

**CONNECTICUT STATE BOARD OF EDUCATION
Hartford**

To: State Board of Education
From: Theodore S. Sergi, Commissioner of Education
Subject: "Praxis Test Recommendations"

PRAXIS TESTS RECOMMENDATIONS

October 3, 2001

As part of the Education Enhancement Act of 1986, Connecticut established a set of requirements designed to upgrade professional standards for educators and to ensure that all children have a competent, caring and qualified teacher. The Connecticut Educator Continuum, as defined by Section 10-145f of the Connecticut General Statutes, defined standards for entry into a teacher preparation program, required subject area assessment prior to certification, and required demonstration of professional knowledge for beginning teachers. The continuum also established a set of professional development requirements for mid-career and veteran teachers. The current requirements for teachers obtaining and continuing their certification include demonstrating:

- Competence in the areas of essential reading, writing, and mathematics by meeting Connecticut's standards on Praxis-I, Computer-Based Test (CBT) or by meeting the approved waiver standard;
- Competence in the candidate's intended teaching area by meeting Connecticut's standards on the Praxis-II subject knowledge tests; and

- Competence in professional knowledge as demonstrated by meeting Connecticut's standard on the Beginning Educator Support and Training (BEST) assessment.

Overall, the Praxis I and II tests have helped to establish a reasonable standard for earning a teaching certificate in Connecticut. The purpose of licensure testing is to identify the minimum level of performance established by the profession to grant a license (certification). In all professional licensure assessments, minimum competency is referred to as the point where a candidate will “do no harm” in practicing the profession.

The content of Praxis examinations are based on national job analyses conducted by ETS in each teaching field. The focus of the job analyses is on the core skills and abilities that prospective teachers need to teach their subject matter. The Praxis Series Tests are designed to measure general and specific basic skills (Praxis-I CBT), and subject area knowledge (Praxis-II). The Praxis Series tests cannot measure a candidate’s total knowledge of a subject or of teaching; nor will a candidate’s score predict the quality of his/her teaching. The skills and knowledge assessed in the Praxis series are only one critical component of effective teaching. The Praxis Series Tests are intended to help the State of Connecticut ensure that beginning teachers have a minimum level of basic skills and a basic level of knowledge in the subject matter they will be teaching.

Over the decade, Connecticut has made a commitment to high quality teaching. As a result of Connecticut’s commitment to equity and excellence in education, Connecticut students have consistently performed at high levels in state and national comparisons, in some part due to the quality of Connecticut’s teaching force and the standards required for entering the profession.

Although the pass rates on the Praxis tests averages around 80%, the results of the analyses also identify a performance gap between minority and non-minority candidates and indicates very small numbers of minorities are selecting education as a profession. Of the candidates taking the Praxis tests for certification, only 7.6% were minorities. Additional incentives will be required to attract more highly qualified minority candidates into education. Of note is the performance gap on the Praxis tests between minorities and whites is reduced with retesting which supports the Departments of Education and Higher Education commitment to ensure minority candidates receive appropriate support. A number of the following recommendations are intended to address this problem.

The first three recommendations reflect the advice provided by a panel of more than 100 Connecticut teachers and test preparation educators who reviewed the actual Praxis II tests. The remaining recommendations are the result of an in-depth analysis of Praxis test results, which cover a five-year period.

The accompanying report provides the data, information and analysis upon which these recommendations are made.

1. Discontinue Special Education Application of Core Principles Across Categories of Disability Praxis II Test. A new examination, which has been developed to replace this one, was reviewed and determined preferable by the panel of educators. It will be validated for use in Connecticut this Fall and brought to the State Board of Education for adoption and establishment of the passing score. The Special Education: Knowledge-Based Core Principles Praxis II test will still be required.
2. Discontinue Spanish Productive Language Skills Praxis II Test. The review committee determined that the Productive Language Skills examination did not cover the range of

Spanish cultures, specifically Mexico and Puerto Rico, most prevalent in Connecticut.

The Spanish Content Knowledge Praxis II test will still be required. A new assessment of oral language proficiency, the American Council on the Teaching of Foreign Languages *Oral Proficiency Interview*, which is required for bilingual teachers, will be reviewed this Fall for potential adoption.

3. Discontinue Agriculture Test. This test was considered to include out-dated items which were not reflective of current agriculture and did not reflect the range of agricultural employment and instruction in Connecticut. Currently, there is no alternative assessment available for Agriculture.
4. Adjust the passing standard on the Praxis II Mathematics: Content Knowledge test from 141 to 137 and apply the adjusted standard to all Connecticut candidates who have taken or will take this test (July 1, 1997, to present). In 1997, when this test was reviewed by a representative panel of mathematics teachers, they followed the modified Tucker/Angoff method for standard setting and recommended a score of 141. The standard practice of adjusting the recommended score by one-half of the standard error of measurement (SEM) (See page 4 for explanation) was not done for the mathematics test. Since there were no national or state data available for this newly developed test, the Advisory Committee's recommended passing score was presented to the Board for adoption with the intent that the passing rate would be monitored and a recommendation would be made to the Board for an adjustment, if warranted. Using the unadjusted passing score of 141 resulted in a comparably lower first-time and final pass rate for mathematics than the other Praxis II tests. The initial pass rate for mathematics is 51% and final pass rate is 70%, which is the lowest of all the Praxis II

tests. Adjusting the score to 137 is expected to produce a final pass rate of approximately 76% which is more in alignment with the pass rates of other Praxis II tests, does not significantly lower the mathematics knowledge and skill required for passing the exam or for teaching, and would move Connecticut from the third to the seventh highest passing score of the 20 states using this exam.

5. Ensure access to remedial assistance to all prospective teachers, with a focus on minority candidates, in need of support for Praxis I and Praxis II. The State Department of Education has contracted with Educational Testing Services to provide training for RESC and higher education trainers in preparing for Praxis II exams. Praxis II support will be available to individuals by January 2002. Support is currently available at the RESCs and some universities for Praxis I-CBT.
6. Analyze candidates' performance on the Praxis I and Praxis II for those who did not meet the standard. Identify types of skill area deficiencies and share analysis with the preparing Connecticut high schools and higher education institutions.
7. Ensure that teacher preparation programs provide ongoing individual support and tutoring, with a focus on minority candidates, to enable them to meet the certification testing requirements. The State Department of Education, in partnership with the Department of Higher Education, will continue their efforts toward this goal.
8. Attract more candidates, including minorities, into the teaching profession through Alternative Route to Certification programs, additional scholarships and financial incentives and "grow your own" programs. Some of these incentives will require legislative action in 2002.

9. Establish a formal three-year evaluation cycle—beginning with this evaluation—for all Praxis exams and review and validate new tests as they become available.

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October 3, 2001

ANALYSIS

OF

PRAXIS TEST DATA

1994 - 2000

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Purpose

The purpose of this report is to review and describe the current testing requirements and examine the results of teacher testing to date in Connecticut.

Overview of Connecticut Teacher Assessment

The following sections summarize two parts of Connecticut's Educator Continuum. The first section describes the testing portion: the Praxis Test Series, followed by a description of the Beginning Educator Support and Training (BEST) assessment.

Praxis Series Tests

The Praxis series is a national teacher-testing program that was initially developed in 1987 to provide a system of thorough, fair, and carefully validated tests and assessments for states to use as part of their teacher licensure process. Some of the tests are also used by colleges and universities to ensure that students entering their teacher preparation programs have sufficient grounding in basic academic skills. Other tests in the Praxis series are used by states and professional standards boards as one of several criteria for teacher certification.

