMoyne-Owen College and Tennessee State University.

The project's goal is to strengthen instruction in Mathematics at the K–4 level by working with HBCU Mathematics and Mathematics education professors, preservice teachers and in-service teachers in partner elementary schools selected by each HBCU for the project.

The professional development provided takes the form of a summer institute, Weekend Math Workshops, training in the use of standardized observation protocols, implementation of Professional Learning Communities (PLCs), Mathematics Challenges and a project-based website for participants.

At each HBCU, there is a Campus Project Director and an Associate Campus Project Director who provide leadership and direction for all project-related activities. Mathematics and Mathematics education faculty at each HBCU participate in the professional development alongside teachers from the partner elementary school. They also assist in organizing the Weekend Math Workshops and, most importantly, participate in PLCs throughout the school year. Each HBCU also identifies an Assessment Coordinator to serve as the primary contact at the partner elementary school for all issues related to assessment. Specific responsibilities include the following:

- Serve as a member of the partner elementary school's PLC.
- Coordinate collection of the relevant data at the partner elementary school (from in-service teachers and principal), as defined by the project research plan.
- Collect student work on each Mathematics Challenge from participating teachers at the partner elementary school and prepare student work for analysis.
- Plan for and implement the analysis of the Mathematics Challenges administered at the partner elementary school and provide timely feedback to the partner elementary school.
- Work with the partner elementary school principal to ensure that participating teachers complete monthly Mathematics Challenge logs.
- Participate with ETS researchers in analyzing data and drafting reports of the research findings.

At the school level, the principals are responsible for general oversight of the project. They identify and recruit participating teachers and brief them on their responsibilities, assist in organizing the Weekend Math Workshop sponsored by their school and partner university, schedule PLC meetings, oversee faculty observations of the participating in-service teachers, and work with their SITES-M team to assess the impact of the project on the Mathematical knowledge and pedagogical proficiency of the in-service teachers.

The following programs are used in the SITES-M program:

- Mathematical Knowledge for Teaching
  - *Developing Mathematical Ideas*
- Formative Assessment
  - Unwrapping, Teaching & Assessing Learning Targets
  - Mathematics Challenges
  - The *Keeping Learning on Track*® program
- Components of Effective Teaching
  - Framework for Teaching
  - Observation Program with Plan, Teach, Reflect & Apply Process

To determine whether the project is meeting this goal, a variety of research instruments are being used and administered at a Summer Mathematics Institute every year. Participating in-service teachers are asked to complete a pretest and posttest of Mathematical knowledge for teaching. This includes a series of multiple-choice and constructed-response items. Responses to the pretest and posttest will be compared to see if the professional development had an impact on teachers' knowledge. Second, participating teachers are asked to complete a pretest and posttest of formative assessment knowledge. This assessment consists of a series of constructed-response items; responses will be used to determine if the professional development had an impact on teachers' knowledge of formative assessment. Next, the teachers are asked to complete an assessment practice survey prior to any professional development, after one year and two years of the program. This survey looks at assessment practices over the course of the year and responses will be analyzed to determine if teachers' assessment practices change over time as they participate in the program. Finally, the in-service teachers are asked to complete a Math attitudes survey at the start and end of each Summer Mathematics Institute. The working hypothesis is that as teachers' Mathematical knowledge for teaching increases and teachers become more proficient with formative assessment techniques, their attitudes toward Mathematics and Mathematics instruction will improve. Responses will be evaluated over time to see if the hypothesis holds true.

The working hypothesis is that as teachers' Mathematical knowledge for teaching increases and teachers become more proficient with formative assessment techniques, their attitudes toward Mathematics and Mathematics instruction will improve.

# Examples of Intervention for Prospective Teachers

## *NEA*

NEA has developed several resources to support teachers and prospective teachers who are preparing for licensure exams. Because of the large number of teacher candidates taking them, two exams are the focus of NEA's support efforts thus far.

