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EXECUTIVE SUMMARY

I. Background

The Texas Education Agency is about to complete a three-year effort to design new state assessments. In Spring 2002, the Texas Assessment of Knowledge and Skills (TAKS) will be field-tested in classrooms of public schools, and in the following spring (2003), TAKS tests will replace the TAAS tests (Texas Assessment of Academic Skills). The new assessments are being developed to comply with Senate Bill 103, enacted by the Texas Legislature in 1997. Senate Bill 103 expands the subject areas on several middle school tests, adds assessments to the ninth grade, and changes the high school graduation test – moving the test to eleventh grade and adding subject areas to the test.

Instead of simply modifying the current assessment program, the Agency decided to create all new assessments from Grade 3 through Grade 11 because students had "grown out" of TAAS tests. Rising test scores have pushed current assessments beyond the range that performance can be accurately measured.

New, improved assessments are required to measure higher levels of academic achievement, and, as importantly, to set higher standards for Texas public schools.

II. Purpose and Methods

This report describes the development of new state assessments, the Texas Assessment of Knowledge and Skills (TAKS). It compiles the information now available about TAKS tests, examines the state policy and practices used to develop assessments, identifies legal requirements and relevant judicial rulings, and investigates the research on current assessments. The report is designed to ascertain if TAKS tests appear on course to meet requirements and expectations.

III. Findings

Review of information now available suggests that TAKS tests will look very much like current assessments, the TAAS tests (Texas Assessment of Academic Skills). Based on documents reviewed in this report, it appears that TAKS tests may continue to:

- Measure and set standards for student achievement below national and international standards;
- "Norm" test scores from year-to-year *rather than scoring student performance based on demonstrated mastery of state curriculum standards;*
- Measure only student knowledge of those specific state curriculum standards that educators believe are currently being taught in classrooms *as opposed to those that the State Board of Education has ruled shall be taught;*

- ✯ Encourage curriculum narrowing, as "teachers teach to the test," because assessments will measure only a limited part of state curriculum standards established for a grade or course *rather than all of the state's requirements;*
- ✯ Allow students to pass grade-level tests by answering questions on subject matter for several grades below the grade tested *rather than requiring students to demonstrate proficiency on and only on standards established for the grade tested to pass;*
- ✯ Devote a substantial portion of tests to "generic skills" that have no specific relevance to the academic subject *rather than testing knowledge and skills specifically related to the academic discipline;*
- ✯ Trivialize questions by imbedding answers in the question itself *rather than posing questions that require students to demonstrate acquired academic knowledge and skills;*
- ✯ Set and measure a level of academic difficulty that is based on the current level of student performance *as opposed to the level of difficulty set by state curriculum standards;*
- ✯ Use test questions that cannot be scored objectively yet increase the amount of time required for test administration and are more costly *rather than multiple choice questions;*
- ✯ Design tests that measure low levels of student performance more accurately than higher levels; and
- ✯ Require students to take tests several times to secure fully accurate scores *instead of designing a statistically accurate test that reliably measures student performance.*

IV. Significance

Development of new state assessments is a complex endeavor that must balance the demands of state law with judicial rulings, state goals for student achievement, current levels of student performance, and public expectations. This endeavor is far more complicated today than when previous state assessments were developed.

The introduction of TAKS tests coincides with the effort to end social promotion in Texas. Senate Bill 103 expands the accountability system and raises the "stakes" associated with state assessments by linking student performance with grade-level promotion from elementary school through high school graduation.

The introduction of TAKS tests also coincides with the federal reauthorization of the Elementary and Secondary School Act (ESEA). Federal funding for ESEA will now be tied to students' annual yearly progress on state assessments toward a standard of proficiency that all students can fully meet in 12 years.

Changes in state and federal law demand significant changes in state assessments. The accuracy of new assessments must be significantly higher to support new "high stakes" expectations, and performance standards on state assessments must be significantly higher for students to reach national or international proficiency.

Changing conditions in public education also demand significant changes in state assessments. The Texas Legislature will need more accurate and useful information from assessments to

develop innovative solutions to school finance, teacher certification, and teacher compensation that are linked to student performance.

Texas needs significantly new and improved assessments, however, there is little evidence that TAKS tests will be sufficiently different from previous state assessments. Based on information currently available, TAKS tests may not meet the demand for tests to measure more meaningful academic expectations, set high standards for proficiency, increase test accuracy, and produce more useful information about student performance.

V. Recommendations for Policy

The findings of this report stimulate questions about: the integrity of standards-based reforms; the insulated and exclusive exercise of bureaucratic authority in decisions about assessments; lack of direct and immediate authority by elected officials over assessments; and public oversight and involvement. The following recommendations are proposed to address these questions.

- Independent national experts should be secured to immediately validate that TAKS will meet state requirements and public expectations.
- The State Board of Education should create an advisory council of educators, academicians, test experts, business leaders, and public policy analysts to propose policy and legislative solutions to problems with state assessments.
- The State Legislature should enact law to restore authorities of the elected State Board of Education over state assessments and the accountability system to make educational accountability reflect public expectations.

I. INTRODUCTION

The Texas Education Agency is about to complete a three-year effort to design new state assessments. In Spring 2002, the Texas Assessment of Knowledge and Skills (TAKS) will be field-tested in classrooms of Texas public schools, and in the following school year (2002-03), TAKS tests will replace the Texas Assessment of Academic Skills (TAAS) tests in the School Accountability System. Development of the new state assessments has been underway since 1997 when the Texas Legislature approved Senate Bill 103, legislation that expands the subject areas covered by the tests and moves the high school graduation test from tenth to eleventh grade.[1] Instead of simply expanding the current tests, the Agency indicated it would shelve TAAS and create all new assessments for elementary, middle, and high school.

The Texas Education Agency's decision was right. Texas needs new, better tests:

- ✯ Current TAAS tests are designed to measure lower levels of academic proficiency than are required of youth today;
- ✯ High test scores now breech the ceiling of TAAS test accuracy;
- ✯ Statistical weaknesses undermine the quality of information produced by the test and diminish test accuracy; and
- ✯ Classroom instruction is often narrowed and trivialized as teachers "teach to the test."

The time is right for new, improved state tests. New tests must set higher academic standards to meet increased expectations for student achievement. New tests must be more successful in identifying and measuring the knowledge and skills that Texans value and expect. New tests must offer a higher degree of accuracy for students who will soon be required to pass TAKS tests for promotion to fourth, sixth, and ninth grade. New test scores must furnish a more accurate and more meaningful prediction of subsequent performance in successive courses, post-secondary programs, and employment readiness.

New tests must equip State Legislators, the State Board of Education, and the Texas Education Agency with the information needed to link student performance with school finance, and to link student achievement with the certification, retention, and pay of teachers. New tests are needed to address Texas' higher education crisis, and to produce a more highly skilled workforce.

Texas needs new, better tests. However, as TAKS tests near completion, it appears that new assessments may not be sufficiently different from previous tests, and there is doubt that TAKS is on course to meet public expectations.

This report:

- ✯ Examines information now available about TAKS tests;
- ✯ Describes how TAKS tests are being developed;

[1] Outlines of the current and future assessment programs are provided as Appendix I and Appendix II. These charts were produced by the Texas Education Agency, Austin, TX.

- ✯ Compares TAKS tests with TAAS tests;
- ✯ Reviews independent research on TAAS tests to determine how TAKS tests should be different;
- ✯ Provides the blueprint for a well-designed test; and
- ✯ Outlines steps that can be taken to ensure TAKS tests are highly accurate and academically challenging.

Today is the time to ensure that state assessments will meet public expectations and support state goals for improving student achievement. As the development of TAKS tests draws to a close, Texas should commission national experts (as many other states routinely do but has never before been done in Texas) to conduct an independent audit of test content and statistical design. Conducted immediately, the audit can validate TAKS tests, recommend any measures that may be needed to improve reliability and raise standards, increase public confidence, and keep the new state assessments on the schedule established by the Legislature for test administration.

II. HOW WILL TAKS TESTS DIFFER FROM TAAS TESTS?

A. Will TAKS Tests Measure Different Academic Expectations?

Assessment objectives for TAKS tests, the statements describing the knowledge and skills that assessments will measure, show disappointingly few differences from the objectives currently tested by TAAS tests. Assessment objectives for TAKS tests primarily represent a rewording and an occasional elaboration of TAAS test objectives, although many TAKS test objectives are identical to TAAS.[2] Assessment objectives given below depict the minimal changes between what is planned for TAKS tests and what is currently on TAAS tests.

Example 1. Assessment Objective 2 – Mathematics Grade 3

TAKS test: *The student will demonstrate an understanding of patterns, relationships, and Algebraic reasoning.*

TAAS test: *The student will demonstrate an understanding of mathematical relations, functions, and other Algebraic concepts.*

Example 2. Assessment Objective 5 – Mathematics Grade 3

TAKS test: *The student will demonstrate an understanding of probability and statistics.*

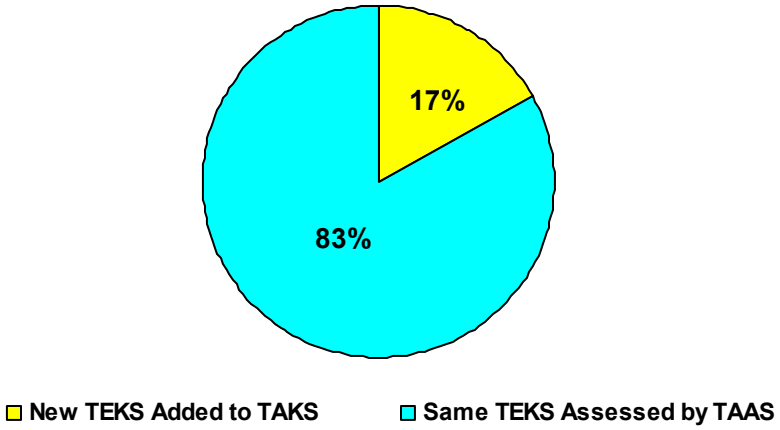
TAAS test: *The student will demonstrate an understanding of probability and statistics.*

Assessment objectives are based on the expectations for learning that are established by state curriculum standards, the Texas Essential Knowledge and Skills (TEKS Standards). However, not all TEKS Standards are selected for measurement on state assessments. The new TAKS test could - but does not - measure significantly different TEKS Standards than are presently tested by TAAS. Because TAKS tests are not based on new assessment objectives nor new TEKS Standards, it is likely that TAKS tests will be significantly similar to TAAS tests.

[2] TAKS Assessment Objectives are published on the Texas Education Agency website, http://www.tea.state.tx.us/student.assessment/taks.

Figure 1 depicts how closely the TEKS Standards tested by TAKS tests mirror the TAAS test; fully 83 percent of material to be tested on the Grade 3 Mathematics assessment is presently tested by TAAS tests.[3] Appendix III provides a comparative analysis of assessment objectives for present and future Grade 3 Mathematics.

Figure 1:
Grade 3 Math TAKS:
Additional TEKS Standards to be Tested



B. Will TAKS Tests Measure Higher Academic Expectations?

There is little evidence that TAKS tests will measure more difficult knowledge and skills than are presently tested by TAAS tests, based on the assessment objectives and curriculum standards selected for TAKS. While the Texas Education Agency asserts that TAKS tests will be significantly more difficult, confidence about test rigor is tenuous.

State assessments became more difficult, according to the Agency, when TAAS tests replaced TEAMS (the Texas Educational Assessment of Minimum Skills, administered from 1986-90), and when new curriculum standards (the Texas Essential Knowledge and Skills-TEKS) were adopted in 1997.[4] Despite the increased test difficulty described by the Agency, no change has been evident in test questions, and no change is seen in test scores. Soaring TAAS test scores, as shown in Figure 2,[5] contradict the expectation that an increase in test difficulty will trigger a temporary decline in scores (or at least a plateau) as students face a harder test.

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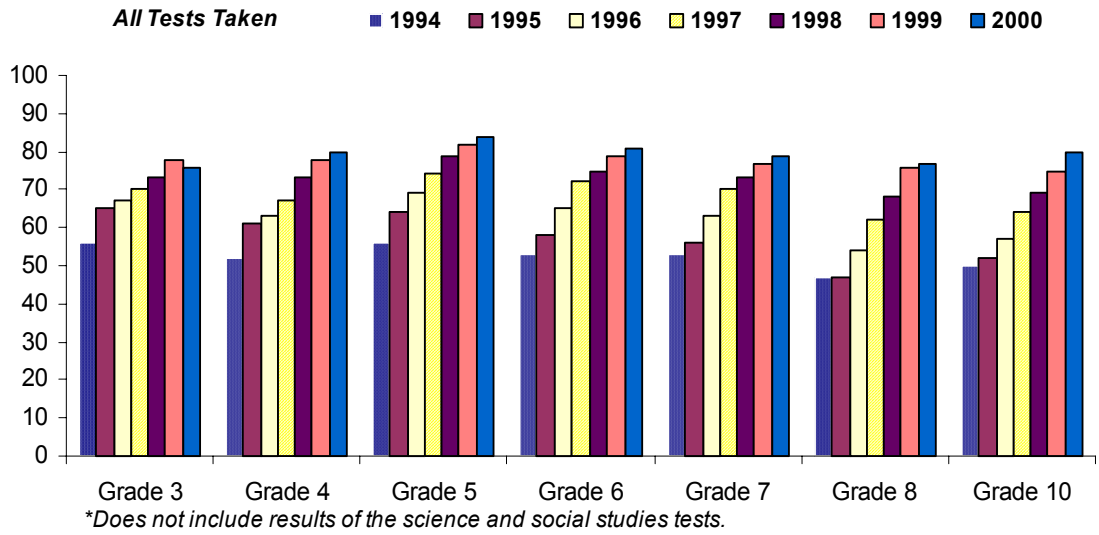
[3] Data in Figure 1 excerpted from the analysis of grade 3 TAKS and TAAS Math Assessment Objectives, Texas Education Agency, Austin, TX, http://www.tea.state.tx.us/student.assessment/taks/objectives/index.html

[4] *Report to the State Board of Education, Committee on Instruction, Past and Future Activities of the Student Assessment Program,* Texas Education Agency, Austin, TX, September 6, 2001.

[5] *2000 Comprehensive Biennial Report on Texas Public Schools,* Texas Education Agency, Austin, TX, 2000, Page 4.