The Praxis Series Tests are developed and administered by the Educational Testing Service (ETS). The response formats used on the Praxis test series include both multiple-choice and constructed response (CR) or essay. The Praxis program is currently used by 37 states and the District of Columbia as part of their teacher certification processes.

The Praxis Series Tests were developed using current research, professional judgment and the experience of educators from across the country. Each test was developed with the assistance of an advisory committee composed of teachers and higher education faculty who teach in that field (similar to the process used to develop the Connecticut Mastery Test and the

Connecticut Academic Performance Test). Prior to the development of each test, a job analysis was conducted to determine what knowledge and skills are important for beginning teachers in that field.

The Praxis Series Tests are reviewed for accuracy, fairness and relevance many times during development. Prior to the first release of a test's scores, each question is subjected to a statistical analysis to further insure accuracy, comparability to previous tests and fairness to all subgroups of test takers.

The Praxis Series Tests are designed to measure general and specific basic skills (Praxis-I CBT), and subject area knowledge (Praxis-II). **The Praxis Series tests cannot measure a candidate's total knowledge of a subject or of teaching; nor will a candidate's score predict the quality of their teaching.** The skills and knowledge assessed in the Praxis series are only one critical component of effective teaching. The Praxis Series Tests are intended to help the State of Connecticut ensure that beginning teachers have a minimum level of basic skills and a basic level of knowledge in the subject matter they will be teaching.

Praxis-I

The Praxis-I assessments are designed to be taken early in the student's college career to measure reading, writing and mathematics skills vital to all teacher candidates. The assessments are available in paper-based and computer-based formats. In Connecticut, meeting the Praxis-I Computer Based Test standards are required for admittance into a teacher preparation program.

Praxis-II

The Praxis-II assessments consist of 140 tests, which are regularly updated. Each test measures a candidate's knowledge of the subject(s) they will teach as well as how much they

know about teaching that subject. Due to the availability of so many tests, states customize their programs by selecting only those assessments that best match their certification requirements. Connecticut currently requires the Praxis-II tests in 26 subject areas (See Attachment 2, Table 12 on page 36).

Beginning Educator Support and Training (BEST)

The Beginning Educator Support and Training (BEST) program is an outgrowth of Connecticut's teacher improvement initiatives. It is the third of three assessment requirements that must be met in order to be eligible for the provisional educator certificate. In order to meet this requirement, beginning teachers must demonstrate, in their classroom, mastery of essential teaching competencies related to content knowledge, planning, instruction, and student assessment.

BEST is a comprehensive two-to three-year teacher induction program involving both support and assessment for beginning teachers. The support for beginning teachers involves district-based mentoring and state-sponsored training such as portfolio clinics, beginning teacher seminars, as well as other forms of professional development. The assessment component requires that all beginning teachers demonstrate their teaching skills and competencies by completing a content-specific portfolio during their second year of teaching. The portfolio assessment requires a beginning teacher to document a unit of instruction around important concepts or goals in a series of lessons, assess student learning and reflect on students' learning and the quality of their teaching. The portfolio includes lesson logs, videotapes of their teaching, examples of student work and student assessments, and teacher commentaries. Teachers holding the initial educator certificate must complete the BEST assessment requirements to obtain a provisional educator certificate.

Part I: Praxis Series Tests and Results in Connecticut, 1994-2000

Part I is divided into the following three sections: Connecticut's Praxis Series Tests, Essential Skills Tests in Reading, Writing and Mathematics and Subject Knowledge Tests.

Connecticut's Praxis Series Tests

Table 1 lists all the currently required Praxis tests for Connecticut educators. The scale score range and the passing standard required for each is identified. The range of scale scores for the Praxis I-CBT are from 300 to 335 and the Praxis II tests are scored on a scale of 100-200. However, a few of the Praxis II (former National Teacher Exams [NTE]) tests are reported on a scale of 250-990. Regardless of the use of scale scores, the scores are generally not comparable across content areas. This is because the levels of difficulty of the tests are not comparable. (See Attachment 1, Table 11 on page 31, for a comparison of the passing standards on the Praxis-I & II tests). Each state or professional organization that adopts a Praxis test is required to set its own passing standard. Since each state sets its own standards, they vary across states. Connecticut's passing standards were established for each test using a modified Tucker/Angoff method for the multiple-choice tests and a holistic method for the constructed-response tests. The standards were set by Connecticut educators following a process that consisted of: establishing a preliminary standard using expert judgment and analyzing the results; and presenting the standard for Board adoption with a statistical adjustment downward of one-half a standard error of measurement (SEM)¹. The SEM is used to describe the reliability of the scores of a group of examinees. For example, if a large group of examinees takes a test for which the SEM is eight, then it is expected that about two-thirds of the examinees would receive

¹ Except for the Mathematics Praxis II Test

scores that are within eight points of their true score (plus four or minus four). An examinee's true score can be thought of as the average of the examinee's observed scores obtained over an infinite number of repeated testings using the same test (Crocker & Algina, 1986).

Connecticut's rank with regard to the passing standards and the number of states using that particular test is summarized in Table 1. For example, of the 30 states using Praxis-I CBT, Reading, Writing and Mathematics tests, Connecticut's rank is four, six and five respectively. Note that Connecticut's rank on the Praxis-I writing and mathematics tests are tied with 11 states on writing and three states on mathematics. Of the 41 Praxis II tests used in Connecticut, Connecticut has set the highest passing rate for 13 tests and all the passing rates are in the top six when compared to other states. Connecticut shares the highest passing standards with Virginia, Maryland, Alaska, Vermont and Maine (See Attachment 1, Table 11 on page 31).

Essential Skills Tests in Reading, Writing and Mathematics

Individuals seeking admission into a Connecticut state college or university teacher preparation program or who are seeking certification in Connecticut from another state must fulfill an essential skills requirement as measured by the Praxis-I – Computer Based Tests (Praxis-I CBT) in Reading, Writing and Mathematics². This requirement can be met either by passing all three subtests of the Praxis-I -CBTs (which can be taken at one seating or one test at a time) or by applying for and receiving a waiver based on scores obtained on specific standardized tests. Candidates may take any of the Praxis I CBT tests an unlimited number of times. However, if a candidate fails a test, that particular test may not be taken again for 60 days.

² ETS is discontinuing the Praxis I-CBT effective 12/31/01. Connecticut will be validating the pencil and paper version of the Praxis-I tests this fall for adoption effective January 2002.