The first product provided by the Association is the *Principles of Learning and Teaching (PLT) Online Study Guide*. This comprehensive tutorial was created through a collaborative effort of the Tennessee Education Association and NEA's Teacher Quality department. Divided into eight sections, the *Study Guide* is an interactive, self-study tool that can be reviewed as a whole, or by section or subsection. The information is presented in a variety of ways, and review questions are included to foster user engagement and understanding.

NEA has developed several resources to support teachers and prospective teachers who are preparing for licensure exams.

The *Study Guide*'s first section introduces the test and its structure. It includes tips for reading and answering the test's multiple-choice questions, case studies and constructed-response items. The second section, "Psyching Yourself Up," addresses test anxiety, negative thinking and myths about the test. It also provides practical tips on what test takers can do in advance to avoid some potential stressors on test day.

The *Study Guide*'s third section begins the review of education-oriented subject matter covered on the exam. Called "Education Then and Now," this section includes a review of the influences on education, and some education-related programs with which test takers need to be familiar. The next section reviews some educational foundations, including human development theory and educational philosophy.

Progressing toward the core of a teacher's work, the fifth section addresses teaching and planning. The material includes various approaches to teaching, ways to keep students engaged and the diversity of student learning styles. Continuing the discussion on diverse learners, the *Study Guide*'s sixth section starts with a review of the Individuals with Disabilities Education Act (IDEA). Several IDEA-related topics are explained further, including Individualized Education Programs, ways to accommodate special-needs students, teaching English-language learners and a review of various learning disabilities.

The next section covers assessment and includes a glossary of general assessment terms, types of tests, terms regarding scoring and alternative assessments for English-language learners. The *Study Guide*'s last section reviews teachers' facilitation of students' learning. This section discusses ways to enhance student comprehension and strategies teachers can use to manage the classroom.

In addition to this *Study Guide,* NEA has also developed workshop modules aimed at helping teacher candidates prepare for the *Praxis II* Elementary Education: Curriculum, Instruction, and Assessment (CIA) test. The curriculum is composed of four modules — two Language Arts and two Mathematics — each divided into six segments of 90 minutes each, for a total of approximately 18 hours of class time per subject.

The curriculum is intended to be used by groups of 8–12 participants who are led by a facilitator. Each module incorporates the ideas behind various learning theories, and the modules are designed to provide real learning, encourage reflection, foster collaboration and apply directly to teaching. Like the *Study Guide,* the CIA modules provide an abundance of learning material, activities, practice questions and topics for discussion.

The workshop modules were designed not simply to help teachers pass their required licensure tests, but also to help them become better teachers of Language Arts and Mathematics, as well as become better readers, writers and mathematicians.

### *NEA/ETS Joint Projects*

NEA and ETS collaboratively held the NEA-ETS Math Panel, another effort aimed at identifying how to help teacher candidates prepare for licensure assessments. The two organizations sponsored the first Math Panel in the winter of 2009, bringing together outstanding Mathematics educators for the purpose of examining Mathematics data on the *Praxis* tests. Looking at this data, the Mathematics educators were able to provide ETS assessment developers with insight regarding misconceptions that struggling candidates might hold when working through Mathematics problems. This information was useful in developing study materials for candidates.

The workshop modules were designed not simply to help teachers pass their required licensure tests, but also to help them become better teachers of Language Arts and Mathematics, as well as become better readers, writers and mathematicians.

### *ETS*

ETS has taken a proactive role in working with candidates of color through the institutions of higher education that prepare them and through direct candidate outreach. Some of these efforts are described below.

ETS has had an active relationship with HBCUs for more than 25 years. During this time, the collaboration has turned its attention to a number of different issues related to large-scale testing. Over the past four years, the collaboration has focused on the dual challenges of improving teaching quality and student achievement. The collaborative has sponsored and run annual or semiannual campus-based meetings with teacher education faculty for the past four years. Additionally, ETS annually invites HBCU teacher educators to an HBCU Assessment Development Invitational on the ETS campus for an in-depth look at how tests are developed, administered and scored.

Through its outreach to teacher candidates, ETS encourages them to build long-term study plans to prepare for their licensure assessments. For each assessment, the *Praxis* website features a "Develop a Study Plan" page. The page includes suggestions for creating a study plan to match the content areas on the test. The suggestions encourage candidates to self-assess their levels of preparation, identify resources, develop a preparation schedule and join study groups (if desired). A template is provided for candidates' use, and a model study plan is provided.