Figure 2:
TAAS Percent Meeting Minimum Expectations,
All Students, 1994-2000



Confidence in the academic rigor of TAAS tests was further eroded when it became known that the introduction of TEKS Standards did not necessitate changes in TAAS test questions for math and reading.[6]

A communication from the Agency about the Spring 2000 assessments sharpened doubt about TAAS tests when a memorandum reassured schools that students would continue to pass TAAS tests at the same rate even though the test difficulty had increased.[7] This communication stimulated newspaper headlines throughout the state: *"Bar for passing TAAS lowered,"*[8] *"TEA has been juggling TAAS passing grade requirements,"*[9] and *"Students pass with fewer right answers."*[10]

Indeed, state assessments were designed to be more difficult in Spring, 2001; tests were constructed with more academically challenging questions. However, TAAS tests were not more

[6] *Goals and Components of the Texas School Reform and the Accountability System,* Presentation by Dr. Ann Smisko to the Workshop on Matching the Intended Reform, Enacted Reform, and Outcomes of Education Reform in Two States, The National Academy of Science, National Research Council, Board on Testing and Assessment, Forum on Educational Excellence and Testing Equity, Irvine CA, June 1999, Page 368.

[7] TEA Correspondence to School Administrators, October 25, 1999, Texas Education Agency, Austin, TX, http://www.tea.state.tx.us/taa/taas991025.html

[8] Terrence Stutz, "*Bar for Passing TAAS Lowered,"* The Dallas Morning News, June 9, 2001.

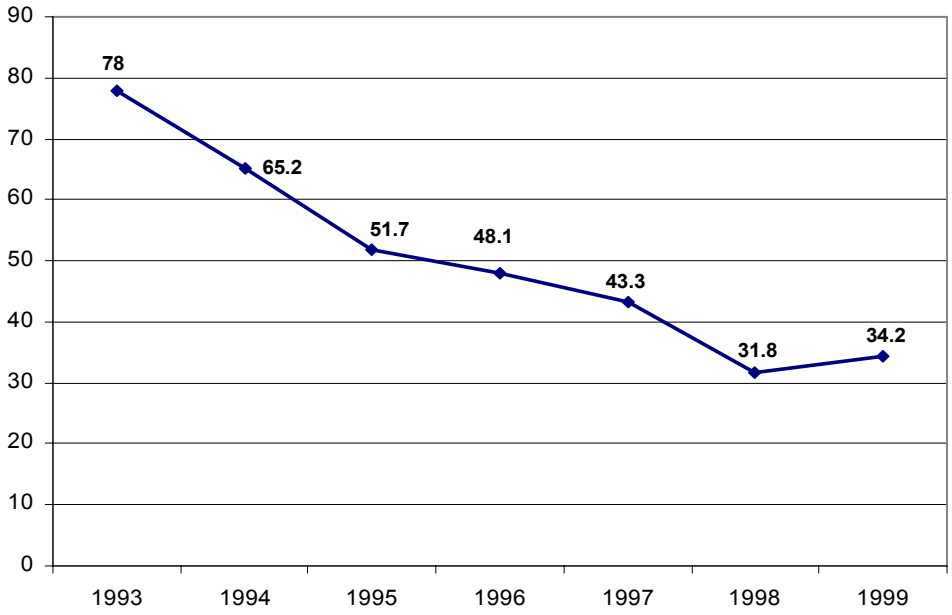
[9] Carlos Guerra, *"TEA has been juggling TAAS passing grade requirements,"* San Antonio Express-News, June 12, 2001.

[10] Carter Thompson, *"Students pass with fewer right answers,"* Galveston County Daily News, October 7, 2001.

difficult for students because the number of correct answers for passing (the passing standard) was decreased.[11] The purpose for this remains unclear. Why did the Agency increase test difficulty without increasing expectations for student achievement? How meaningful is this change for students? Were Texans fully and honestly informed about the increase in test difficulty?

Other measures of academic achievement also provoke questions about the academic rigor of TAAS tests and the meaning of TAAS test scores. Standardized tests of college readiness fail to corroborate TAAS test scores or performance gains on TAAS tests. Improvement of student performance displayed by the passing rates on TAAS tests are inconsistent with student performance on the Texas Academic Skills Program (TASP test – the state test of college readiness) and the College Board's SAT test, as shown in Figures 3 and 4.[12]

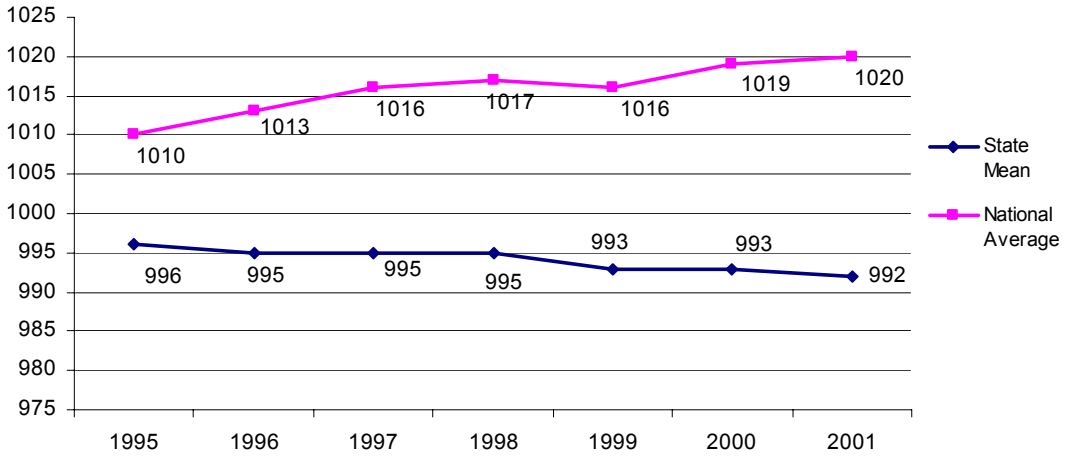
Figure 3:
Initial TASP Test Pass Rates 1993-1999
(All Three Parts)



[11] Ibid.

[12] *Texas Higher Education Coordinating Board, Annual Texas Academic Skills Program/Alternative (TASP/A) Test, Report of Student Performance, Pass Rates by Race/Ethnicity and Test Area 1993–1997 High School Graduating Classes and 1995–1998 High School Graduating Classes,* Texas Higher Education Coordinating Board, Austin, TX, 1998 and 2000; and *Profile of College-Bound Seniors–Texas*, The College Board, New York, NY, 1995– 2001.

Figure 4: Texas Mean SAT Scores: Verbal & Math Combined 1995-2001



While tests of college readiness do measure different, more sophisticated levels of math and reading than are currently measured by TAAS tests, it is reasonable to expect that the performance gains reported for TAAS tests should stimulate higher SAT test scores and TASP test passing rates, an expectation that remains unmet.

To dismiss the disparity between rising TAAS test scores and weak performance on other measures, Texas' performance on the National Assessment of Educational Progress (NAEP) is often cited. NAEP, a test that samples approximately 10,000 of the 4 million students in Texas public schools, furnishes only weak corroboration of TAAS test scores.

On some tests, both NAEP and TAAS test scores rose (although at significantly different rates), while on other tests, NAEP scores fell as TAAS test scores rose. For example, students posted gains on both the 2000 Grade 8 Mathematics NAEP and TAAS test, as shown in Figure 5;[13] passing rates for TAAS tests soared 76 percent while NAEP rose only 4 points. On the 2000 Grade 8 Science NAEP, however, TAAS passing rates rose 10 percent while NAEP declined 2 points, as shown by Figure 6.[14]

[13] *Nation's Report Card Mathematics 2000,* National Center for Education Statistics, U.S. Department of Education, Office of Educational Research and Improvement, Washington, DC, 2001; and *State Academic Excellence Indicators, State Performance 1992-2000*, Texas Education Agency, Austin, TX, http://www.tea.state.tx.us/perfreport/aeis. TAAS scores for 1993 were used because 1992 scores were not available.

[14] *Nation's Report Card Science 2000, State Report Card 2000,* National Center for Education Statistics, U.S. Department of Education, Office of Educational Research and Improvement, Washington, DC, 2001; and *State Academic Excellence Indicators, State Performance 1992-2000*, Texas Education Agency, Austin, TX, http://www.tea.state.tx.us/perfreport/aeis.

Figure 5:
Grade 8 Mathematics: NAEP Cut Scores & TAAS Passing Rates

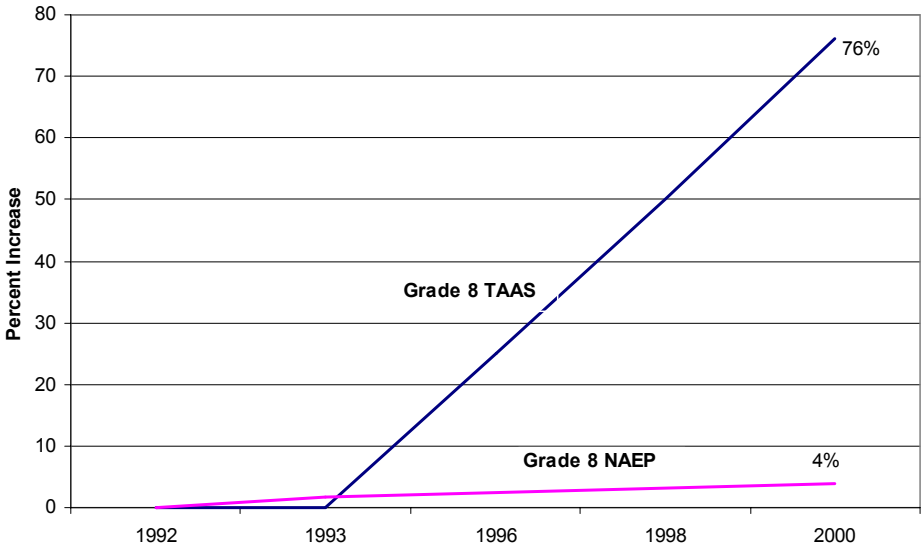
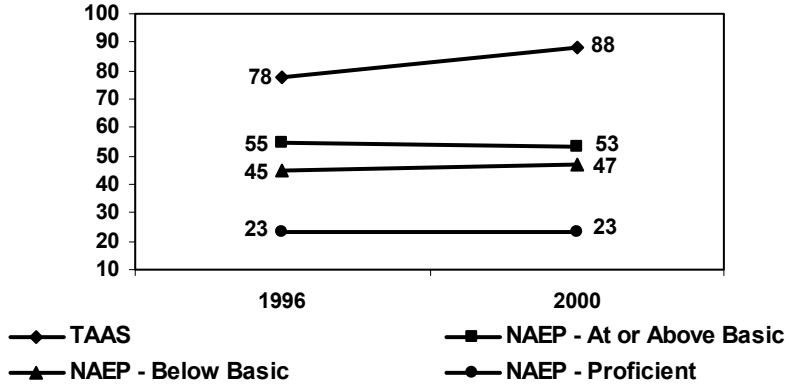


Figure 6:
Grade 8 Science: NAEP Scores & TAAS Passing Rates



To establish higher academic standards for TAKS tests, the Texas Education Agency plans to link the difficulty of all assessments to the high school graduation test, a test the Agency promises will measure "higher expectations" for student learning.[15] As required by the 1997 Texas Legislature, the new graduation test will primarily assess knowledge and skills that students are expected to acquire in high school: Algebra I, Geometry, Biology, Integrated Chemistry and Physics, English III, and U.S. History.[16] Senate Bill 103 requires one middle

[15] *2003 Early Indicator Reports,* TEA Correspondence to Educators, March 9, 2001, Texas Education Agency, Austin, TX, http://www.tea.state.tx.us/taa/perfreport010309.html

[16] Texas Education Code, Subtitle H. Public School Accountability, Chapter 39, Subchapter B. Assessment of Academic Skills.

school subject to be tested on the new high school graduation test; assessment of Early American History, a course of study required for Grade 8, must be covered by the new graduation test.[17] As required by Senate Bill 103, the difficulty of the new TAKS graduation test should be bolstered by the requirement that the test measure college readiness.[18]

However, students will not be required to meet this higher academic standard to graduate. Unfortunately, this well-intended but ill-conceived provision will guarantee the passing standard for the TAKS graduation test will remain below the level of academic proficiency that is needed for college success. The passing standard for the new high school graduation test will institutionalize the ill-founded notion that most students are not destined for college, and may undermine the state's aggressive effort to dramatically increase college enrollment. Unless college completion is sharply increased, Texas could face a "crisis," according to the Texas Higher Education Coordinating Board.[19] Governor Rick Perry states, "Today in Texas, only one in five of our citizens has an undergraduate or graduate degree…We must do better."[20]

Earlier this year, the Agency devised a higher passing standard for 2001 TAAS tests to show school districts how passing scores could be affected by TAKS tests. Districts were issued a report that showed how each individual student tested would have performed if passing had been predicated on answering 70 percent of the test questions correctly (instead of using the current passing standard which is equivalent to average performance "norms" of students who took the 1989-1990 TEAMS Test[21]).[22] The effect on passing rates was dramatic; only 43 percent of students would have passed all of the tests administered.[23]

The results of this exercise suggest that the difficulty of TAAS tests can be dramatically increased simply by requiring students to answer several additional questions correctly to pass the test. It also underscores how current TAAS tests are designed as a hybrid of both criterion and norm-referenced tests. A "norm-referenced" test bases the passing standard on the average performance of students on one test administration, using the average score as the benchmark measure of proficiency for other students who later take the test. A "criterion-referenced" test sets the standard for passing at the percentage or number of questions answered correctly that demonstrates mastery of a set body of knowledge.[24] TAAS test questions are criterion-referenced

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[17] Ibid.

[18] Ibid.

[19] *Closing the Gaps By 2015,* Texas Higher Education Coordinating Board, Austin, TX, 2000, Page 1.

[20] *Governor Rick Perry's Priorities for Texans,* http://www.governor.state.tx.us/priorities_cover.htm

[21] *Texas Student Assessment Program, Technical Digest for the Academic Year1999-2000,* Texas Education Agency and NCS Pearson, Harcourt Educational Measurement, Austin, TX, Page 319-375.

[22] *2003 Early Indicator Reports.*

[23] *Ibid.*

[24] Gregory J. Cizek, *Filling in the Blanks.* Thomas B. Fordham Foundation, Vol. 2, No. 11, October 1998, Page 11-13.

(based on TEKS standards), but the passing standard and scores for TAAS tests are based on the Texas Learning Index[25] (average scores derived from the 1989-1990 administration of TEAMS Test) which "norms" the scores of all students.

C. Will "Open Response" Questions Improve Assessments?

The most significant difference between TAKS tests and TAAS tests appears to be the introduction of additional "open response" questions in math, science, social studies, and reading. "Open" questions require students to fill in blanks or to supply a narrative answer (instead of selecting one correct answer from multiple choices). Previously, "open" questions were only included in the writing section of TAAS tests.

Advocates of non-standardized testing claim that "open response" questions allow measurement of more sophisticated thinking skills than is possible with multiple choice testing.[26] However, advocates of standardized tests point to a large body of research that demonstrates the ability of multiple choice questions to test complex skills with greater accuracy, and note that "open" questions require more time and expense to administer and score.[27]

An example of an "open response" question is provided below.[28] Taken from a collection of Algebra assessments developed for informal classroom use, this particular question is unlikely to be included in TAKS tests but is offered to show how "open" questions require greater time than is required to answer a multiple-choice question and how scoring necessitates human attention (involvement that elevates the cost of testing and decreases the reliability of scores).