Table 1. Praxis Tests Used in Connecticut

Test Code	Test Name	Score Range	Passing Standard	Ranks*	States Using the Test	Test ** Format
711	Praxis-I: Reading	300-335	324	4	30	MC/CR
721	Praxis-I: Writing	300-335	318	6 (11)	30	MC/CR
731	Praxis-I: Mathematics	300-335	319	5 (3)	30	MC/CR
780	Agriculture	250-990	470	1	2	MC
131	Art Making	100-200	148	4	8	CR
132	Art: Content Knowledge	100-200	130	5	7	CR
133	Art: Cont/Trad/Crit/Aest	100-200	157	5 (3)	17	MC
235	Biology Content Knowledge	100-200	152	3 (3)	6	MC
100	Business Education	250-990	620	1 (2)	19	MC
242	Chemistry: Content Essays	100-200	140	3 (4)	8	CR
245	Chemistry: Content Knowledge	100-200	151	4 (3)	9	MC
571	Earth Science	100-200	157	1 (2)	9	MC
11	Elementary Ed.: C/A Exercise	100-200	163	3 (2)	15	MC
12	Elementary Ed: Curr/Inst/Asse	100-200	148	2 (2)	10	CR
41	English Lang/Lit/Comp	100-200	172	1 (2)	23	MC
42	English Lang/Lit/Comp: Essays	100-200	160	1 (2)	11	CR
171	French: Content Knowledge	100-200	163	6	14	CR
173	French: Language Skills	100-200	165	3	16	MC
433	General Science: Essays	100-200	145	1 (2)	9	CR
435	General Science: Knowledge	100-200	157	1	4	MC
181	German: Content Knowledge	100-200	162	2 (2)	13	MC
550	Health Education	250-990	680	3	14	MC
120	Home Economics Education	250-990	630	3	20	MC
620	Italian ***	250-990	670	1	1	MC

Note: *The number of states tied with Connecticut in parenthesis
 **MC: Multiple-Choice. CR: Constructed-Response
 ***Only required in Connecticut.

(table continues)

Test Code	Test Name	Score Range	Passing Standard	Ranks*	States Using the Test	Test ** Format
61	Mathematics	100-200	141	3 (3)	20	MC
49	MS English Language Arts	100-200	164	1	5	MC/CR
69	MS Mathematics	100-200	158	2 (2)	7	MC/CR
89	MS Social Studies	100-200	160	1	5	MC/CR
439	MS Science	100-200	162	1	5	MC/CR
111	Music: Concepts and Process	100-200	150	2 (3)	10	CR
113	Music: Content Knowledge	100-200	153	6	17	MC
91	Physical Education: Knowledge	100-200	154	3 (2)	13	MC
92	Physical Education: Moves	100-200	154	1	8	CR
262	Physics: Content Essays	100-200	135	5 (2)	6	CR
265	Physics: Content Knowledge	100-200	141	4	6	MC
81	Social Studies: Knowledge	100-200	162	1	22	MC
191	Spanish: Content Knowledge	100-200	170	2	16	MC
192	Spanish: Language Skills	100-200	163	6	13	CR
351	Special Education: Applications	100-200	155	1(3)	12	MC
352	Special Education: Knowledge	100-200	150	2	11	MC
50	Technology Education	250-990	640	1 (2)	18	MC

Note: *The number of states tied with Connecticut in parenthesis
 **MC: Multiple-Choice. CR: Constructed-Response.

Praxis-I CBT Description

The Praxis-I CBTs measure the essential skills required for certification as a beginning teacher in Connecticut in the areas of in Reading, Mathematics and Writing. The Writing test includes an essay section. All three tests (except the essay section of the Writing test) are computer-adaptive tests, which means questions are computer selected for examinees based on the responses made to previous questions.

The Assessment in reading measures an examinee's ability to read with understanding by assessing comprehension, analysis, and application skills. This test contains questions based on reading selections taken from the content areas of social science, science and nature, humanities, and education. (See Attachment 4, on page 42).

The Writing assessment measures an examinee's ability to use grammar and language effectively and to communicate effectively in writing. The computer-adaptive section of the Writing test consists of multiple-choice error recognition questions. There is also a 40-minute essay section, which must be completed using a word processor. (See Attachment 4, on page 45).

The basic skills mathematics test measures the examinee's conceptual understanding of the key concepts of mathematics such as problem-solving, mathematical reasoning abilities, and estimating. It also evaluates the skills necessary to read and interpret tables, graphs, charts, and other visual displays of quantitative information, as well as skills needed to perform simple measurement tasks on familiar figures. An onscreen calculator is available at all times during the mathematics test. (See Attachment 4, on page 47).

The test session for each Praxis-I CBT is set for two hours to allow time for tutorials and the collection of background information from test takers. However, the actual testing times are (a) 95 minutes for 36 multiple choice reading questions, (b) 65 minutes for 29 multiple choice mathematics questions, and (c) 30 minutes for 35 multiple choice writing questions and 40 minutes for one essay question.

The cost for taking the Praxis-I CBTs is (a) for One Test, \$80.00, (b) Two Tests at one seating, \$105.00, and (c) Three Tests at one seating, \$130.00. Additionally, a computer-based tutorial developed by ETS is available for \$50.00 through the Regional Educational Service

Centers (e.g., CREC, ACES, and CES). The tutorial may be taken as many times as needed for the initial fee.

Praxis-I Waiver Requirements

The alternative approach to meeting the essential skills requirement for admission into a teacher preparation program is by being granted a waiver by meeting specific criteria set for either the Scholastic Assessment Test (SAT), American College Testing (ACT) Program, or the Prueba de Aptitud Academica (PAA). The following is the waiver criteria set for each test or program:

- A total score of 1,000 or higher on the SAT, with neither the mathematics nor the verbal subtest scores below 400 points from any test administration on or prior to March 31, 1995, or a combined score of 1,100 or more with no less than 450 on either the verbal or mathematics subtests from test administrations on or after April 1, 1995;
- A score of no less than 22 on the English subtest and no less than 19 on the mathematics subtest on the ACT program assessment from test administrations on or after October 1989, or the equivalent ACT scores of no less than 20 on the English and 17 on the mathematics, from test administrations prior to October 1989; or,
- A total score on the PAA equivalent to a combined score of 1,000 on the SAT with neither the mathematics nor the verbal subtest below the equivalent of 400 points. In addition, a minimum score of 510 on the English as a Second Language Achievement Test (ESLAT) or the Test of English as a Foreign Language (TOEFL).

Table 2 is a summary of the number of applicants for teacher preparation programs or certification between June 1994 and December 2000³. During this period, there were 25,987 applicants of which 10,345 (39.85%) applied for and received a waiver, and 15,642 (60.15%)

were administered the three Praxis-I subtests. Approximately seventy eight percent (n = 12,197) of those taking the three Praxis-I subtests, passed all three subtests. The total number of eligible candidates for admission into a teacher preparation program or for certification based on the waiver program and passing the three Praxis-I tests was 22,542, which represents 86.74% of all candidates. The passing standards for Praxis-I (See Table 1) were raised based on the recommendation of the Praxis I test standard setting advisory committee for reading and mathematics on July 1, 1997, which may account for the decrease in passing scores beginning in 1997-98.

Table 2. Praxis-I Test and Waiver Results for Applicants Entering a Teacher Preparation Programs

Test year	Number of applicants	Number of waivers granted ¹	Number passing Praxis-I ²	Eligible applicants	
				Number	Percent
1994-1995	2,673	1,620 (60.61)	920 (87.37)	2,540	95.02
1995-1996	4,031	1,681 (41.70)	2,028 (86.30)	3,709	92.01
1996-1997	4,310	1,715 (39.78)	2,189 (84.35)	3,904	90.58
1997-1998	4,649	1,723 (37.05)	2,271 (77.61)	3,994	85.91
1998-1999	4,787	1,733 (36.19)	2,234 (76.10)	4,057	84.91
1999-2000	5,507	1,873 (36.86)	2,477 (68.16)	4,338	78.42
Totals	25,987	10,345 (39.81)	12,197 (77.98)	22,542	86.74

Note. ¹ Percent granted a waiver in parentheses. ² Percent Passing Praxis-I in parentheses.

³ The Praxis-I - CBTs were adopted on June 9, 1994 and the Praxis Subject Knowledge series were introduced July 1, 1994. As a result, all of the following analyses were conducted to include test data between June 1994 and December 31, 2000.