Since the inception of the *Praxis* program in the early 1990s, ETS has published a free test overview guide called Test at a Glance for every *Praxis* test title. These free guides include information on timing, pacing, test structure, question types, content categories and sample questions with answers. In addition to Tests at a Glance, ETS provides these additional free downloadable booklets:

- *General Information and Study Tips* contains strategies for responding to various types of questions and for creating an individualized study plan
- *Reducing Test Anxiety* provides in-depth information about managing stress and tension associated with testing

ETS has also instituted a free webinar series, beginning with *Praxis I* tests. Candidates and faculty can sign up for free, one-hour, web-based seminars focused on specific test titles. Thousands of candidates have participated in the free webinars, and many candidates have recognized, as a result of the webinars, that they need extensive work before they take their tests.

ETS offers priced preparation materials in e-book format for candidates who want more information and practice. E-books include practice tests (full, released forms of various test titles) and study guides (including detailed information about content coverage, as well as practice test items).

ETS also offers in-depth online interactive tutorials for the PLT tests and the *Praxis I* tests. The software programs include test questions, as well as textbook content for all domains covered in the exams. The software assists candidates in developing an individualized study plan based on pretests in each domain area, and the multimedia presentation, including videos of instruction in classroom settings, provides for a rich learning experience.

Available to institutions of higher education, ETS workshops are designed for both candidates and faculty. These workshops are full-day sessions designed to help participants better understand the structure and content of the *Praxis* tests.

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# Next Steps and Conclusion

NEA and ETS are committed to working together to share knowledge about performance, readiness and best practices for intervention. A task force will be formed in the coming year to advise us on how best to broaden the awareness of the need for significant intervention, promote the tools and practices available and share joint research results. We will reach out to institutions, organizations and foundations to join this task force.

Both organizations want to move this agenda forward. For its part, ETS is committed to making information transparent using data analysis to help the field and using available communication channels to spread the word about best practices, research results and case studies of successful intervention. ETS is willing to work with any state, even those that do not use the *Praxis* tests, to analyze its performance data, using the approaches outlined in this paper or other viable approaches that will result in actionable information. ETS hopes that through additional analyses, data gathering and applications of research, we can improve interventions to help increase the academic preparation of those students who want to become teachers.

NEA will continue its long-standing commitment to equity, diversity and excellence in education and in the teaching profession. NEA is deeply committed to addressing the challenges of recruiting and retaining a highly qualified, culturally competent, diverse teaching force for our nation's public schools. Toward that end, NEA has developed an aggressive advocacy agenda focused on teacher quality and diversity. The agenda includes:

- Promoting the development of early intervention and minority pipeline programs for high school and college students, such as teacher career academies and future educator programs
- Advocating for high-quality teacher preparation and licensure programs, such as national accreditation and teacher residency programs
- Building partnerships and alliances, including expanding the work of an NEA-initiated National Collaborative on Diversity in the Teaching Force

In addition to these teacher diversity initiatives, NEA recently launched a Priority Schools Campaign that focuses on lower-performing schools, making them Priority Schools. The goal is to transform the lives of tens of thousands of students by significantly raising student achievement. This campaign will provide support to hundreds of schools, in dozens of communities, that are most in need.

ETS and NEA call on other organizations and institutions to join in the effort to improve college access and success for minority students, as well as build a more diverse and highly skilled teacher workforce. Progress has been too slow, and more significant efforts are needed. No single project or focus can achieve that goal, so it is critical that efforts be aligned and visible in the field.

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## About NEA

Our mission is to advocate for education professionals and to unite our members and the nation to fulfill the promise of public education to prepare every student to succeed in a diverse and interdependent world.

**www.nea.org**

## About ETS

At ETS, we advance quality and equity in education by providing fair and valid assessments, research and related services. Our products and services measure knowledge and skills, promote learning and educational performance, and support education and professional development for all people worldwide.

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