A school organization has found four different places from which they may place an order for t-shirts. Each function below could represent the cost of placing a t-shirt order as a function of the number of t-shirts purchased. Write a scenario for each function.

A) $c = 5t$ B) $c = 3.25t + 55$ C) $c = 3t + 100$ D) $c = 6t - 55$

The same knowledge and skills tested by this "open response" question could be measured – more accurately and efficiently – by a multiple choice question that provided four scenarios and required students to identify the appropriate function for each scenario.

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[25] The Texas Learning Index is a scoring system constructed to identify how far above or below scores are posted relative to the passing standard (*2000 comprehensive Biennial Report on Texas Public Schools,* Texas Education Agency, Austin, TX, 2001, Page 4).

[26] *Filling In The Blanks,* Page 2-3.

[27] *Ibid.*

[28] *Sample Assessments from the Algebra Assessment Project,* T-Shirts, Algebra TEKS (c.1)The Charles A Dana Center, University of Texas at Austin, Austin, TX, 2001.

The use of "open response" questions requires policy leaders to establish priorities for the length, accuracy, cost, and reliability of assessments. Test construction involves trade-offs. Will "open response" questions yield information about student performance that is more valuable than test reliability? Does the information gleaned from "open" questions justify additional testing costs? Should additional classroom time be devoted to longer assessments if the additional test questions decrease test accuracy? These questions are particularly important as Texas expands the stakes attached to assessments. In 2003, Texas' "social promotion" law will require third grade students to pass TAKS tests for grade-level promotion; in 2005, fifth graders must pass TAKS for advancement, and in 2008, eighth graders must pass TAKS tests for advancement.[29]

III. HOW WILL TAKS TESTS REPLICATE TAAS TESTS?

A. Will TAKS Tests Be More Difficult Than TAAS Tests?

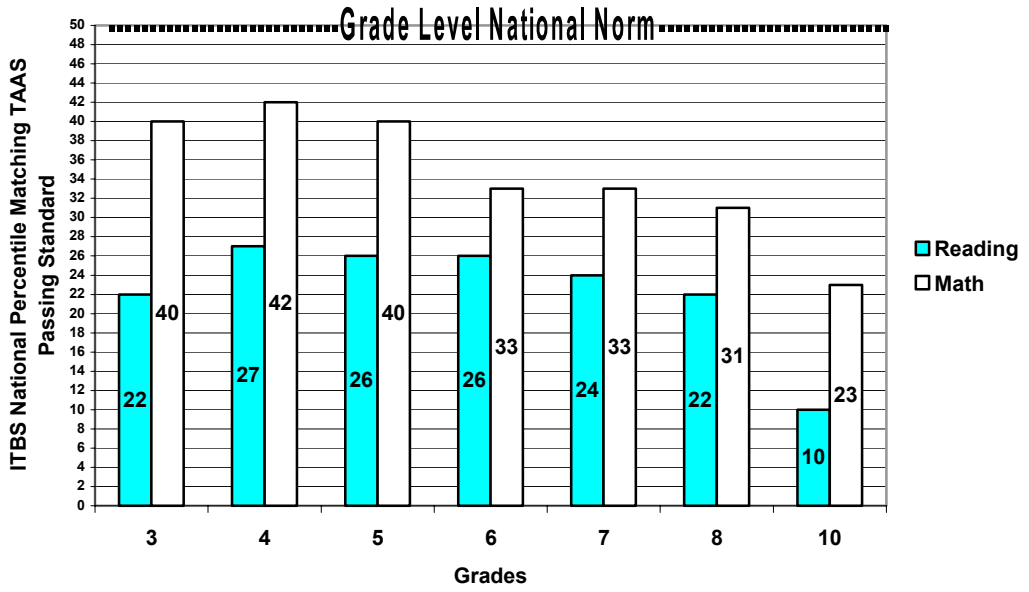
Until tests are released in Spring 2002, it is impossible to answer this question definitively, however, certain assumptions about test difficulty can be made with reasonable certainty. It can be predicted that TAKS tests will be less academically rigorous, setting lower expectations for student proficiency, than the standards set by the national norm-referenced tests that are used by many other states. For the last several decades, state assessments have been far less rigorous than tests such as the Iowa Test of Basic Skills and the Stanford 9. What is the current level of difficulty for TAAS tests? What does it mean to pass TAAS tests?

In 1998, the Dallas Independent School District set out to answer this question. The district administered both TAAS tests and the Iowa Test of Basic Skills to all students, and analyzed both tests to determine what national percentile of performance on the norm-referenced test was equivalent to TAAS test scores for each student. Dallas found that passing math and reading TAAS corresponds to at least one to two years below grade-level standards established by the Iowa Test of Basic Skills, as shown by Figure 7.[30]

[29] The "Social Promotion Bill," Senate Bill 4 was enacted in 1999 as Chapter 28.00211, Texas Education Code.

[30] *TEA Position on Using TAAS Data and TAAS-Norm Referenced Comparisons,* Dallas Public Schools, Education Committee, Dallas, TX, February 9, 1999, Page 5 and 6.

Figure 7:
Dallas ISD 1998 TAAS Analysis Relationship Between
TAAS Standard & ITBS Grade Norms
Reading & Math Tests

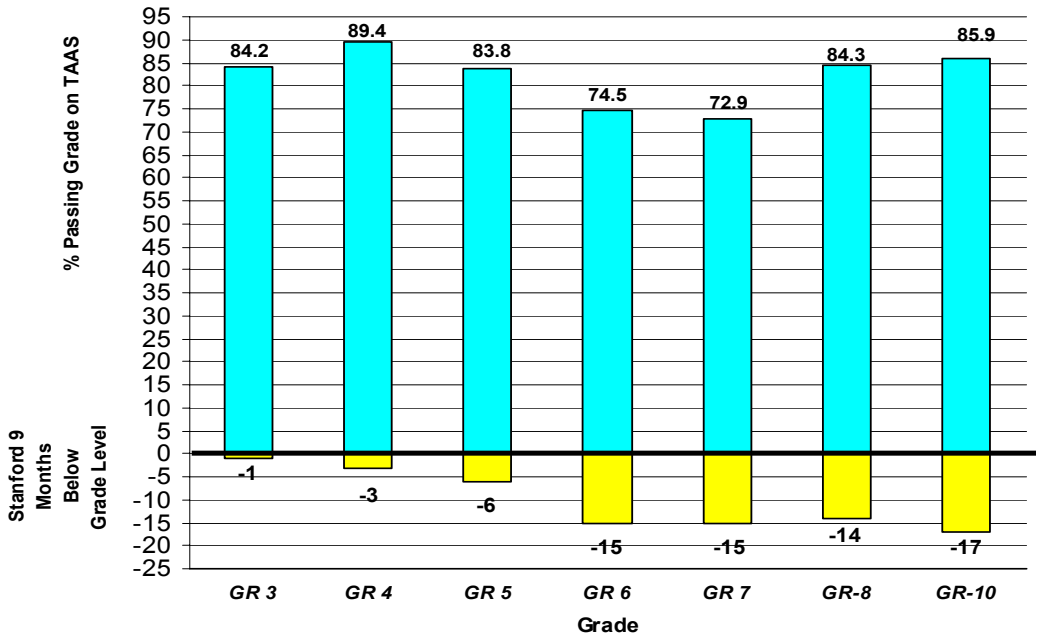


Test scores from Houston Independent School District also reveal what it means to pass TAAS tests. Houston administers a national norm-referenced test with TAAS tests annually. As shown in Figure 8, scores released by the district reveal that students passing TAAS tests in Spring 2000 scored below grade level in math and reading at all grades; Houston students who passed TAAS tests performed one to seventeen months below norms established by the Stanford 9 (Stanford 9 measures performance by months – nine months corresponds to one full school year).[31]

[31] Group Report for Houston ISD, Stanford 9 Test of Academic Skills, Fourth Edition, 2000, Houston, TX, provided to Texas Public Policy Foundation in response to request for public information.

Figure 8:

Comparison of Houston ISD Reading Performance 2000



Information about student performance from the two school districts indicates that TAAS tests measure below-grade performance, and that student achievement is significantly below national standards. However, a national comparative study conducted by the Texas Education Agency in 1999 found very different results. The Agency contracted with Harcourt Educational Measurement (the corporation that is contracted to advise the Agency on developing TAAS tests and which produces the TAAS tests) to administer the Metropolitan Achievements Tests (MAT-7) to almost 90,000 students in Texas public schools.[32] The Agency found that students are generally performing above national standards on the MAT-7; Texas students scored slightly above the national norm on math, reading, science, and social studies in Grades 3 to 5 and Grade 10, but scored slightly below the national norm in Grades 6 through 8.[33]

As revealed by the Agency's pilot testing of higher passing standards on the Spring 2001 TAAS tests, the difficulty of current state assessments plays a leading role in determining the difficulty of TAKS tests. What level of difficulty will TAKS tests present to students? Based on the current design of TAAS tests, it seems reasonable to expect that TAKS tests will continue to establish expectations for student performance that are lower than national standards. If Texas were to hold students to the passing standards established by national tests, such as the Stanford 9 and Iowa Test of Basic Skills, "School districts would be required to retain one-half of their student bodies," according to an analysis of TAAS tests commissioned by the Texas Education

[32] *Student Performance Results 1998-1999, Texas Student Assessment Program,* Texas Education Agency, Austin, TX, 2000, Page 208 and 209. State law requires the Agency to conduct biennial studies that sample student performance according to national standards-Texas Education Code, Section 35.028.

[33] *Ibid.*

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Agency.[34] It is equally reasonable to assume that TAKS tests will establish slightly higher performance requirements than are currently set for TAAS tests, as required by SB 103.

It is also reasonable to expect that the difficulty of TAKS tests will be determined in the same manner as TAAS tests. For TAAS, tests were piloted to determine the average passing rate of different student groups and the State Board of Education set passing standards based on information about test scores (current levels of student performance).[35] It is likely that the difficulty of TAKS tests, like TAAS, will be only slightly more difficult than its predecessor.

Prevailing wisdom argues that increased difficulty must be introduced in small increments to prevent an unacceptable rate of test failure. However, extraordinary wisdom counters that student achievement should not be restrained by low standards, relying on research that shows students rise to higher expectations when given academically rigorous classroom instruction. Nothing in Texas public education will do more to establish (or diminish) higher expectations than the TAKS test.

Because test difficulty has a direct relationship with classroom instruction, student learning and student achievement outcomes, decisions about test difficulty must be carefully aligned with state goals. In this, state law is crystal clear: "The state's students will demonstrate exemplary performance in comparison to national and international standards" - Education Code, Title 2, Subtitle A., Chapter 4, Section 4.001 [b].

Lastly, determinations about test difficulty must also consider statistical accuracy of the TAKS test. Reliability is intimately linked to the degree of academic difficulty that tests are designed to measure. Today, many students are posting scores on TAAS tests that exceed the statistical accuracy limits of the test. Test results at extreme ends of the scoring range, both high scores and low scores, lack measurement accuracy[36]; this weakness can be resolved by expanding the range of difficulty set for TAKS tests and increasing the number of test questions. Because average TAAS test scores reach 80 or above on the Texas Learning Index, as shown by Figure 9A and Figure 9B, [37] scores have breeched the threshold of accuracy. Texas requires a more rigorous test for accurate measurement.

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[34] *Comparisons Between the TAAS and Norm-Referenced Tests: Issues of Criterion-Referenced Validity,* The Sociology of Education Research Group, The University of Houston, Houston, TX, 1999, Page 27.

[35] *Texas Student Assessment Program, Technical Digest For the Academic Year 1999-2000,* Page 136-375.

[36] *Ibid, Page 30.*

[37] *2000 Comprehensive Biennial Report on Texas Public Schools,* Table l.3 Average TLI, All Students, 1994-2000, Texas Education Agency, Austin, TX, 2001, Page 5. Data has been reformatted by Texas Public Policy Foundation for this report.

Figure 9A
Average Reading Scores
Texas Learning Index, All Students, 1994 - 2000

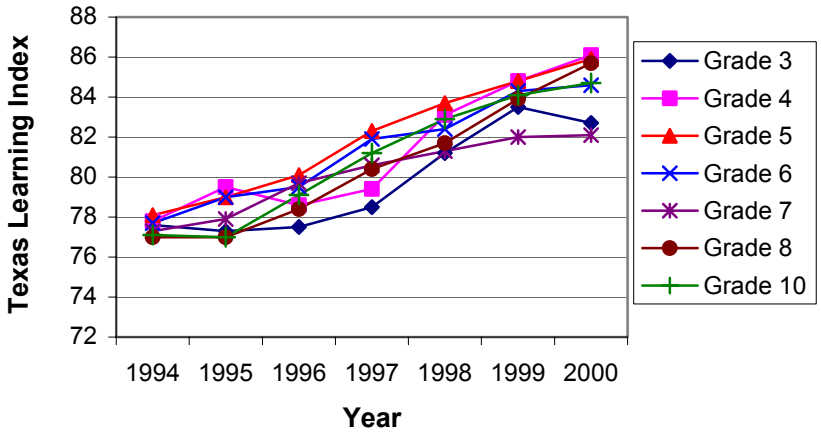
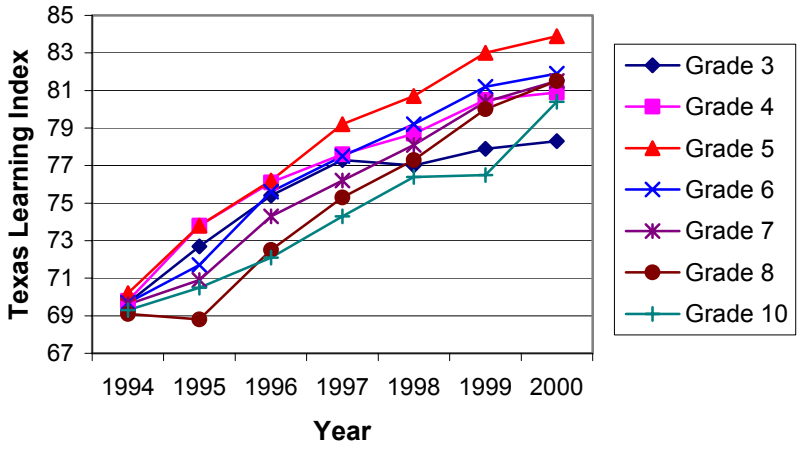


Figure 9B
Average Mathematics Scores
Texas Learning Index, All Students, 1994 - 2000



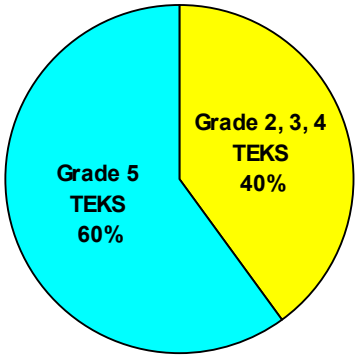
B. Test Content

1. Will TAKS be a Grade-Level Test?

Like TAAS tests, TAKS tests will be administered annually for elementary and middle school students, beginning in third grade. Like TAAS tests, TAKS tests will not be definitive, specific grade-level tests; state assessments are, instead, only capable of measuring student proficiencies for a group of grade levels. As shown by Figure 10, only 60 percent of the assessment objectives for the Grade 5 Science TAKS test measure mastery of the State's fifth grade curriculum standards; 40 percent of the new assessment objectives for Grade 5 Science represent

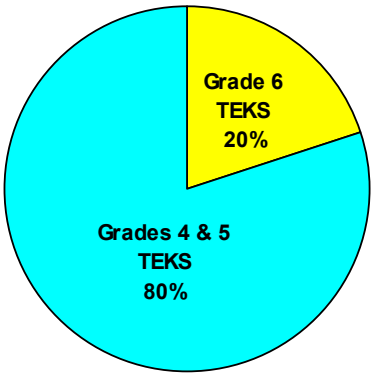
expectations for student learning from Grades 2, 3, and 4. A detailed analysis of the grade-level expectations for the Grade 5 Science TAKS test is provided at the conclusion of this report in Appendix IV.