Results of the Analysis of Passing Rates for Praxis-I CBT

The initial passing rates for all of the following analyses are based on an examinee's first attempt on a subtest in the Praxis series. The final passing rate is based on an examinee's last attempt on a subtest in the Praxis series. If an examinee only takes a subtest once, then their initial and final tests scores are the same. However, regardless of the number of times an examinee retakes a subtest, only the last attempt was used to calculate the final passing rate.

Table 3 is a summary of the 16,738 examinees that were administered at least one subtest in the Praxis-I series. The number of examinees that took all three tests in the series was 15,642. Of those who took all three tests, 68.7% passed all three on the first attempt, and an additional 1,452 were able to pass all three tests by utilizing the retake option. The total number of examinees eligible for admission into a teaching preparation program or for teacher certification based on their Praxis I-CBT scores was 12,197 or a final pass rate of 78%. That is, twenty-two percent of the candidates could not meet the basic skills standards in math, reading and/or writing and were, therefore, unable to enter either a teacher education program or, if from out of state, to be certified in Connecticut. Due to an additional 10,345 candidates who met the waiver requirement for the Praxis I tests, the percent of candidates eligible to enter a teacher preparation program, or, if from out of state, to be certified in Connecticut, increased to almost 87%.

Table 3. The Initial and Final Pass Rates for Praxis-I Subtests Taken Between June 1994 and December 31, 2000

Test Name (Test Code)	N	Initial Pass Rates		Final Pass Rates		Increase	
		n	%	n	%	n	%
Reading (711)	16,198	14,390	88.8	14,894	91.9	504	3.50
Writing (721)	16,055	14,033	87.4	14,625	91.1	592	4.22
Mathematics (731)	16,110	12,425	77.1	13,615	84.5	1,190	9.58
Pass all three tests	15,642	10,745	68.7	12,197	78.0	1,452	13.51

Note. N = The number taking the test. n = The number passing.

Table 4 is a summary of the demographics of test takers by gender and ethnicity. Of the 16,738 examinees, 76.3% of the Praxis I test takers were females, 8.5% of whom were minority. Of the 23.6% male test takers, only 3.14% were minorities.

The low numbers of minority students taking at least one of the Praxis I tests supports a recent report “Minority Teacher Recruitment and Retention in Connecticut” (Rong, 2001). In the report, Rong (2001) points out that the number of minority students entering teacher preparation programs is declining (7.1% in 2000) even though the number of minority students (13% to 15.2%) who received a bachelor’s degree has grown between 1995 and 2000. Fewer minorities are choosing education as a career and are seeking other professions; therefore, the “testing pool” has very small number of minority students.

Table 4. Praxis-I Demographics by Ethnicity and Gender

<u>Ethnicity</u>	<u>Gender</u>				<u>Total</u>	
	<u>Female</u>		<u>Male</u>		<u>N</u>	<u>%</u>
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>		
African American	621	3.71	278	1.66	899	5.37
Asian American	158	0.94	34	0.20	192	1.15
Hispanic	618	3.69	200	1.19	818	4.89
Native American	26	0.16	15	0.09	41	0.24
White	10,060	60.10	3,032	18.11	13,092	78.22
Other	135	0.81	59	0.35	194	1.16
Missing	1,164	6.95	338	2.02	1502	8.97
Totals	12,782	76.37	3,956	23.63	16,738	100.00

Note. Percents are of total (N = 16,738).

Table 5 is a summary of the Praxis-I test results compared by ethnicity. The largest group of examinees across all tests and for those who took all three subtests were white (78.22%). Hispanics (4.89%) and African American (5.37%) examinees made up the next largest groups with the smallest groups being Asian Americans (1.15%) and Native American (0.24%) examinees. There is an evident gap between white candidates' and minority candidates' results on the Praxis-I CBT, although by utilizing the retake option, minority candidates' pass rates increased significantly. This gap will be further discussed later in the report. (see page 23).

Table 5. Praxis-I Percent Passing Rates by Ethnicity

<u>Ethnicity</u>	<u>Reading (711)</u>		<u>Writing (721)</u>		<u>Mathematics (731)</u>		<u>Pass all three</u>	
	<u>Initial</u>	<u>Final</u>	<u>Initial</u>	<u>Final</u>	<u>Initial</u>	<u>Final</u>	<u>Initial</u>	<u>Final</u>
All	88.8 (14,495)	91.9 (15,015)	87.4 (14,112)	91.1 (14,707)	77.0 (12,523)	84.4 (13,725)	68.6 (10,806)	78.0 (12,274)
African American	74.7 (652)	79.2 (691)	69.3 (595)	77.1 (662)	54.8 (472)	64.3 (554)	42.8 (354)	54.7 (452)
Asian American	72.3 (133)	80.4 (148)	72.4 (131)	79.0 (143)	82.7 (153)	86.0 (159)	54.2 (96)	66.1 (117)
Hispanic	74.8 (589)	79.3 (625)	67.2 (525)	75.9 (593)	57.3 (450)	69.0 (542)	45.6 (343)	58.7 (442)
Native American	92.3 (36)	94.9 (37)	75.0 (30)	82.5 (33)	72.5 (29)	82.5 (33)	56.4 (22)	69.2 (27)
White	90.0 (11,514)	93.1 (11,932)	90.3 (11,431)	93.5 (11,845)	79.3 (10,131)	86.9 (11,102)	71.4 (8,851)	80.9 (10,034)
Other	82.4 (154)	85.0 (159)	80.2 (146)	84.1 (153)	73.3 (137)	79.1 (148)	60.8 (107)	68.8 (121)
Missing	97.7 (1,417)	98.1 (1,423)	87.1 (1,253)	88.9 (1,278)	80.9 (1,151)	83.4 (1,187)	75.4 (1,033)	78.9 (1,081)

Note. The number of examinees passing in parentheses.

Subject Knowledge Tests: Praxis-II

Individuals who are applying for a teaching certificate for the first time, current teachers who are applying for one or more additional endorsements and individuals whose Connecticut certificates have lapsed and are applying for reissuance of a teaching certificate must take and pass one or more subject knowledge tests. Connecticut has adopted 41 tests, which are required in order to receive certification to teach in one of 26 endorsement areas in Connecticut (See Attachment 2, Table 12 on page 36).

The subject knowledge tests are part of the Praxis Testing Series (e.g., Praxis-II subject knowledge tests). These tests are developed by and administered by ETS. Each test is meant to measure in part an examinee's knowledge of the subject(s) he/she will teach, as well as how much he/she knows about teaching the subject. Some tests are all multiple choice, while others contain constructed response (essay) items, which allow test takers to demonstrate in depth knowledge and reinforce the importance of writing in the teaching profession. The tests are offered six times a year and candidates may register online. Test results are made available to candidates approximately two months after the test administration. The cost of the Praxis II test range from \$55 to \$85; the large majority of tests are \$70.

Praxis-II Test Takers

Between June 1994 and December 31, 2000, 17,027 examinees participated in the Praxis-II professional series tests for the 26 subject area endorsements. Of these examinees, approximately 2,400 took tests in more than one subject area. As shown in Table 6, the majority of test takers were white females (59.97% out of 70.65% female). Furthermore, like Praxis-I (See Table 4), regardless of race/ethnicity, female test takers out-numbered male test takers by almost three to one, and of the 29.4% male test takers, only 2.26% were minorities.

Table 6. Praxis-II Demographics by Ethnicity and Gender

<u>Ethnicity</u>	<u>Gender</u>				<u>Totals</u>	
	<u>Female</u>		<u>Male</u>		<u>N</u>	<u>%</u>
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>		
African American	424	2.49	188	1.10	612	3.59
Asian American	121	0.71	38	0.22	159	0.93
Hispanic	345	2.03	147	0.86	492	2.89
Native American	29	0.17	13	0.08	42	0.25
White	10,211	59.97	4,200	24.67	14,411	84.64
Other	111	0.65	76	0.45	187	1.10
Missing	789	4.63	335	1.97	1124	6.60
Totals	12,030	70.65	4,997	29.35	17,027	100.00

Note. Percents are of total.

Analysis of Passing Rates for Praxis-II tests

A summary of the Praxis-II overall test results is presented in Table 7. There were 18,505 attempts at passing the required subtest(s) in the 26 endorsement areas. Of these, 15,115, or 81.7%, were able to meet the minimum requirements on each subtest(s) in order to receive endorsement in their endorsement area. Over 15% of those who failed to meet this standard on their initial attempt were successful on subsequent retests.

Table 7. Initial and Final Pass Rates for Praxis-II Endorsements by Total

	<u>Initial Pass Rates</u>			<u>Final Pass Rate</u>		<u>Percent Increase</u>
	<u>N</u>	<u>N Passed</u>	<u>%</u>	<u>N Passed</u>	<u>%</u>	
Total	18,505	12,274	66.3	15,115	81.7	15.4

Note. If an individual is attempting to obtain endorsements in multiple content areas, they are counted once in each area.

The initial and final passing rates for each endorsement area are presented in Table 12 (See Attachment 2 on page 36) and by subtest in Table 13 (See Attachment 2 on page 37). Fifteen out of 26 endorsement areas (57.7%) require passing one test, 10 endorsement areas (38.5%) require passing two tests, and only Art requires passing three separate tests for an endorsement. The decision on the number of tests and which particular tests are required for an endorsement area was made based on the recommendation of teacher expert review committees in each of the endorsement areas. In a number of endorsement areas, the initial passing rate was below 70% (e.g., elementary education, mathematics, middle school science, music, physical education, Spanish and special education) but using the retake option the final passing rates increased by more than 20% in each area. However, while the number of examinees that were able to meet or exceed the passing standard in Mathematics increased by 26.6% (i.e., from 51% to 70% passing rate from 1994 to 2000) this number of examinees meeting the standard is still comparatively low.

Table 8 presents the results of the comparison among ethnic groups. The retest option has had the largest impact on African American examinees, where over 22% were able to meet the minimum standard in their endorsement area after retesting. Hispanic examinees scored higher than both African American and Asian American examinees with regard to the final pass rate.

Again, the gap in performance between white and minority candidates is evident. Since the retest option significantly improves the passing rate, more intense and individualized preparation for the tests (see recommendations 4 and 5 on page 25 and 26) prior to retaking the test should increase the number of minorities meeting the passing standard.

Table 8. Initial and Final Pass Rates for Praxis-II Subtests Administered between June 1994 and December 31, 2000 by Ethnicity

Ethnicity	N	Initial Pass Rates		Final Pass Rate		Percent Increase
		N Passed	%	N Passed	%	
African American	633	223	35.2	364	57.5	22.3
Asian American	175	98	56.0	129	73.7	17.7
Hispanic	533	334	62.7	400	75.0	12.4
Native American	48	30	62.5	38	79.2	16.7
White	15,802	10,691	67.7	13,238	83.8	16.1
Other	209	150	71.8	166	79.4	7.7
Missing	1105	748	67.7	780	70.6	2.9

Part II: Discussion

The following discussion is divided into four sections: Demographics, Praxis-I, Praxis-II Subject Knowledge Tests, and Expert Teacher Review Findings.

Demographics

The three to one ratio of females to males taking the Praxis-I CBT, is consistent with that reported by Gitomer and Latham (1999) and those presently found in Connecticut schools. The comparison of the racial/ethnic make-up of the Praxis I test with the racial/ethnic make-up of Connecticut schools indicates that the number of African American and Hispanic examinees taking the test was low. That is, African American students represent 13.6% of the Connecticut school population but represent only 5.37% of the Praxis-I examinee pool and Hispanic students represent 12.4% of the population in Connecticut but only make up 4.89% of the Praxis-I

examinee pool. In general, the composition of the examinee pool for the Praxis-I tests was predominately female and white. This was true for the racial-ethnic make-up on the Praxis-II tests. The composition of the examinee pool for the Praxis-II is even more homogeneous than the Praxis-I examinee pool. Therefore, smaller numbers of African American and Hispanic examines are choosing to enter the field of education and are seeking other professions. Greater efforts need to be made to attract young minority students and mid-career changers into the teaching profession (see recommendation #7 on page 26). Although Connecticut's average teacher salary remains the highest in the United States (\$52,410), the average entry level salary of \$30,466 is not competitive with other entry level professions such as engineering, marketing, banking and sales, which can lure potential minority candidates. Connecticut ranks 39 out of 50 states when the average teacher salary is compared to the 1999-2000 per-capita personal income in Connecticut (Survey and Analysis of Teacher Salary Trends 2000).

Praxis-I Passing Rates

Gitomer and Latham (1999) reported finding an overall national passing rate of 77% for all examinees on the Praxis-I tests, as shown in Table 9. The overall passing rate for Gitomer and Latham's (1999) national sample was almost the same as that found for Connecticut examinees. The average total SAT score for all examinees who passed the Praxis-I tests was 1,035. Students with low SAT scores failed to meet the Praxis-I standards. The average combined SAT score for all examinees who failed to meet the passing standard on the Praxis I-CBT was 841. This combined score is generally considered low and, when considered with other indicators of achievement, might prevent admission into some colleges or universities.

Table 9. Praxis-I Comparison of Passing Rates between Connecticut Examinees and a National Sample.

Percent of Examinees who Meet the Praxis Standard		SAT Score for Examinees who Meet the Praxis Standard				SAT Score for Examinees who Fail to Meet the Praxis Standard		
CT Pass Rate	National Pass rate	CT Average SAT Score	Math	Verbal	Total	Math	Verbal	Total
78	77	1017	514	521	1,035	414	427	841

Praxis-II Passing Rates

The Gitomer & Latham sample's overall final passing rate on the Praxis-II was 87%, somewhat higher than Connecticut at 82%². As shown in Table 10, for those examinees that passed the Praxis-II, their average scores on the mathematics and verbal parts of the SAT were 507 and 522, respectively. For those examinees who failed to meet the standard on Praxis-II, their total SAT scores were low (869), albeit a little higher than those who failed to meet the standard on Praxis-I (841).

Table 10. Praxis-II Comparison of Passing Rates between Connecticut Examinees and a National Sample.

Percent of Examinees who Meet Praxis II Standard		SAT Score for Examinees who Meet the Praxis II Standard			SAT Score for Examinees who Fail to Meet the Praxis II Standard		
CT Pass Rate	National Pass rate	Math	Verbal	Total	Math	Verbal	Total
82	87	507	522	1,029	435	434	869

² The comparison of passing rates was not based on the same passing standards across states.