Figure 10:
Below Grade Level TEKS:
Percent of Grade 2,3,& 4 TEKS on Grade 5 Science TAKS



Assessment objectives for TAKS tests do not clearly identify different and higher expectations for student performance as grades progress. In many subject areas, there is substantial repetition in what will be tested year after year. In reading, for example, 80 percent of what will be tested by TAKS in fourth, fifth, and sixth grade is exactly the same, as shown in Figure 11.

Figure 11:
Percent of Grade 4 & 5 TEKS
On Grade 6 Reading TAKS Test

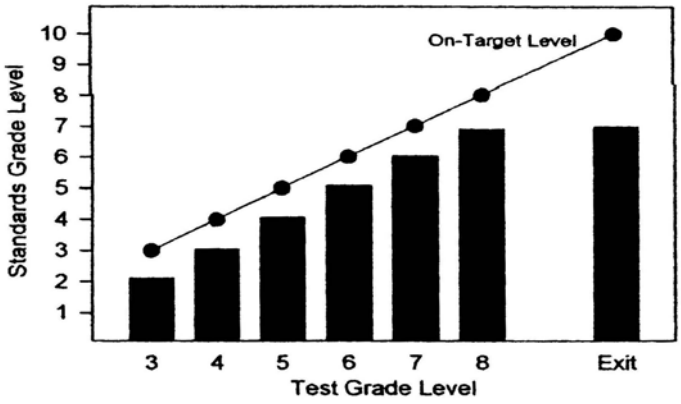


Where some assessment objectives for TAKS tests are, indeed, different for the new tests, the difference is slight from one grade to another. As shown by the analysis provided in Appendix V, TAKS test objectives for math in Grades 3 and 4 look much the same.

Testing performance expectations below the grade level presents several challenges. This form of test can allow students to attain passing scores without mastering the more complex knowledge and skills for the grade tested; this weakens the academic rigor of the test and leads to lower expectations. Dallas ISD's evaluation of TAAS tests suggests that students can pass grade-level TAAS tests by correctly answering below grade-level questions.[38] This suggestion is confirmed by a study of TAAS tests that was commissioned by the Texas Education Agency in 1995 showing that more than half of the third grade math TAAS tests measure first and second grade expectations for learning.[39]

Testing performance expectations below the grade level further weaken the academic rigor of assessments when passing scores can be earned on below grade-level expectations. As shown by Figure 12,[40] a graphic published in a study of Texas' new math assessments, the difficulty of TAAS tests for math are significantly below grade-level difficulty established by state curriculum standards, TEKS.

Figure 12
Standards Grade Level of TAAS Items



When tests measure performance below grade level, the difficulty of each grade-level test becomes problematic for educators who teach to the test, for publishers who create instructional materials, and for test developers who design the assessments. The consequences of ill-defined assessment objectives for TAAS tests are evident in Figure 13 where virtually the same operation of subtraction is tested in Grades 3, 4, 5, 6, 7, 8, and in the high school graduation exam. The following questions were excerpted from the TAAS tests administered in Spring 2000. The boxes showing the operation of subtraction included in the figure were not part of the original questions but were added for this report.

[38] *TEA Position on Using TAAS Data and TAAS-Norm Referenced Comparisons,* Page 6.

[39] Kathleen Coburn, *Mathematics Textbook Analysis for Teachers,* Texas Education Agency, Austin, TX, 1995, Page 6.

[40] Paul Clopton, *Texas Mathematics in Transition* in Texas Education Review, Fall 2000, Page 57.

Figure 13

Grade 3, Spring 2000 (A), Question 40

Darla had 83¢ in coins. She spent 36¢ for a package of gum. How much money did she have left? Mark your answer.

- o 43¢
- o 47¢
- o 53¢
- o 59¢

83
− 36

Grade 4, Spring 2000 (A), Question 36

There are 853 students at Travis Elementary School. The school nurse has checked 457 students to see if they have good vision. How many students have not had their vision checked?

F. 404
G. 400
H. 396
J. 346

853
− 457

Grade 5, Spring 2000, Question 41

Eugene bought school supplies for $7.54. He gave the clerk $10.00. How much change should he receive?

A. $3.56
B. $3.46
C. $2.56
D. $2.46
E. Not Here

10.00
− 7.54

Grade 6, Spring 2000 (A), Question 43

Wilma and Silvia's mother had $75 to spend on school clothes for the 2 girls. If she spent $37.99 on clothes for Wilma, how much money did she have left to spend on Silvia's clothes?

A. $47.01
B. $38.99
C. $37.11
D. $36.01
E. Not Here

75.00
− 37.99

Grade 7, Spring 2000, Question 43

Jim's purchases at the grocery store totaled $9.46. How much change should he have received from a $20 bill?

A. $10.64
B. $11.46
C. $11.54
D. $11.64
E. Not Here

20.00
− 9.46

Grade 8, Spring 2000, Question 54

A customer gave a cashier $20 to pay for $13.39 in purchases. How much money should the customer have received in change?

F. $6.39
G. $6.61
H. $7.39
J. $7.61

20.00
− 13.39

Exit Level, February 2000, Question 59

Lisa put $455 into an interest-bearing savings account. After 1 year there was $481.66 in the account. If she made no deposits or withdrawals during that year, how much interest did Lisa's account earn?

A. $25.34
B. $25.66
C. $26.34
D. $26.66
E. $34.66

481.66
− 455.00

Measuring performance should be predicated on assessment objectives that clearly define the level of academic difficulty that students are expected to demonstrate at each grade. Because assessment objectives for TAAS tests fail to define a standard of difficulty, the difficulty of grade-level tests can and do vary from year-to-year. As demonstrated by a study of TAAS Reading tests conducted by Dr. Sandra Stotsky using a well-known readability formula, the overall difficulty of Texas reading assessments at all grade levels declined from 1995 to 1998.[41]

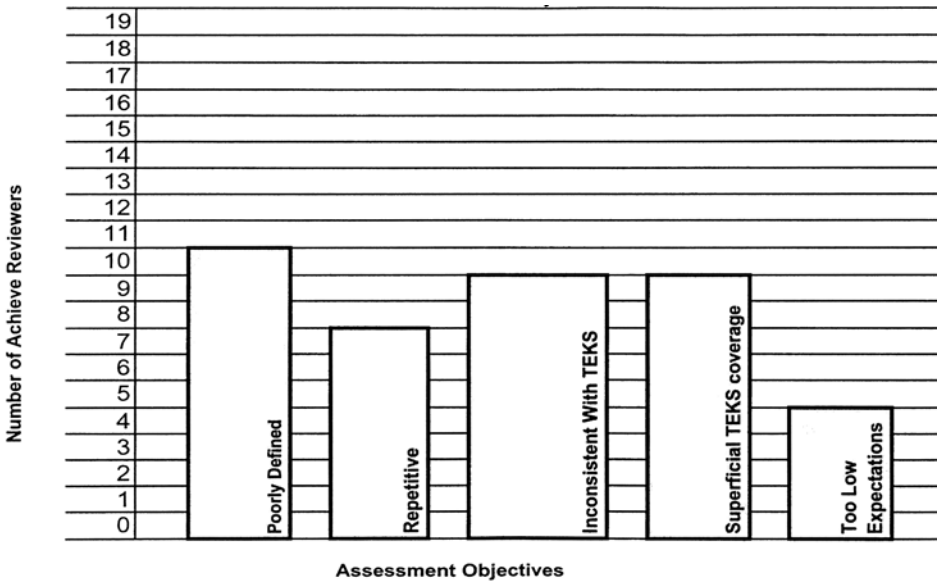
While it is true that state curriculum standards - the TEKS - identify the knowledge and skills that students are expected to acquire as grade groupings or "clusters," state law does not require assessments to measure grade clusters. To be meaningful, assessments must measure student performance against what is expected at the specific level of difficulty. Although the TEKS standards do not specify what level of knowledge or skill a student must demonstrate for each grade, standards for test difficulty could be established by clarifying performance goals for the

[41] Sandra Stotsky, *The State of Literary Study in National and State English Language Arts Standards* in What's at Stake in the K-12 Standards Wars: A Primer for Educational Policy Makers, Peter Lang, NY, 2000, Page 250 and 251.

TEKS standards, or simply by requiring correct answers on the most academically difficult TEKS standards established for each grade.

The failure of TAKS – to define expectations for proficiency, to clearly differentiate expectations for proficiency required at different grades, and to establish high academic expectations – was recently identified by expert reviews of a national nonprofit organization founded to help states raise and measure educational standards. The Texas Education Agency commissioned ACHIEVE to evaluate TAKS test objectives this past spring.[42] Findings of ACHIEVE's panel of academic experts[43] are displayed in Figure 14, and a list of specific criticisms of TAKS is provided in Appendix VI.

Figure 14
Key Findings of ACHIEVE's Analysis of Proposed TAAS II
July 2001



2. Will TAKS Test Questions Have Academic Value?

Because assessment objectives for TAKS tests are fundamentally the same as objectives used to construct TAAS tests, it is reasonable to assume that the questions will be similar as well. This replication is not completely desirable; the design of TAAS test questions frequently lacks academic rigor – with questions that assess material below grade level, require no prior knowledge about a subject area to produce the correct answer, and supply answers within the

[42] Reports of the National Review Panel, ACHIEVE Review of TAKS Assessment Objectives was obtained by Texas Public Policy Foundation from the Texas Education Agency, June 2001.

[43] It is possible that the number of experts who found weaknesses in TAKS would have been higher if the Texas Education Agency had not replaced several ACHIEVE experts with individuals who had worked with the Agency to develop the Texas Essential Knowledge and Skills. This chart was created by Texas Public Policy Foundation from ACHIEVE's expert reviews.

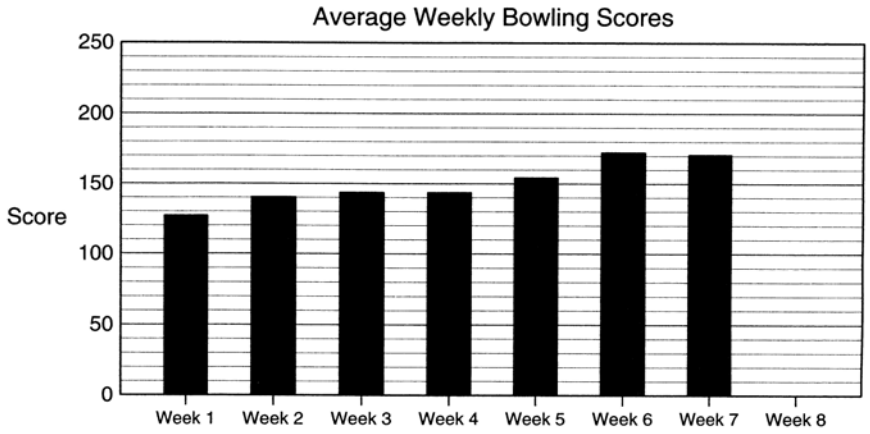
questions. If TAKS tests are designed like TAAS tests, TAKS test questions will likely lack academic integrity and further narrow classroom instruction.

The American Federation of Teachers found that 98 percent of questions on the Grade 8 Math TAAS tests were "easy" in a comparison of five different eighth grade math tests used throughout the nation.[44] This study found that most TAAS test questions merely required students to recognize information given within the question.

"Trivialization" or designing questions to measure the simplest, least consequential aspect of a subject can easily occur when assessment objectives do not clearly define the levels of performance required or desired from students. Figure 15, a question taken from the End-of-Course Algebra Exam for Spring 2000, illustrates trivialization. The answer is provided by visual clues – there is no need to read the question because the answer can be inferred from the pattern in the picture. The academic content of this question might be considered equally trivial for an End-of-Course Algebra test. Is a student's ability to read graphs an important skill that should be tested in algebra?

Figure 15

3 Janet has participated in a bowling league for 7 weeks. The graph below shows her average score by week.



Which is the most reasonable prediction of Janet's average score for Week 8?

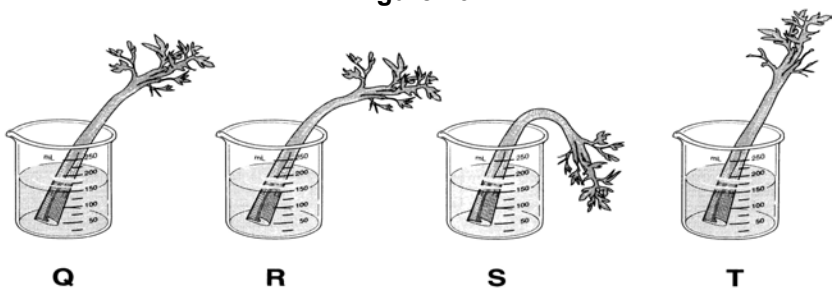
A Less than 130
B From 130 to 160
C From 170 to 200
D From 210 to 240
E More than 240

Trivial questions are far too evident on TAAS tests. Figure 16 is taken from the Summer 2000 End-of-Course High School Biology test. While the question begins with a promising description of internal cytoplasmic pressure, it deteriorates into a question that merely asks

[44] *Setting Higher Sights: A Need for More Demanding Assessments for U.S. Eighth Graders,* The American Federation of Teachers, 1999, http://www.aft.org/Edissues/standards/mathgap/Index/htm

students to determine the sequence of pictures that would represent most to least. The design of multiple choice answers points out the answer to this question; only one of the choices identifies extremes.

Figure 16



3 Turgor is the internal cytoplasmic pressure that results from the amount of water absorbed by plant cells. The picture shows a turgor pressure demonstration using stalks of celery in different salt solutions. Which of these shows the celery stalks in order from the one with the most turgor pressure to the one with the least turgor pressure?

A Q, T, S, R
B R, S, T, Q
C S, R, T, Q
D T, Q, R, S

A question from the Spring 2000 high school Biology End-of-Course exam, shown in Figure 17, appears at first glance to involve reading metrical measurements on a graduated cylinder; however, the question is solely designed to determine if students recognize the importance of using a level surface when measuring liquids. This question would be a breeze for any child who ever prepared a pitcher of Kool-Aid.

Figure 17

The picture shows a student reading a graduated cylinder. Which change would help ensure that a more accurate measurement is made?

A The student should be seated.
B The cylinder should be held with two hands**.**
C The student should be wearing insulated gloves.
D The cylinder should be on a flat surface.

Poorly designed, trivial questions weaken the meaningfulness of tests. This is a particularly serious problem as teachers are encouraged to "teach to the test," and many classroom hours are invested in test drills. TAAS test preparation booklets, now widely used throughout Texas public schools, offer sad commentary on the value of teaching to TAAS tests.

A manual published by the Princeton Review, "Cracking the TAAS," describes how students can identify the right answer to a question about *King Lear,* without having read the play, simply by recognizing the characteristic patterns of multiple choice answers furnished by TAAS tests.[45] This manual also advises students how to increase the likelihood of passing TAAS tests by making sure the easy questions are answered first; the manual recommends that students divide the test booklet into thirds, to begin the test at the last third because these questions are always the easiest and then to finish up from the front of the test booklet because the first third of the questions are only moderately difficult.[46] Students can pass the test, the manual notes, without having to answer the difficult questions in the middle third of the book.[47]

A *Parent's Guide to the TAAS for Grade 3* published by Kaplan equips parents with the information that third grade students "need to be successful on TAAS tests."[48] According to this guide, students can be fairly certain of answering a question correctly if they select the multiple-choice response that is "happy."[49] It notes that TAAS tests are designed by former educators who don't put "bad feelings" on tests, and gives the following example for students to use for practice in recognizing correct answers.[50]

> *How did Aunt Dawn feel about Dashiell at the end of the story?*
> *A. Angry B. Pleased C. Curious D. Sad*

Some research suggests that TAAS test questions are uniquely designed, based on a particular test format on which familiarity with the test question offers singular advantage. A study of TAAS tests that was conducted by a charter school to determine why students scored at or above grade level on a national norm-referenced test but failed TAAS tests cites unfamiliarity with the design of TAAS test questions as one of the causes for low TAAS test scores.[51] Conversely, familiarity with the format of test questions may explain why a significant number of students who score above grade level on national norm-referenced tests fail TAAS tests. A study of the relationship between scores on the TAAS tests, the Iowa Test of Basic Skills, and the Stanford 9 Test of students in the Houston Metropolitan Area found that one third of the students who scored above national standards failed the TAAS tests.[52] This finding is especially significant given the below-grade difficulty of TAAS tests.

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[45] *Cracking the TAAS, Exit Level Math,* The Princeton Review, Random House Inc., NY, 2000, Page 11.

[46] *Ibid,* Page 14.

[47] *Ibid.*

[48] *Kaplan - Parent's Guide to the TAAS for Grade 3: A Complete Guide to Understanding the Test and Preparing Your Child for a Successful Test-taking Experience,* Simon and Schuster, Inc. Riverside, NJ, 1999, Page 18 and 19.

[49]. *Ibid.*

[50] *Ibid.*

[51] Robert Dixon, *Enhancing Student Performance on the Texas Assessment of Skills (TAAS)*, Advantage Schools, San Antonio, TX, 1999.

[52] *Comparisons Between the TAAS and Norm-Referenced Tests: Issues of Criterion-Related Validity,* Page v.

TAKS tests should assess the expectations for student learning that are most valued by Texans. Parental and teacher concerns about the meaningfulness of TAAS test questions reveal the gulf between the knowledge and skills valued and those now tested by TAAS tests. If tests are unable to measure all of the knowledge and skills that students are required by state law to demonstrate, test questions should be restricted to the expectations for learning that the public most value. The TEKS Standards that are selected for assessments will define, and for many classrooms limit, what students will be taught. Figure 18[53] depicts the percentage of the state curriculum that will be taught if teachers "teach to the TAKS tests.

Figure 18
TEACHING to the TEST
CURRICULUM NARROWING
Percentage of TEKS Covered by TAKS

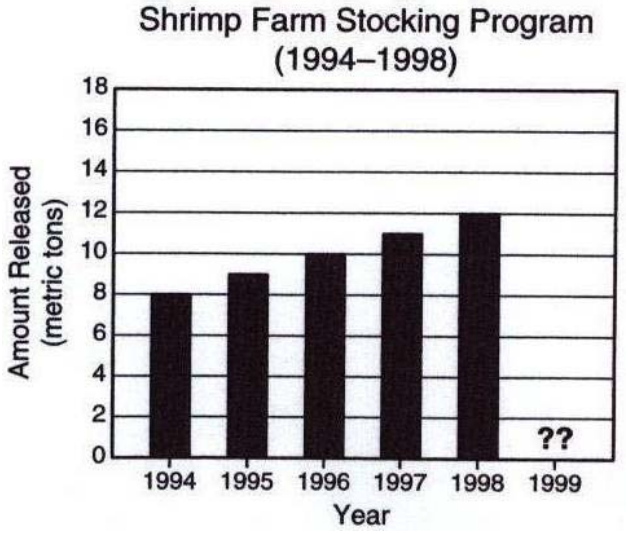
Subject	Grade	% of TEKS
Math	3	83%
Math	8	93%
Social Studies	8	54%
Science	8	80%
Reading	8	32%

3.Will TAKS Emphasize Academics?

Many questions on TAAS tests measure generic "skills," and can be answered without any acquired knowledge about a specific academic discipline. These "skills" include reading maps, sequencing information, and analyzing data. Most would agree that these skills are important; however, are they more important than the content matter relevant to a specific course of study? Figure 19, an End-of-Course Biology exam (Spring 2000), offers an example of a question that measures "skills" instead of specific course knowledge.

[53] Preliminary Blueprint for TAKS, provided to Texas Public Policy Foundation by the Texas Education Agency, August 17, 2001.

Figure 19



2 The graph shows the results of a restocking program in which shrimp raised on a shrimp farm are released into the wild. If this trend continues, about how many metric tons of shrimp will be released in 1999?

F 12
G 13
H 14
J 15

TAKS tests, like TAAS tests, will apparently include a preponderance of non-academic questions. As shown in Figure 20, preliminary blueprints indicate that 30 to 40 percent of TAKS tests across the subject areas will test generic "skills" that have little to do with the specific subject areas tested.[54]

Figure 20
Non-Academic Questions on TAKS Draft Blueprint
Math, Science & Social Studies

Grades	Math
3-4	30%
6-8	35%
9	15%
11	15%

Grade	Science
5	34%
10	27%
11	27%

Grade	Social Studies
8	20%
10	25%
11	22%

An evaluation of the assessment objectives established for the Grade 10 Social Studies TAKS test defines the large number of TAKS objectives that measure non-academic skills (Appendix VII). Thirty percent of the assessment objectives for the Grade 10 Social Studies TAKS test will measure a student's ability to recognize information given within the question.

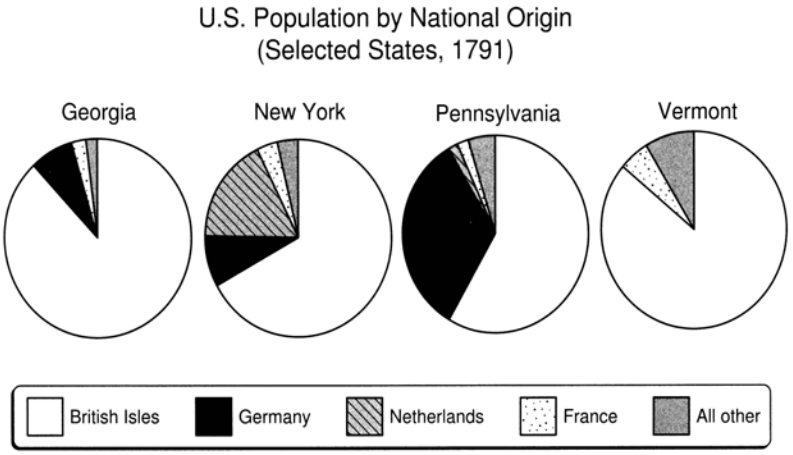
Figure 21 offers another example of a "skills" question, designed to measure an assessment objective that requires students to: *Answer questions about geographical distributions and*

[54] Ibid.

patterns shown on maps, graphs, and charts. This question was taken from the Spring 2000 Grade 8 Social Studies TAAS test.

Figure 21

Use the graphs and your knowledge of social studies to answer the following questions.



39 Which of these states had the largest percent of people from the Netherlands?
A Georgia
B New York
C Pennsylvania
D Vermont

40 Which of these states had the largest percent of people from Germany?
F Georgia
G New York
H Pennsylvania
J Vermont

Figure 22 offers one more example of assessing Social Studies "skills." This question appeared on the Spring 2000 Grade 8 Social Studies TAAS, and exemplifies a TAKS test assessment objective for: *interpreting visuals, including graphs, charts, timelines, and maps.*

Figure 22

Use the cartoon and your knowledge of social studies to answer the following question.

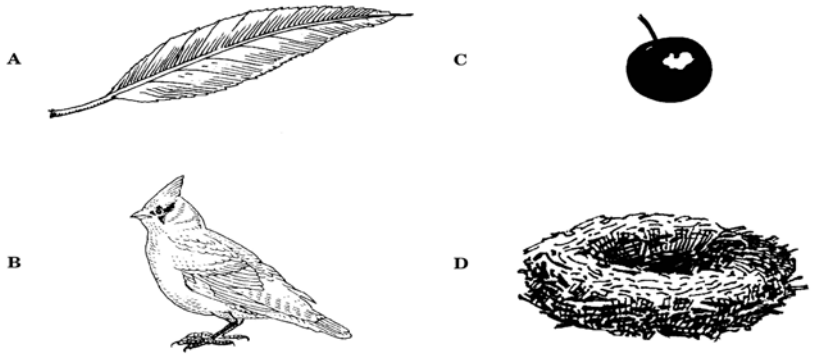
7 Which is the most appropriate title for this cartoon?
A *British Inventions in America*
B *Inventions in Communication*
C *Inventions in Agriculture*
D *Inventions in Transportation*

A last example, provided in Figure 23, illustrates how little knowledge of science is required for students to answer questions related to "skills" on the Spring 2000 Grade 8 Science TAAS test.

Figure 23

Picture 1 Picture 2

39 The pictures above were taken ten days apart. What has grown the most in Picture 2?



Is it more important for TAKS tests to measure "generic" skills than to test specific subject knowledge? What are the most important knowledge and skills that should be tested in each subject area? Recognizing that tests include a limited number of questions, should questions about specific subject matter be supplanted by questions about "skills?" The answers to these questions are extremely important because teachers "teach to the test," textbooks are developed to focus on assessment objectives, and parameters of student learning are defined by the tests.

IV. STATISTICAL DESIGN OF TAKS – HOW WILL TAKS TESTS BE DIFFERENT?

TAAS is the current incarnation of a long lineage of assessments for public schools that have been administered in Texas to measure student performance against state standards for learning. TAAS tests succeeded the TEAMS tests (Texas Educational Assessment of Minimum Skills), administered from 1985 through 1989, and TEAMS tests replaced the TABS tests (Texas Assessment of Basic Skills) that were administered from 1980 through 1984.

National Computer Systems (Harcourt Brace) has assisted the Texas Education Agency in developing criterion-referenced tests since 1980.[55] The Texas Education Agency develops tests for each subject and National Computer Systems provides technical assistance and expert advice to the Agency.[56] National Computer Systems serves under the direction of the Agency's Student Assessment Division.

The statistical design of state assessments (the format of questions, length of test, range of test difficulty, test accuracy, etc.) has remained unchanged since tests were first conducted in 1980. From 1980 until today, one individual has directed the development of state assessments, TABS, TEAMS and TAAS tests.[57]

When state assessments were first developed in 1980, no stakes were attached to assessments for either students or schools. In 1984, state legislation was passed that required students to qualify for high school graduation by passing an eleventh grade test (House Bill 72).[58] State assessments held no consequences for schools until 1993 when the Texas Legislature created the Texas public school accountability system, basing school accreditation on the results of student assessments.[59] Today, Texas is poised to raise the stakes of testing to a higher level by reserving fourth, sixth, and ninth grade for students who have passed state assessments.

The first state assessments were developed for diagnostic purposes, to determine the strengths and weaknesses of individual students. This original purpose has an important bearing on assessment today because tests are constructed to serve specific, limited purposes. Validity and reliability of tests change when the use of these tests change.[60] Current state assessments were not designed for "high stakes" decisions, those related to grade-level promotion or graduation.

Because state assessments have evolved into high stakes tests, tests must be re-designed specifically for this purpose. The technology of testing has evolved greatly over the past 20 years, allowing construction of highly accurate tests. Has the statistical design of TAKS tests been modified to improve reliability and validity? No information to date indicates that the statistical construction of TAKS tests will be any different than TAAS, TEAMS or TABS tests.

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[55] *Texas Assessment of Academic Skills Program Project Proposal,* Submitted by National Computer Systems, Inc to the Texas Education Agency, Austin, TX, 1996, Page 1

[56] *Ibid,* Page 6, 9, 14, 41, and 42.

[57] *Ibid,* Page 4.

[58] *Texas Assessment of Skills Program Project Proposal,* Page 1. In 1993, Senate Bill 7 changed the test administration schedule to the schedule now used in which the Exit-Level test is first administered at grade 10.

[59] *2000 Accountability Manual,* Texas Education Agency, Austin, TX, Page 1.

[60] *Standards for Educational and Psychological Testing,* American Educational Research Association, American Psychological Association, and National Council on Measurement in Education, Washington, DC, 1999, Page 17 and 18.