Haycock (1998) points out that strong verbal and math skills are critically important for effective teaching. Ferguson (1986; cited in Haycock, 1998) found that there was a significant positive relationship between what teachers score on standardized tests and student achievement. Those examinees that were able to pass the Praxis-I or Praxis-II showed strong verbal and mathematics skills as indicated on the SAT. Those who failed to meet the standards do not possess the verbal and mathematics skills necessary to be a teacher in Connecticut.

Expert Teacher Review of Praxis II

On March 30, over 100 teachers and teacher preparation educators were brought together to review the current Praxis-II tests used in Connecticut. Between three and seven educators reviewed each of the Praxis content tests required for certification endorsement areas, evaluating the importance for new teachers of the subject knowledge as measured by each test. They were also asked to provide an overall evaluation of the appropriateness, fairness and currency of the Praxis-II test for prospective teachers. With the exception of the Agriculture, Spanish Productive Language Skills, and Special Education Application of Core Principles Across Categories of Disability all were supported as appropriate for new teachers in Connecticut. The recommendations for change based on this review are reflected in this October Board resolution.

Part III: Summary

The purpose of licensure testing is to identify the minimum level of performance established by the profession to grant a license (certification). In all professional licensure assessments, minimum competency is referred to as the point where a candidate will “do no harm” in practicing the profession. As defined in 1971 by the U.S. Department of Health Education and Welfare, “licensure is the process by which an agency of government grants

permission to persons to engage in a given profession or occupation by certifying that those licensed have attained the minimal degree of competency to ensure that the public health, safety and welfare will be reasonably well protected.” In setting Praxis standards, ETS statistically lowers the standards set by the subject area committee by one half a standard error of measurement to ensure that states are not falsely identifying an examinee as failing³. The content of Praxis examinations are based on national job analyses conducted by ETS in each teaching field. The focus of the job analyses is on the core skills and abilities that prospective teachers need to teach their subject matter. Therefore, Praxis content focuses on curriculum that is taught at the middle school and high schools levels. Given this context, Praxis performance is related to SAT performance. Prospective teachers who passed Praxis had an average SAT total score of about 1032 and those who failed Praxis had an average SAT score of about 855. Interestingly, the “average total SAT score for examinees passing Praxis” is analogous to most published college entry requirements.

Over the decade, Connecticut has made a commitment to high quality teaching. The state is committed to having a highly qualified, competent and caring teacher in every classroom. As a result of Connecticut’s commitment to equity and excellence in education, Connecticut students have consistently performed at high levels in state and national comparisons, in some part due to the quality of Connecticut’s teaching force and the standards required for entering the profession. Connecticut’s performance on the National Assessment of Educational Progress (NAEP) is among the highest in the nation. Further, Connecticut’s performance on the SAT’s was 3rd out of 6 of the states with participation rates of 70% or more, with Connecticut having the highest participation rate in the nation (82%). Nevertheless, we are still challenged by the student

³ This adjustment has been used on all Praxis exams with the exception of mathematics.

performance gap in achievement between our affluent and less affluent school districts. One of the major goals of Connecticut's new comprehensive plan is to close the student performance gap between rich and poor communities. We cannot accomplish this goal without a highly competent, committed and diverse teaching force. The Praxis examinations are designed to determine minimum basic skills and subject area competence. Effective teaching, of course, is much more than basic skills or subject specific knowledge; however, without minimum command of basic skills and the subject area field the likelihood of being an effective teacher is greatly reduced.

Of particular concern is the gap between white and minority performance on the Praxis tests. White candidates consistently outperform minority prospective teachers. The performance gap in Connecticut is similar to the gap reported on the Praxis tests nationally and to the performance gap on other national tests (SAT, ACT, GRE) as well as on the CMT and CAPT. To further reduce the gap in performance on the Praxis tests, we need to reduce the gap in performance in Connecticut's public school students. The causes for the achievement gap for students in PreK-12 have been heavily researched and they appear to fall in two main categories: 1) factors related to socioeconomic status and the dire effects of poverty and 2) factors related to a students' school (Baker & Linn, 2000). Students living in poverty are more likely to suffer from conditions which interfere with learning, such as poor health, frequent changes in residence and schools, lack of educational resources in the home and unstable families. Often, students living in poverty attend schools with inadequate resources staffed by teachers not as qualified to teach their subjects (Darling-Hammond, 2000). Teachers may also have low expectations of these students, leading them to low expectations for themselves. Research also suggests that schools can take the following specific steps in order to raise achievement for all students:

- High expectations of all students.
- Using teaching strategies that directly involved each student in learning and exploring.
- Smaller class size, especially in K-3.
- High teacher quality.
- Summer enrichment programs.

There are no simple solutions, and Connecticut's efforts to raise all student achievement over time have continued to show progress. Continued focus, adequate resources and, most importantly, the desire and will to ensure that all students can achieve must continue to be a priority.

Currently, there are few opportunities statewide for students who fail Praxis to receive adequate support. Connecticut needs to concentrate its efforts to work in partnership with universities and RESCs to provide targeted assistance to all candidates who have difficulty passing Praxis. The education profession is also competing with higher paid professions for minority candidates. Continuing efforts need to be made to attract minorities into the teaching profession.

Recommendations

The first three recommendations reflect the advice provided by a panel of more than 100 Connecticut teachers and test preparation educators who reviewed the actual Praxis II tests. The remaining recommendations are the result of an in-depth analysis of Praxis test results, which cover a five-year period.

To ensure that all students have highly competent teachers, the following recommendations are presented:

1. Discontinue Special Education Application of Core Principles Across Categories of Disability Praxis II Test. A new examination, which has been developed to replace this one, was reviewed and determined preferable by the panel of educators. It will be validated for use in Connecticut this Fall and brought to the State Board of Education for adoption and establishment of the passing score. The Special Education: Knowledge-Based Core Principles Praxis II test will still be required.
2. Discontinue Spanish Productive Language Skills Praxis II Test. The review committee determined that the Productive Language Skills examination did not cover the range of Spanish cultures, specifically Mexico and Puerto Rico, most prevalent in Connecticut. The Spanish Content Knowledge Praxis II test will still be required.
3. Discontinue Agriculture Test. This test was considered to include out-dated items which were not reflective of current agriculture and did not reflect the range of agricultural employment and instruction in Connecticut. Currently, there is no alternative assessment available for Agriculture.
4. Adjust the passing standard on the Praxis II Mathematics: Content Knowledge test from 141 to 137 and apply the adjusted standard to all Connecticut candidates who have taken or will take this test (July 1, 1997, to present). In 1997, when this test was reviewed by a representative panel of mathematics teachers, they followed the modified Tucker/Angoff method for standard setting and recommended a score of 141. The standard practice of adjusting the recommended score by one-half of the standard error of measurement (SEM) (See

page 4 for explanation) was not done for the mathematics test. Since there were no national or state data available for this newly developed test, the Advisory Committee's recommended passing score was presented to the Board for adoption with the intent that the passing rate would be monitored and a recommendation would be made to the Board for an adjustment, if warranted. Using the unadjusted passing score of 141 resulted in a comparably lower first-time and final pass rate for mathematics than the other Praxis II tests. The initial pass rate for mathematics is 51% and final pass rate is 70%, which is the lowest of all the Praxis II tests. Adjusting the score to 137 is expected to produce a final pass rate of approximately 76% which is more in alignment with the pass rates of other Praxis II tests, does not significantly lower the mathematics knowledge and skill required for passing the exam or for teaching, and would move Connecticut from the third to the seventh highest passing score of the 20 states using this exam.

5. Ensure access to remedial assistance to all prospective teachers, with a focus on minority candidates, in need of support for Praxis I and Praxis II. The State Department of Education has contracted with Educational Testing Services to provide training for RESC and higher education trainers in preparing for Praxis II exams. Praxis II support will be available to individuals by January 2002. Support is currently available at the RESCs and some universities for Praxis I-CBT.
6. Analyze candidates' performance on the Praxis I for those who did not meet the standard. Identify types of skill area deficiencies and share analysis with the preparing Connecticut high schools and higher education institutions.

7. Ensure that teacher preparation programs provide ongoing individual support and tutoring, with a focus on minority candidates, to enable them to meet the certification testing requirements. The State Department of Education, in partnership with the Department of Higher Education, will continue their efforts toward this goal.
8. Attract more candidates, including minorities, into the teaching profession through Alternative Route to Certification programs, additional scholarships and financial incentives and “grow your own” programs. Some of these incentives will require legislative action in 2002.
9. Establish a formal five-year evaluation cycle—beginning with this evaluation—for all Praxis exams and review and validate new tests as they become available.

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Attachment 1. Comparison of Test Standards by State

Table 11. Praxis-I and Praxis-II Test Standards by State

STATES	Praxis-I			Praxis-II																
	Reading (711)	Writing (721)	Mathematics (731)	Art Making (131)	Art(132)	Art(133)	Biology (235)	Business Ed (100)	Chemistry (242)	Chemistry (245)	Earth Science (571)	Elementary Ed (11)	Elementary Ed (12)	English (41)	English(42)	French (171)	French (173)	General Science (433)	General Science (435)	German (181)
Alaska	319	319	316											158	160			145		
Arkansas	322	321	318	167	140	157		550						159	150	167	158			
CAE	325	320	322																	
California									150						155	173		135		
Connecticut	324	318	319	148	130	157	152	620	140	151	157	163	148	172	160	163	165	145	157	132
Delaware	322	319	319																	
Dist. of Columbia	319	316	319									146	148	142		173	155			
DODDS	325	320	320																	
Florida	321	318	317									151		165						
Georgia	322	321	321	156		161	152	610	150	154			137	168	150	162	156	130	145	156
Hawaii	322	316	321		135	166		550				164	135	164		164	158			148
Indiana	323	318	320					480				143		153						
Kentucky	320	318	318	154		154		584				163		160	154	167	159			157
Louisiana	319	316	315					540				156	137	160						
Maine	320	312	317																	
Maryland	325	319	322		155	159		590		153	152		150	164		170	161			153
Minnesota	320	318	314																	

(table continues)

STATES	Praxis-I			Praxis-II																	
	Reading (711)	Writing (721)	Mathematics(731)	Art Making(131)	Art(132)	Art(133)	Biology (235)	Business Ed (100)	Chemistry (242)	Chemistry (245)	Earth Science(571)	Elementary Ed (11)	Elementary Ed (12)	English (41)	English(42)	French (171)	French (173)	General Science(433)	General Science(435)	German (181)	
Mississippi	316	318	314			139	150	560		151				157		161					
Missouri						153		550			147	164		158							161
Montana	319	314	315																		
Nebraska	316	318	316																		
Nevada	321	318	317	154		156		560	145	151		158	135		155	162	152	135			
New Hampshire	321	318	317				153		140	153	148			164	155			135	147		
New Jersey						136		580			134			155			146				146
North Carolina	323	319	318					580													
Ohio						157		610			151	162		157		169	160				165
Oklahoma	320	318	316																		
Oregon	321	317	320		145	161		620	140					164	145	164	150	135			161
Pennsylvania						161				154	157	168		160			170		146	165	
South Carolina	322	319	317					540				164	145	162	150						
Tennessee	321	319	318			150		570	140		144	159		157	150		160	130			139
Vermont	327	322	322																		
Virgin Islands	322	320	315																		
Virginia	326	324	323			159	155	590		153	156			172			169				162
West Virginia	321	318	317			160	152	570		157		155		155			131				132
Wisconsin	322	320	318																		

(table continues)

STATES	Praxis-II																			
	MS English (49)	MS Science (439)	MS Social Studies (89)	MS Math (69)	Mathematics (61)	Music (111)	Music (113)	Physical Ed (91)	Physical Ed (92)	Physics (262)	Physics (265)	Social Studies (81)	Spanish (191)	Spanish (192)	Special Ed (351)	Special Ed (352)	Technology Ed (50)	Health Education (550)	Home Economics (120)	
Alaska					146															
Arkansas					136	145	150					155	155	155	150	141	550	520	560	
California										160				181						
Connecticut	164	162	160	158	141	150	153	154	154	135	141	162	170	163	155	150	640	680	630	
Dist. of Columbia												145	153	166						
DODDS					141															
Florida												158								
Georgia					136	150	154		148	150		151	167	159	152	130	620	650	550	
Hawaii					136	145	139	160	145			154	171		136	141	560		560	
Indiana												147					590	420	540	
Kentucky	153	139	144	143	141	146	150	152	151			151	160	158		146	600	623	570	
Louisiana												149								510
Maryland					141		154	153			143	154	162	168	155	147	580		640	

(table continues)

Praxis-II

STATES	MS English (49)	MS Science(439)	MS Social Studies	MS Mathematics (69)	Mathematics (61)	Music (111)	Music (113)	Physical Ed (91)	Physical Ed (92)	Physics (262)	Physics (265)	Social Studies (81)	Spanish (191)	Spanish (192)	Special Ed (351)	Special Ed (352)	Technology Ed (50)	Health Ed (550)	Home Economics
Mississippi					123		139	150			139	143		155			560		560
Missouri	163	149	154	158	137		151	153				152	158				570	480	560
Nevada						150	149	154	149			152	160	156	150		580	600	610
New Hampshire				151	127					140	146	155							
New Jersey					130		143	139				153	149				560		550
North Carolina	145	134	149	141				158							143	136	580	640	540
Ohio					139		154	153				157		167	151	147		480	540
Oregon				163	147	170	167	160	141	145		158	166	165	155	156	640	720	650
Pennsylvania					136		158					157	166		152	144	620	650	600
South Carolina												158					570	710	540
Tennessee					136		150	152	148	135			152	154	145	140	580	570	580
Virginia					147		160				147	161	161				610		550
West Virginia	147	151	151	148	133		155	150			126	148	143		136		570	640	530

**Attachment 2. Praxis-II Initial and Final Pass Rates for Endorsement Areas and for
Subtests**

Table 12. Initial and Final Pass Rates by Endorsement Areas for Praxis-II Subtests Administered
between June 1994 and December 31, 2000

Test Name	Number of Tests	Total N	Initial Pass Rates		Final Pass Rates		Percent Increase	
			N	%	N	%	N	%
Agriculture	1	45	44	98	45	100	1	2.22
Art	3	344	266	77	319	93	53	16.61
Biology	1	592	476	80	533	90	57	10.69
Business Education	1	583	448	77	483	83	35	7.25
Chemistry	2	284	246	87	262	92	16	6.11
Earth Science	1	106	87	82	93	88	6	6.45
Elementary Education	2	4,811	3,197	66	4,221	88	1,025	24.26
English Language Arts	2	1,885	1,410	75	1,624	86	214	13.18
French	2	163	134	82	151	93	17	11.26
General Science	2	194	194	100				
German	1	25	24	96	24	96	NC	NC
Health Education	1	1,171	1,034	88	1,089	93	55	5.05
Home Economics	1	208	171	82	182	88	11	6.04
Italian	1	86	77	90	79	92	2	2.53
Mathematics	1	540	276	51	376	70	100	26.60
MS English Language Arts	1	135	117	87	127	94	10	7.87
MS Science	1	95	57	60	72	76	15	20.83
MS Social Studies	1	169	140	83	148	88	8	5.41
MS Mathematics	1	127	91	72	102	80	11	10.78
Music	2	399	221	55	337	84	116	34.42
Physical Education	2	669	344	51	568	85	116	34.42
Physics	2	97	78	84	90	91	12	13.33
Social Studies	1	1,884	1,440	77	1,620	91	180	11.11
Spanish	2	714	432	61	552	77	120	21.74
Special Education	2	1,805	1,037	57	1,516	84	479	31.60
Technical Education	1	268	229	85	240	90	11	4.58

Note. NC = no change.