There is evidence to suggest that the statistical accuracy of TAAS can be improved for TAKS tests:

- New technology can establish greater accuracy for TAKS tests. Technology has increased accuracy – how precisely test scores reflect a student's true academic ability – to reliability coefficients of .95 (95 percent in lay terms) or greater.[61] This level is substantially higher than current levels of accuracy found with TAAS tests. Research conducted at the University of Houston indicates that test-retest accuracy of TAAS tests ranges between 63 to 78 percent.[62] When the accuracy of TAAS tests was compared with Stanford 9 tests, this same study found correlations that averaged .88 across the grades;[63] these results compare less favorably than correlations between the Stanford 9 and Florida's criterion-referenced test, correlations averaging 92 percent.[64]

- Testing higher levels of performance can increase the accuracy of TAKS tests. All tests have "ceilings," an upper limit of performance that can be accurately measured. If a test is too easy, scores in the top of the scoring range push accuracy beyond the "ceiling" of performance that can be accurately measured.[65] TAAS test scores show a significant "ceiling" effect that interferes with accurate measurement; this measurement error is far greater on TAAS tests than achievement measured by Stanford 9 tests, according to researchers at the University of Houston.[66] As previously shown in Figure 9, average TAAS scores now reach 86 on the Texas Learning Index, passing the upper range of performance that can be measured with accuracy.

- Decreasing the standard error of measurement can increase the accuracy of TAKS tests. No test is completely accurate. All tests have standard errors of measurement, a range within which a student's "true score" would fall had the student taken the test more than once.[67] While standard error cannot be eliminated, it can be minimized; some tests are

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[61] Gregory Cizek, *Filling in the Blanks: Putting Standardized Tests to the Test,* Thomas B. Fordham Foundation. Washington, DC, 1998, Page 33.

[62] *Comparisons Between the TAAS and Norm-Referenced Tests: Issues of Criterion-Related Validity*, Table 3C.

[63] *Ibid.*

[64] Jay P. Greene, *An evaluation of the Florida A-Plus Accountability and School Choice Program,* Center for Civic Innovation at the Manhattan Institute, NY, 2001.

[65] *Beyond the Numbers: A Guide to Interpreting and Using the Results of Standardized Achievement Tests,* CTB McGraw-Hill, California, 1997, Page 15. The *Technical Digest for the Texas Student Assessment Program* warns that scores at the ends of the scoring range (both high and low) must be "viewed cautiously" and are unlikely to represent true achievement (page 30).

[66] *Comparisons Between the TAAS and Norm-Referenced Tests: Issues of Criterion-Related Validity,* Page 9 and 27.

[67] *Beyond the Numbers: A Guide to Interpreting and Using the Results of Standardized Achievement Tests,* Page 18.

designed to minimize standard error more than other tests. As shown in Figure 24,[68] a table taken from the Texas Education Agency's Technical Digest for TAAS tests, accuracy at the passing standard is low. A student with true achievement at the passing standard has only a 50 percent likelihood (coin-toss chance) of passing TAAS tests on the first try. Only after 8 tries, is TAAS accurate for students with true achievement at the passing standard.

Figure 24
TAAS TEST
STANDARD ERROR OF MEASUREMENT
HIGH SCHOOL GRADUATION EXAM

True Student Achievement Level			Probability of Passing	
TLI	Scale Score	Raw Score	1 Attempt	8 Attempts
X-74	1530	36/48	67%	99.986%
X-70	1500	34/48	50%	99.6%
X-66	1450	32/48	23%	88%
X-62	1410	30/48	9%	55%
X-60	1400	29/48	7%	44%
X-58	1380	28/48	4%	27%
X-54	1350	26/48	1.4%	10.5%

Student with a true score of 70 must take the test 8 times before securing 99.6% accuracy

TAAS Technical Digest 1999-2000

- Increasing the number of questions asked on each test can increase the accuracy of TAKS tests. A TAAS test typically contains approximately 50 questions (although the number of test questions can be considerably less – the Grade 3 Reading TAAS in 2000, for example, only contained 36 questions). As constructed today, state assessments contain too few questions to yield reliable scores for individual students, according to numerous research studies of TAAS tests.[69]

While the accuracy of state assessments has proven sufficient for requirements of Texas' current accountability system, changes introduced by Senate Bill 103 place new demands for greater test accuracy.

Social promotion will end in Spring 2003 when students will be required to pass the third grade TAKS test to qualify for enrollment in Grade 4. Passing the TAKS test will be required of fifth grade students in 2005 and of eighth grade students in 2008. As TAKS tests become "high stakes," and sanctions are levied for failure, TAKS tests must be designed to afford the highest level of accuracy possible.

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[68] *Texas Student Assessment Program, Technical Digest for the Academic Year, 1999-2000,* Page 36 and 37.

[69] Paul Clopton, Wayne Bishop, and David Klein, *Statewide Mathematics Assessment in Texas,* Mathematically Correct, 1999, http://www.mathematicallycorrect.com, Page 15; and Walt Haney, *The Myth of the Texas Miracle in Education,* Education Policy Analysis Archives, Vol.8, 2000, Page 4.

The judicial standard for test accuracy that stems from recent court cases may not apply to Texas' new tests that impose higher consequences for failure for younger students. The legal challenge mounted by the G.I. Forum in 1999 demonstrated that high school exit-level tests met the legal test for accuracy at that time.[70] However, the court noted that the effect of testing inaccuracies was "limited" or mitigated by the large number of opportunities provided to a student for passing the exit-level TAAS tests.[71] The court specifically referred to the eight opportunities for passing the TAAS exit-level test, beginning in Grade 10.

Third, fifth, and eighth grade students will not have eight opportunities to pass TAKS tests before sanctions are imposed for failure. At this time, only three administrations of TAKS are planned for Grades 3, 5, and 8 (two tests will be scheduled during the spring and one test will be scheduled during the summer).[72]

Changes in student accountability require changing the statistical design of state assessments - incorporating new test technology and expanding expert resources - to increase test accuracy. Changes in accountability stimulate new questions about state assessments. Has the statistical design of TAKS tests been changed to increase accuracy? Will three test administrations satisfy legal requirements for accuracy of third, fifth and eighth grade tests? Will the test schedule furnish students with sufficient time to acquire the knowledge and skills required to improve both academic performance and test scores? How will repeated test administration affect third, fifth and eighth grade students? Can TAKS be designed with sufficient accuracy to avoid the necessity of repeated test administrations?

V. TEST DEVELOPMENT PROCESS – WILL TAKS TESTS BE DIFFERENT?

Until the Agency releases the first TAKS tests in 2003, it is impossible to determine how tests will be different from TAAS. However, the process for developing tests that was established by the Agency more than twenty years ago, will define and limit the TAKS tests in specific ways that can be identified at this time. How the test development process shapes the form of tests stimulates questions about the process as well as the tests.

Since 1980, the Texas Education Agency's Assessment Division, in conjunction with National Computer Systems, has developed and produced state assessments: TABS, TEAMS, and TAAS tests. Tests are developed as follows:[73]

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[70] G.I. Forum v. Texas Education Agency, Civil Action No. SA 97-CA-1278, United States District Court for the West District of Texas, San Antonio Division, 2000.

[71] *TAAS Test Opinion,* United States District Court for the Western District of Texas, January 7, 2000, http://www.txwd.uscourts.gov, Page 15.

[72] *Curriculum and Assessment in Texas,* a report to the State Board of Education, Texas Education Agency, Austin, TX, 2001.

[73] *Test Development Process*, a report to the State Board of Education, Texas Education Agency, Austin, TX, 2001; and *Texas Assessment of Academic Skills Program Project Proposal,* Page 171-238.

1. The Agency coordinates committees of educators to develop assessment objectives for each specific grade and subject – formulating test goals and selecting specific curriculum standards (TEKS) to be tested;

2. The Agency sends out the assessment objectives to school districts to solicit feedback and finalizes the objectives;

3. The Agency coordinates educator committees to develop guidelines for test questions, sample questions, the type of questions, the difficulty of questions, the number of questions, and test length;

4. The Agency hires professional writers (educators and former educators) to write test questions;

5. The Agency and educator committees review and revise test questions;

6. National Computer Systems field tests the questions by "imbedding" questions in current tests (these questions will not count toward passing while being piloted);

7. The Agency makes final selection of questions and questions are placed in a "bank" by National Computer Systems;

8. National Computer Systems develops test booklets and distributes tests to schools; and

9. National Computer Systems scores tests and reports results to the Agency.

Educators are intimately involved in the development of state assessments. To understand the significance of their role in test development today, knowledge of early test development is required. When the state assessments were first introduced in 1979, there was no established state curriculum as exists now in Texas with the Texas Essential Knowledge and Skills (TEKS). What was to be tested on the TABS test and the level of difficulty to be tested was determined by educators.[74] Educators continued to determine test content and test difficulty even after the first statewide curriculum was adopted by Texas in 1986, the Essential Elements.[75] Although the Essential Elements could have been used to develop the TEAMS tests, educator committees continued to determine what instruction should be measured by state assessments and what level of difficulty should be tested.

Educators continue to determine what is on state assessments to this day. This involvement helped the Texas Education Agency to demonstrate that students are given the "opportunity to

[74] Keith L. Cruse and Jon S. Twing, *The History of Statewide Achievement Testing in Texas* in Applied Measurement in Education, Vol. 13, No. 4, 2000, Page 328.

[75] *Texas Public School Education: Aiming for Excellence,* Texas Education Agency, Austin, TX, 1993, Page 18.

learn" what is tested on state assessments, according to the decision rendered in the G.I. Forum litigation against the TAAS test.[76]

The current process for developing tests ensures that what is tested is, in fact, already taught in classrooms throughout Texas. Teachers are surveyed to determine if students receive sufficient instruction to allow students to answer questions correctly.[77] Before questions are incorporated into tests, field-testing is conducted to determine if test scores demonstrate that students are familiar with the knowledge and skills to be tested.[78]

Procedures presently used to develop state assessments employ strong safeguards to ensure all students have an "opportunity to learn." These safeguards protect Texas against legal challenges to the fairness of assessments, a challenge that Florida lost in the *Debra P*. case,[79] (now considered the legal test of tests). However, these same safeguards undermine the academic integrity of Texas' criterion-referenced assessments.

State assessments must be criterion-referenced, according to the Texas Education Code (Section 39.023) and must require students to demonstrate the knowledge and skills established by state curriculum standards (TEKS). Criterion-referenced tests are tests that measure a student's performance against specific standards rather than against the performance of other students (the latter is a norm-referenced test).[80] The standard by which student achievement must be measured in Texas is TEKS.

However, the process now used to develop state assessments does not rely solely or even primarily on TEKS; tests are developed from a selection of assessment objectives and a selection of specific TEKS. Test questions are then juried by educator committees and validated by test scores that demonstrate student familiarity with the material tested. TEKS do not serve as the absolute standard or reference for state assessments; instead judgment of educators and student performance arbitrate what will be tested and the difficulty of material to be tested.

This process is dangerously flawed. It undermines expectations for learning established by state curriculum standards and threatens the integrity of criterion-referenced testing. How could this process diminish TAKS tests?

- ✯ TAKS tests will measure only those specific curriculum standards (TEKS) that educators deem important rather than all of the curriculum standards that Texas supposedly requires

[76] *TAAS Test Opinion,* Page 9.

[77] *The History of Statewide Achievement Testing in Texas,* Page 341.

[78] *Texas Student Assessment Program, Technical Digest for the Academic Year 1999-2000,* Page 183.

[79] S. E. Phillips, *G.I. Forum v. Texas Education Agency: Psychometric Evidence* in Applied Measurement in Education, Vol. 13, No. 4, 2000, Page 355.

[80] *Beyond the Numbers: A Guide to Interpreting and Using the Results of Standardized Tests,* Page 13-17.

all students to master. Developing tests in this manner will limit classroom instruction as teachers teach to the test (i.e. curriculum narrowing);

- ✯ TAKS tests will measure only those specific curriculum standards (TEKS) that educators consider common components of classroom instruction today rather than all of the curriculum standards that Texas requires students to master. Perversely, this process creates a test that will measure – and institutionalize – the status quo in classroom instruction and student performance; and

- ✯ TAKS tests will measure the level of academic difficulty that educators (as opposed to the State Board of Education or the Texas Legislature) believe is sufficient and attainable. This process furnishes no absolute standard for test difficulty that can be maintained in tests from year to year, and may perpetuate lower expectations for student performance than intended by the Education Code.[81]

The process for developing TAKS tests remains unchanged from the process used to develop TAAS, TABS, and TEAMS tests.[82] This process was appropriate twenty years ago when Texas lacked established standards for classroom learning. However, new curriculum standards, TEKS, have been in place for almost five years; textbooks and professional development are now based on TEKS. Should TEKS now serve as the sole standard for state assessments? If state assessments were based completely on TEKS, would tests satisfy legal standards for fairness? These questions beg careful answers if TAKS is to comply with state requirements for a criterion-referenced test and serve state goals for raising student achievement.

VI. TEST SPECIFICATIONS – HOW SHOULD TAKS BE DESIGNED?

The following specifications propose a blueprint for TAKS tests that meets state requirements, accurately measures student performance, and provides the information needed to evaluate and shape education reform. These specifications synthesize recommendations from national organizations and associations that promote educational accountability and test standards.[83]

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[81] Half of teachers surveyed by a national commission believe it is unnecessary for schools to equip students with the academic preparation for college or employment, according to *Raising Our Sights: No High School Senior Left Behind* by the National Commission on the High School Senior Year, The Woodrow Wilson National Fellowship Foundation, Princeton, NJ, 2001, Page 28; and Three-fourths of teachers surveyed think that classroom instruction contains sufficient academics, and less than one-third think that education is important, and advanced academic learning is valuable, according to *Given the Circumstances: Teachers Talk About Public Education Today* by Public Agenda, New York, NY, 1996, Page 25 and 40.

[82] Report to the State Board of Education, Committee on Instruction, Texas Education Agency, Austin, TX, October 31, 2001, Page3.

[83] *The Full Measure: Report of the NASBE Study Group on Statewide Assessment Programs,* National Association of State Boards of Education, Alexandria, VA, 1997; *Getting Results: A Fresh Look at School Accountability,* Southern Regional Educational Board, Atlanta, GA, 1998; *Standards for Educational and Psychological Testing,* American Educational Research Association, Washington, DC, 1999; John M. Goff, *A More Comprehensive Accountability Model,* Council for Basic Education, http://www.c-b-e.org/PDF/acctmodel.pdf; *Criteria for Outstanding Standards and Assessments,* ACHIEVE, http://www.achieve.org/achieve.nsf/Benchmarking; and *State*

1. TAKS tests should measure all of the state curriculum standards (TEKS) that are established for each grade and subject. To develop tests of reasonable length, the most important standards should be tested annually and less important TEKS should be sampled each year.

2. The difficulty of TAKS test questions should be based on state curriculum standards for the grade and course.

3. TAKS tests should become increasingly and substantially more difficult – consistent with grade-level expectations.

4. TAKS questions should be designed to test academically meaningful (important) knowledge and skills.

5. TAKS should be highly accurate. A sufficient number of test questions should be included in tests to assure accuracy and standard error should be minimized to provide reliability coefficients of .95 or better.

6. TAKS should measure student proficiency on subject matter and curriculum standards below, on, and above the grade tested but the passing scores should be based only on performance expectations of the grade tested.

7. Difficulty of TAKS tests should correspond to or exceed the level of difficulty set by nationally normed tests, such as the Iowa Test of Basic Skills.

8. The passing standard for TAKS tests should be set at a level of proficiency above current performance levels but gradually and incrementally raised over four to six years to reach national or international standards of achievement.

9. TAKS should measure achievement and identify different levels of proficiency such as "Basic," "Proficient," and "Exemplary."

10. The eleventh grade TAKS test should test a level of college readiness that corresponds with standards established by national tests, such as the ACT and SAT.

11. TAKS tests should be vertically aligned, constructing a sequence of knowledge and skills that would allow scores to be used for predicting readiness for successive grades and courses.

12. TAKS should be one of a two-part state assessment program. The first part, TAKS, should be a criterion-referenced test that is based on state curriculum standards (the TEKS) and the second part should be a commercial national norm-referenced test (such as the Iowa Test of Basic Skills) that can be used to validate the TAKS and provide national comparisons of student achievement.

Standards and State Assessment Systems A Guide to Alignment, Council of Chief State School Officers, Washington, DC, 2001.

VII. AUTHORITY AND OVERSIGHT – WHO IS IN CHARGE OF TAKS TESTS?

If state assessments need to be improved, who has the authority to make these changes? The Education Code does not furnish a clear answer to this question. The State Legislature created the assessment program, divided authority over assessments between the State Board of Education and the Texas Education Agency, and regularly introduces changes in the assessment program (as exemplified by Senate Bill 103). The Legislature generally enacts policy, not procedure or guidelines for implementation.

The Education Code authorizes the State Board of Education to "create and implement a statewide assessment program" (Section 39.022), and to "administer the assessment instruments (Section 39.023 c). The Code charges the Texas Education Agency to adopt or develop criterion-referenced assessment instruments to assess essential knowledge and skills in reading, writing, mathematics, social studies, and science (Section 39.023).

The law does not define how the State Board and Agency should exercise their respective authorities over state assessments. In July 2001, the Agency sought clarification from co-authors of the 1995 rewriting of the Education Code; State Representative Paul Sadler and Senator Bill Ratliff sent a letter to the Commissioner, agreeing with the Agency's judgment that the State Board's authority over assessments was limited to setting the passing standard.[84] In September 2001, the Board passed a rule establishing policy about test questions but the Agency refused to post the rule in the *Texas Register* (an action required to legalize its adoption) until the Agency secures an opinion from the State Attorney General on the Board's authority.[85] The Attorney General has yet to render a decision to date.

While statutory authority over state assessments remains undetermined, the Agency is exercising comprehensive and exclusive authority over the assessment program and development of TAKS tests. Who has authority over the Texas Education Agency and ultimately over assessments? The Education Code grants the Commissioner of Education authority over the Agency. The Governor, who appoints the Commissioner, is presently the only elected representative with oversight and authority over state assessments. Questions about the development of TAKS generate additional and important questions about the statutory authorities of public representatives and the importance of public representation in policy decisions about state assessments.

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[84] *Nelson and SBOE Clash Over Testing Authority,* Texas Education News, Vol. 18, Iss. 25, July 23, 2001.

[85] Report of the State Board of Education, Committee on Instruction, Texas Education Agency, Austin, TX, November 8, 2001.

VIII. CONCLUSION

The development of new state assessments is a complex endeavor that must balance the demands of state law with judicial rulings, state goals for student achievement, current levels of student performance, and public sentiment about state tests. This endeavor is far more complicated today than when previous state assessments were introduced because the introduction of TAKS tests coincides with the end of social promotion in Texas. Results of the first administration of TAKS tests in 2003 will determine if third grade students can advance to fourth grade.

The development of TAKS tests is also complicated by the newly enacted reauthorization of the federal Elementary and Secondary School Act (ESEA). This legislation promises to significantly impact state assessments. ESEA will tie federal funds to "annual yearly progress," and will require states to demonstrate that all student groups have reached state standards for academic proficiency within 12 years.[86] This provision would *appear* to pose little hazard to Texas because our state accountability system already establishes similar standards and sanctions. However, ESEA could create unintended consequences by rewarding states that set low passing standards for their assessments, a circumstance that Texas and all other states should guard against.

TAKS tests will enter a highly-charged educational, social, political, and legal environment. It is critically important to answer questions about the academic and statistical integrity of TAKS tests before the new assessments reach the classroom. TAKS tests must be superior to TAAS tests; while TAAS tests met the demands of their time, today is a new day. Changes in state policy and federal law call for increased accuracy and higher standards.

TAKS will define expectations for student achievement and determine how well students are educated in Texas for at least the next decade. Nothing is more important than getting TAKS tests right. Research demonstrates that tests measure, as well as determine, student outcomes, and reveals the close correlation between high standards and high achievement.[87] If students in Texas are to meet high expectations, TAKS tests must measure high levels of academic performance.

Research on TAKS tests to date indicates the urgent need to validate that new assessments will be different, better assessments. New processes for developing TAKS, new expert resources, and new technology are required to produce new assessments. However, poorly defined law and ill-defined governance structures impede the public oversight and involvement required to ensure new approaches are taken to develop new tests. The development of TAKS tests is drawing to a close. There are only a few months available to conduct a thorough examination of TAKS tests,

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[86] Thomas J. Kane, Douglas O. Staiger, and Jeffrey Geppert, *Assessing the Definition of "Adequate Yearly Progress" in the House and Senate Education Bills,* School of Public Policy and Social Research, UCLA, Los Angeles, CA, 2001.

[87] *Urgency, Responsibility, Efficacy: Preliminary Findings of A Study of High-Performing Texas School Districts,* The Charles A. Dana Center, Austin, TX, 1997; John H. Bishop, Ferran Mane, and Joan Moriarty, *The Role of End-of-Course Exams and Minimum Competency Exams in Standards-Based Reforms* in Brookings Papers on Education Policy 2001, edited by Diane Ravitch, Washington, DC, 2001, Page 267-345; and Martin Carnoy, Susanna Loeb, and Tiffany L. Smith, *Do Higher State Test Scores in Texas Make for Better High School Outcomes? 2001, http://www.law.harvard.edu/groups/civilrights/publications/dropout/carnoy.html.*

to ensure the tests meet expectations, and to deliver tests on schedule for April 2002. To make certain that TAKS tests are right, national test experts should be commissioned immediately to validate the tests.

Problems of educational governance and public oversight should be addressed by the next legislature. The State Board of Education should create an advisory council to encourage educators, academicians, test experts, business leaders, and public policy analysts to propose legislative remedies. The Texas Legislature should enact law to restore authorities of the State Board of Education over assessments and the accountability system.

The stakes are high. TAKS tests must be right. New, more rigorous tests are needed to prepare students to succeed in college or skilled vocational training. More accurate and useful test results are needed to help formulate innovative solutions to problems of education policy - to address school finance, teacher certification, teacher pay, and workforce development. No less than the future of Texas is at stake

APPENDIX I

CURRENT ASSESSMENT PROGRAM

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
ENGLISH-VERSION ASSESSMENT									
Reading	Reading	Reading	Reading	Reading	Reading		Reading		
	Writing				Writing		Writing		
Math	Math	Math	Math	Math	Math		Math		
					Science				
					Social Studies				
						Algebra I			
						Biology			
						English II			
						U. S. History			
SPANISH-VERSION ASSESSMENT									
Reading	Reading	Reading	Reading						
	Writing								
Math	Math	Math	Math						
READING PROFICIENCY TESTS IN ENGLISH FOR LEP STUDENTS (implemented Spring 2000)									
RPTE	RPTE		RPTE			RPTE			
ALTERNATIVE ASSESSMENT FOR SPECIAL EDUCATION STUDENTS (implemented Spring 2001)									
Reading	Reading	Reading	Reading	Reading	Reading				
	Writing				Writing				
Math	Math	Math	Math	Math	Math				

APPENDIX II

FUTURE ASSESSMENT PROGRAM
(Senate Bill 103, as enrolled)

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
ENGLISH-VERSION ASSESSMENT									
Reading	Reading	Reading	Reading	Reading	Reading	Reading	ELA	ELA	
	Writing			Writing					
Math	Math	Math	Math	Math	Math	Math	Math	Math	
		Science					Science	Science	
					Social Studies		Social Studies	Social Studies	
SPANISH-VERSION ASSESSMENT									
Reading	Reading	Reading	Reading						
	Writing								
Math	Math	Math	Math						
		Science							
READING PROFICIENCY TESTS IN ENGLISH FOR LEP STUDENTS									
RPTE	RPTE		RPTE			RPTE			
ALTERNATIVE ASSESSMENT FOR SPECIAL EDUCATION STUDENTS									
Reading	Reading	Reading	Reading	Reading	Reading	ELA			
	Writing			Writing					
Math	Math	Math	Math	Math	Math	Math			

APPENDIX III

COMPARISON OF ASSESSMENT OBJECTIVES
TAAS AND TAAS II (TAKS)
Grade 3 Mathematics

Overview:

This analysis compares the assessment objectives of the current TAAS test for Grade 3 mathematics with assessment objectives proposed for the new state assessments, TAAS II or TAKS. The comparison reveals that the TAKS will test almost the same information as TAAS, and offers no evidence that TAKS will be academically more challenging than TAAS.

While the rephrasing of assessment objectives for TAKS may, in a few instances, broaden the scope of knowledge and skills to be tested, the objectives generally represent restatements of assessment objectives currently employed in TAAS. In fact, there is very little new knowledge and skills from TEKS, state curriculum standards, added to assessment objectives for TAKS. Only six (6) of thirty-five (35) performance expectations for TAKS are different from TAAS.

Many of the new TEKS that are to be introduced in TAKS represent process skills, soliciting a response from students that is not related to knowledge specific to the academic discipline or acquired during the specific grade or course of study. Many of the new TEKS that are to be introduced to TAKS will be exceeding difficult or impossible to assess in a standardized test format (such as "acting out" a test solution strategy).

TAAS II (TAKS) Assessment Objective 1:

TAAS: The student will demonstrate an understanding of number concepts.

TAAS II (TAKS): The student will demonstrate an understanding of numbers, operations and quantitative reasoning.

TEKS Expectations for TAAS Objective 1:

(3.1) Number, operation, and quantitative reasoning. The student uses place value to communicate about increasingly large whole numbers in verbal and written form. The student is expected to: (A) use place value to read, write (in symbols and words), and describe the value of whole numbers through 999,999; (B) use place value to compare and order whole numbers through 9,999; and (C) determine the value of a collection of coins and bills.
(3.2) Number, operation, and quantitative reasoning. The student uses fraction names and symbols to describe fractional parts of whole objects or sets of objects. The student is expected to: (C) use fraction names and symbols to describe fractional parts of whole objects or sets of objects with denominators of 12 or less.

TEKS Expectations for TAAS II (TAKS) Objective 1:

(3.1) Same as *TAAS*

(3.2) Same as *TAAS* plus (B) The student is expected to compare fractional parts of whole objects or sets of objects in a problem situation using [concrete- not included in test] models {Note: This is a new TEKS not previously assessed in TAAS}.

(3.3) Number, operation, and quantitative reasoning. The student adds and subtracts to solve meaningful problems involving whole numbers. The student is expected to: (A) model addition and subtraction using pictures, words, and numbers {Note: This TEKS is not new but previously assessed in TAAS as Objective 7}; and (B) select addition or subtraction and use the operation to solve problems involving whole numbers through 999 {Note: This TEKS is not new but assessed previously in TAAS as Objective 11}.

(3.4) Number, operation, and quantitative reasoning. The student recognizes and solves problems in multiplication and division situations. The student is expected to: (B) solve and record multiplication problems (one-digit multiplier) {Note: This TEKS is not new but previously assessed in TAAS as Objective 8}; and (C) use models to solve division problems and use number sentences to record the solutions {Note: This TEKS is not new but previously assessed in TAAS as Objective 9}.

(3.5) Number, operation, and quantitative reasoning. The student estimates to determine reasonable results. The student is expected to: (A) round two-digit numbers to the nearest ten and three-digit numbers to the nearest hundred {Note: This is a new assessment objective not tested previously by TAAS}; and (B) estimate sums and differences beyond basic facts {Note: This TEKS is not new but previously assessed in TAAS as Objective 10}.

TAAS II (TAKS) Assessment Objective 2:

TAAS: The student will demonstrate an understanding of mathematical relations, functions, and other algebraic concepts.

TAAS II (TAKS): The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

TEKS Expectations for TAAS Objective 2:

(3.6) Patterns, relationships, and algebraic thinking. The student uses patterns to solve problems. The student is expected to: (A) identify and extend whole number and geometric patterns to make predictions and solve problems; and (C) identify patterns in related multiplication and division sentences (fact families), such as 2 X 3 = 6, 3 X 2 = 6, 6 / 2 = 3, 6 / 3 = 2.

(3.7) Patterns, relationships, and algebraic thinking. The student uses lists, tables, and charts to express patterns and relationships. The student is expected to: (A) generate a table of paired numbers based on a real-life situations, such as insects and legs; and (B) identify patterns in a table of related number pairs based on a real-life situation and extend the table.

TEKS Expectations for TAAS II (TAKS) Objective 2:

(3.6) Same as *TAAS*

(3.7) Same as *TAAS*

TAAS II (TAKS) Assessment Objective 3:

TAAS: The student will demonstrate an understanding of geometric properties and relationships.

TAAS II (TAKS): The student will demonstrate an understanding of geometry and spatial reasoning.

TEKS Expectations for TAAS Objective 3:

(3.8) Geometry and spatial reasoning. The student uses formal geometric vocabulary. The student is expected to name describe, and compare shapes and solids using formal geometric vocabulary.

(3.9) Geometry and spatial reasoning. The student recognizes congruence and symmetry. The student is expected to (A) identify congruent shapes; and (C) identify lines of symmetry in shapes.

(3.10) Geometry and spatial reasoning. The student recognizes that numbers can be represented by points on a line. The student is expected to locate and name points on a line using whole numbers [and fractions such as halves-not included in test].

TEKS Expectations for TAAS II (TAKS) Objective 3:

(3.8) Same as *TAAS*

(3.9) Same as *TAAS*

(3.10) Same as *TAAS*

TAAS II (TAKS) Assessment Objective 4:

TAAS: The student will demonstrate an understanding of measurement concepts using metric and customary units.

TAAS II (TAKS): The student will demonstrate an understanding of the concepts and uses of measurement.

TEKS Expectations for TAAS Objective 4:

(3.11) Measurement. The student selects and uses appropriate units and procedures to measure length and area. The student is expected to: (A) estimate and measure lengths using standard units such as inch, foot, yard, centimeter, decimeter, and meter; (B) use linear measure to find the perimeter of a shape.