Table 13. Initial and Final Pass Rates for Praxis II Subtests Administered between June 1994 and
December 31, 2000

Code	Test Name	N	Initial Pass Rates		Final Pass Rates		Percent Increase	
			N	%	N	%	N	%
780	Agriculture	45	44	98	45	1.00	1.00	2.22
131	Art Making	553	476	86	526	95	50	9.51
132	Art: Cont/Trad/Crit/Aest	548	499	91	533	97	34	6.38
133	Art: Content Knowledge	362	332	92	346	97	14	4.05
235	Biology Content Knowledge	592	476	80	533	90	57	10.69
100	Business Education	583	448	77	483	83	35	7.25
242	Chemistry: Content Essays	284	246	87	262	92	16	6.11
245	Chemistry: Content Knowledge	284	246	87	262	92	16	6.11
571	Earth Science	106	87	82	93	88	6	6.45
11	Elementary Ed: Curr/Inst/Asse	4,995	4,386	88	4,717	94	331	7.02
12	Elementary Ed.: C/A Exercise	4,882	3,470	71	4,373	90	903	20.65
41	English Lang/Lit/Comp	1,885	1410	75	1,624	86	214	13.18
42	English Lang/Lit/Comp: Essays	1,885	1410	75	1,624	86	214	13.18
171	French: Language Skills	272	233	86	252	93	19	7.54
173	French: Content Knowledge	170	152	89	162	95	10	6.17
433	General Science: Essays	370	209	56	270	73	61	22.59
435	General Science: Knowledge	434	356	82	379	87	23	6.07
181	German: Content Knowledge	25	24	96	24	96	NC	NC
550	Health Education	1,171	1,034	88	1,089	93	55	5.05
120	Home Economics Education	208	171	82	182	88	11	6.04
620	Italian	86	77	90	79	92	2	2.53
61	Mathematics	540	276	51	376	70	100	26.60
49	MS English Language Arts	135	117	87	127	94	10	7.87
439	MS Science	95	57	60	72	76	15	20.83
89	MS Social Studies	169	140	83	148	88	8	5.41
69	MS Mathematics	127	91	72	102	80	11	10.78
111	Music: Concepts and Process	411	252	61	355	86	103	29.01
113	Music: Content Knowledge	436	375	86	405	93	30	7.41
91	Physical Education: Knowledge	720	444	62	600	83	156	26.00
92	Physical Education: Moves	678	509	75	640	94	131	20.47
262	Physics: Content Essays	144	131	91	138	96	7	5.07
265	Physics: Content Knowledge	99	83	84	90	91	7	7.78
81	Social Studies: Knowledge	1,884	1,440	77	1,620	91	180	11.11
191	Spanish: Content Knowledge	752	557	74	638	85	81	12.70
192	Spanish: Language Skills	729	478	66	578	79	100	17.30
351	Special Education: Knowledge	1,839	1,434	78	1,687	92	2.53	15.00
352	Special Education: Applications	1,820	1,172	64	1,589	87	417	26.24
50	Technology Education	268	229	85	240	90	11	4.58

Attachment 3. Summary of Scale and Raw scores for Praxis-II Subtest

Table 14. Summary of Scale and Raw Scores for Praxis-II Subtests

Code	Test Name	Type of Test	Scale Score	Raw Score	Total raw score*	% Raw Correct	SEM
0780	Agriculture	MC	470	56	119	47.06	38
0131	Art Making	CR	148	27	52	51.92	--
0133	Art: Content Knowledge	MC	157	77	120	64.17	5.2
0132	Art: Content, Traditions, Criticism, and Aesthetics	CR	130	9	30	30.00	--
0235	Biology: Content Knowledge	MC	152	92	150	61.33	29
0100	Business Education	MC	620	94	156	60.26	18
0242	Chemistry: Content Essays	CR	140	12	30	40.00	--
0245	Chemistry: Content Knowledge	MC	151	61	100	61.00	6.0
0571	Earth Science: Content Knowledge	MC	157	64	100	64.00	32
0011	Elementary Education: Curriculum, Instruction, and Assessment	MC	163	74	110	67.27	6.0
0012	Elementary Language: Content Area Exercises	CR	148	26	48	54.17	--
0041	English Language Literature, and Composition: Content Knowledge	MC	172	93	138	67.39	4.3
0042	English Language, Literature, and Composition: Essays	CR	160	15	24	62.50	--
0173	French: Content Knowledge	MC	165	96	139	69.06	4.3
0171	French: Productive Language Skills	MC	163	69	120	57.50	4.5
0433	General Science: Content Essays	CR	145	16	30	53.33	--
0435	General Science: Content Knowledge	MC	157	78	120	65.00	5.1
0181	German: Content Knowledge	MC	162	96	140	68.57	24
0550	Health Education	MC	680	87	119	73.11	28

(table continues)

Code	Test Name	Type of Test	Scale Score	Raw Score	Total raw score*	% Raw Correct	SEM
0120	Home Economics Education	MC	630	100	148	67.57	20
0620	Italian	MC	670	91	130	70.00	28
0061	Mathematics: Content Knowledge	MC	141	29	50	58.00	8.6
0049	Middle School English Language Arts	MC/CR	164	79	117	67.52	--
0069	Middle School Mathematics	MC/CR	158	38	60	63.33	--
0439	Middle School Science	MC/CR	162	79	120	65.83	--
0089	Middle School Social Studies	MC/CR	160	77	120	64.17	--
0111	Music: Concepts and Processes	CR	150	11	20	55.00	--
0113	Music: Content Knowledge	MC	153	74	132	56.06	5.2
0091	Physical Education: Content Knowledge	MC	154	78	119	65.55	4.8
0092	Physical Education: Movement Forms-Analysis and Design	CR	154	23	66	34.85	--
0262	Physics: Content Essays	CR	135	11	30	36.67	--
0265	Physics: Content Knowledge	MC	141	54	100	54.00	5.9
0081	Social Studies: Content Knowledge	MC	162	89	129	68.99	4.9
0191	Spanish: Content Knowledge	MC	170	96	139	69.06	4.3
0192	Spanish: Productive Language Skills	CR	163	90	120	75.00	--
0352	Special Education: Application of Core Principles	MC	150	30	50	60.00	8.8
0351	Special Education: Knowledge-Based Core Principles	MC	155	38	60	63.33	7.8
0050	Technology Education	MC	640	101	149	67.79	15

* Note. Total raw score is the number of scored items for the MC tests, the total number of points for the CR tests and for tests using both MC and CR it is the sum of the sum of scored MC items and total CR point