(3.12) Measurement. The student measures time and temperature. The student is expected to (A) tell and write time shown on traditional and digital clocks; (B) use a thermometer to measure temperature.

TEKS Expectations for TAAS II (TAKS) Objective 4:

(3.11) Same as *TAAS* plus (C) use [concrete-not included in test] models of square units to determine the area of shapes {Note: This TEKS is new, not previously assessed in TAAS}.

(3.12) Same as *TAAS*

(3.13) Measurement. The student applies measurement concepts. The student is expected to (A) measure to solve problems involving length, [area-not included in test,] temperature, and time {Note: This is not a new TEKS, but was previously assessed in TAAS as Objective 11}.

TAAS II (TAKS) Assessment Objective 5:

TAAS: The student will demonstrate an understanding of probability and statistics.

TAAS II (TAKS): The student will demonstrate an understanding of probability and statistics.

TEKS Expectations for TAAS Objective 5:

(3.14) Probability and statistics. The student solves problems by collecting, organizing, displaying, and interpreting sets of data. The student is expected to: (A) collect, organize, record, and display data in pictographs and bar graphs where each picture or cell might represent more than one piece of data; and (B) interpret information from pictographs or bar graphs.

TEKS Expectations for TAAS II (TAKS) Objective 5:

(3.14) Same as *TAAS* plus (C) the student is expected to use data to describe events as more likely, less likely, or equally likely {Note: This TEKS is new, not previously assessed in TAAS}.

TAAS II (TAKS) Assessment Objective 6:

TAAS: The student will use the operation of addition to solve problems.
TAAS II (TAKS): The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

TEKS Expectations for TAAS Objective 6:

(3.3) Number, operation, and quantitative reasoning. The student adds and subtracts to solve meaningful problems involving whole numbers. The student is expected to (A) model addition and [not included in this section of the test] subtraction using pictures, words, and numbers.

TEKS Expectations for TAAS II (TAKS) Objective 6:

(3.15) Underlying processes and mathematical tools. The student applies Grade 3 mathematics to solve problems connected to everyday experiences and activities in and outside of school. The student is expected to: (A) identify the mathematics in everyday situations {Note: This is a new TEKS not previously assessed in TAAS}; (B) use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness {Note: This is not a new TEKS, but was previously assessed as Objective 13 in TAAS}; (C) select or develop an appropriate problem-solving strategy, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem {Note: This is a new TEKS, not previously assessed in TAAS}.

(3.16) Underlying processes and mathematical tools. The student communicates about Grade 3 mathematics using informal language. The student is expected to: (B) relate informal language to mathematical language and symbols {Note: This is a new TEKS, not previously assessed in TAAS}.

(3.17) Underlying processes and mathematical tools. The student uses logical reasoning to make sense of his or her world. The student is expected to: (A) make generalizations from patterns or sets of examples and nonexamples {Note: This is a new TEKS, not previously assessed in TAAS}.

New TEKS Added to TAAS II (TAKS) Grade 3 Mathematics Assessment Objectives:

(3.2) Number, operation, and quantitative reasoning. The student is expected to: (B) compare fractional parts of whole objects or sets of objects in a problem situation using [concrete- not included in test] models.

(3.5) Number, operation, and quantitative reasoning. The student is expected to: (A) round two-digit numbers to the nearest ten and three-digit numbers to the nearest hundred.

(3.11) Measurement. The student is expected to: (C) use [concrete-not included in test] models of square units to determine the area of shapes.

(3.14) Probability and statistics. The student is expected to: (C) use data to describe events as more likely, less likely, or equally likely.

(3.15) Underlying processes and mathematical tools. The student is expected to: (A) identify the mathematics in everyday situations; and (C) select or develop an appropriate problem-solving

strategy, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem.

(3.16) Underlying processes and mathematical tools. The student is expected to: (B) relate informal language to mathematical language and symbols.
(3.17) Underlying processes and mathematical tools. The student is expected to: (A) make generalizations from patterns or sets of examples and nonexamples.

Total Number New TEKS Added to Grade 3 Mathematics Assessment: 8 (4 process)

TEKS Unchanged in Grade 3 TAAS II (TAKS) Mathematics Assessment Objectives:

3.1 Number, operation, and quantitative reasoning - (A), (B) and (C)
3.2 Number, operation, and quantitative reasoning - (C)
3.3 Number, operation, and quantitative reasoning - (A) and (B)
3.4 Number, operation, and quantitative reasoning - (B) and (C)
3.5 Number, operation, and quantitative reasoning - (B)
3.6 Patterns, relationships, and algebraic thinking - (A) and (C)
3.7 Patterns, relationships, and algebraic thinking - (A) and (B)
3.8 Geometry and spatial reasoning
3.9 Geometry and spatial reasoning - (A) and (C)
3.10 Geometry and spatial reasoning
3.11 Measurement - (A) and (B)
3.12 Measurement - (A) and (B)
3.13 Measurement - (A)
3.14 Probability and statistics - (A) and (B)
3.15 Underlying processes and mathematical tools - (B)

Total Number TEKS Unchanged in Grade 3 Mathematics Assessment: 25

APPENDIX IV

TAKS ASSESSMENT OBJECTIVES - SCIENCE
REPETITION from GRADE to GRADE

Grade 5 Assessment Objectives

Performance Expectations (TEKS) from Grades 2, 3, and 4
40 Percent of Assessment Objectives Below Grade-Level (19 of 48)

2.9 Science Concepts. The student knows that living organisms have basic needs. The student is expected to:
(A) identify the external characteristics of different kinds of plants and animals that allow their needs to be met; and
(B) compare and give examples of the ways living organisms depend on each other and on their environments.

3.1, 4.1, 5.1 Scientific Processes. The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices. The student is expected to:
(A) demonstrate safe practices during field and laboratory investigations

3.3, 4.3, 5.3 Scientific processes. The student uses critical thinking and scientific problem-solving to make informed decisions. The student is expected to:
(A) analyze, review scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;
(B) draw inferences based on information for products and services; and
(C) represent the natural world using models and identify their limitations

3.6 Science Concepts. The student knows that forces cause change. The student is expected to:
(A) measure and record changes in the position and direction of the motion of an object to which a force such as a push or pull has been applied; and
(B) identify that the surface of the Earth can be changed by forces such as earthquakes and glaciers.

3.8 Science Concepts. The student knows that living organisms need food, water, light, air, a way to dispose of waste, and an environment in which to live. The student is expected to:
(A) observe and describe the habitats of organisms within an ecosystem;
(B) observe and identify organisms with similar needs that compete with one another for resources such as oxygen, water, food, or space;
(C) describe environmental changes in which some organisms would thrive, become ill or perish;
(D) describe how living organisms modify their physical environment to meet their needs such as beavers building a dam or humans building a home.

3.11 Science Concepts. The student knows that the natural world includes earth materials and objects in the sky. The student is expected to:
(A) identify and describe the importance of earth materials including rocks, soil, water, and gases of the atmosphere in the local area and classify them as renewable, nonrenewable or inexhaustible resources;
(C) identify the planets in our solar system and their position in relation to the Sun; and
(D) describe the characteristics of the Sun.

4.6 Science Concepts. The student knows that change can create recognizable patterns. The student is expected to:
(A) identify patterns of change such as in weather, metamorphosis, and objects in the sky.

4.11 Science Concepts. The student knows that the natural world includes earth materials and objects in the sky. The student is expected to:
(A) test properties of soil including texture, capacity to retain water, and ability to support life;
(B) summarize the effects of the oceans on land; and
(C) identify the Sun as the major source of energy for the Earth and understand its role in the growth of plants, in the creation of winds, and in the water cycle.

Performance Expectations (TEKS) Unique and Specific to Grade 5 Assessment
60 Percent of Assessment Objectives at Grade-Level (29 of 48)

5.2 Scientific Processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:
(A) plan and implement descriptive and simple experimental investigations including asking well-defined questions, formulating testable hypotheses and selecting and using equipment and technology;
(B) collect information by observing and measuring;
(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence;
(D) communicate valid conclusions; and
(E) construct simple graphs, tables, maps, and charts using tools to organize, examine, and evaluate information.

5.4 Scientific Processes. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:
(A) collect and analyze information using tools including calculators, microscopes, hand lenses, rulers, thermometers, compasses, balances, meter sticks, timing devices, magnets, collecting nets, and safety goggles.

5.5 Science Concepts. The students knows that a system is a collection of cycles, structures, and processes that interact, the student is expected to:
(A) describe some cycles, structures and processes that are found in a simple system; and
(B) describe some interactions that occur in a simple system.

5.6 Science Concepts. The student knows that some change occurs in cycles. The student is expected to:
(A) identify events and describe changes that occur on a regular basis such as in daily, weekly, lunar, and seasonal cycles;
(B) identify the significance of the water, carbon, and nitrogen cycles; and
(C) describe and compare life cycles of plants and animals.

5.7 Science Concepts. The student knows that matter has physical properties. The student is expected to:
(A) classify matter based on its physical properties including magnetism, physical state, and the ability to conduct or insulate heat, electricity and sound;
(B) demonstrate that some mixtures maintain the physical properties of their ingredients;
(C) identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving sugar in water; and
(D) observe and measure characteristic properties of substances that remain constant such as boiling points and melting points.

5.8 Science Concepts. The student knows that energy occurs in many forms. The student is expected to:
(A) differentiate among forms of energy including light, heat, electrical, and solar energy;
(B) identify and demonstrate everyday examples of how light is reflected, such as from tinted windows, and refracted, such as in cameras, telescopes, and eyeglasses;
(C) demonstrate that electricity can flow in a circuit and can produce heat, light, sound, and magnetic effects; and
(D) verify that vibrating an object can produce sound.

5.9 Science Concepts. The student knows that adaptations may increase the survival of members of a species. The student is expected to:
(A) compare the adaptive characteristics of species that improve their ability to survive and reproduce in an ecosystem;
(B) analyze and describe adaptive characteristics that result in an organism's unique niche in an ecosystem; and
(C) predict some adaptive characteristics required for survival and reproduction by an organism in an ecosystem

5.10 Science Concepts. The student knows that likenesses between offspring and parents can be inherited or learned. The student is expected to:
(A) identify traits that are inherited from parent to offspring in plants and animals; and
(B) give examples of learned characteristics that result from the influence of the environment.

5.11 Science Concepts. The student knows that certain past events affect present and future events. The student is expected to:
(A) identify and observe actions that require time for changes to be measurable, including growth, erosion, dissolving, weathering, and flow;
(B) draw conclusions about “what happened before” using data such as tree-growth rings and sedimentary rock sequences; and

(C) identify past events that led to the formation of the Earth's renewable, non-renewable, and inexhaustible resources.

5.12 Science Concepts. The student knows that the natural world includes earth materials and objects in the sky. The student is expected to:
(A) interpret how land forms are the result of a combination of constructive and destructive forces such as deposition of sediment and weathering; and
(C) identify the physical characteristics of the earth and compare them to the physical characteristics of the moon.

APPENDIX V

TAKS ASSESSMENT OBJECTIVES - MATHEMATICS
Analysis of Differentiation of Assessment Objectives Between Grades 3 and 4

Grade 3	Grade 4
3.1 (B) Use place value to compare & order whole numbers through 9,999	4.1 (A) Use place value to read, write, compare & order whole numbers through the millions place
How is the Grade 4 Test Different from the Test for Grade 3? Students are expected to read and write numbers in addition to "using numbers, and numbers are expanded from thousands to millions [no significant change in grade-level expectations]	
Grade 3	**Grade 4**
3.2 (C) Use fraction names & symbols to describe fractional parts of while objects or sets of objects with denominators of 12 or less	4.2 (A) Compare & order fractions using pictorial models
How is the Grade 4 Test Different from the Test for Grade 3? Students are expected to compare and order fractions in addition to "using" them but only as pictures not symbols [no significant change in grade-level expectations]	
Grade 3	**Grade 4**
3.3 (A) Model addition & subtraction using pictures, words & numbers	4.3 (A) Use addition & subtraction to solve problems involving whole numbers
How is the Grade 4 Test Different from the Test for Grade 3? Students are expected to solve addition and subtraction using symbols not pictures [a significant change]	
Grade 3	**Grade 4**
3.4 (B) solve & record multiplication problems (one digit multiplier)	4.4 (D) Use multiplication to solve problems involving two digit numbers
How is the Grade 4 Test Different from the Test for Grade 3? Students are expected to multiply two, not just one, digit numbers [no significant change in grade-level expectations]	
Grade 3	**Grade 4**
3.5 (B) Estimate sums & differences beyond basic facts	4.5 (B) Estimate a product or quotient beyond basic facts
How is the Grade 4 Test Different from the Test for Grade 3? Students are expected to multiply and divide as well as add and subtract – but only estimate not produce correct answers. [no significant change in grade-level expectations]	
Grade 3	**Grade 4**
3.6 (C) Identify patterns in related multiplication & division sentences (fact families) such as 2 x 3 = 6, 3 x 2 = 6, 6 / 3 =2	4.6 (B) Solve division problems related to multiplication facts (fact families) such as 9 x 9 = 81 & 81/9 = 9

How is the Grade 4 Test Different from the Test for Grade 3? **Students are expected to** solve multiplication and division problems, not just identify patterns [significant change]	
Grade 3	**Grade 4**
3.7 (B) Identify patterns in a table of related number pairs based on a real-life situation & extend the table	4.7 (B) Describe the relationship between two sets of related data such as ordered pairs in a table
How is the Grade 4 Test Different from the Test for Grade 3? Students are expected to identify the relationship as well as the pattern between numbers [no significant change in grade-level expectations]	
Grade 3	**Grade 4**
3.8 (A) Name, describe & compare shapes & solids using formal geometric vocabulary	4.8 (C) Describe shapes & solids in terms of vertices, edges & faces
How is the Grade 4 Test Different from the Test for Grade 3? No difference	
Grade 3	**Grade 4**
3.9 (C) Identify lines of symmetry in shapes	4.9 (C) Use reflections to verify that a shape has symmetry
How is the Grade 4 Test Different from the Test for Grade 3? Students are expected to move shapes to recognize symmetry [no significant change in grade-level expectations]	

APPENDIX VI

ACHIEVE - National Review Panel
Texas Proposed Objectives for TAAS II
General Statements about Subject Area Tests

1. "The fundamental problem with the new objectives is the attempt to add a layer of concepts that are not reflected in the organization of TEKS." *English Language Arts Reviewer, Arthur Applebee*

2. "Anyone concerned with highlighting 'critical thinking'(reading objective 4), for example, could easily question how students could possibly learn the analytical skills underlying critical thinking within an educational system whose objectives were so poorly distinguished." *English Language Arts Reviewer, Arthur Applebee*

3. "The proposed objectives, on the other hand, are less helpful and caused some confusion-at least for this reader. Little difference exists among the four reading objectives. The English Language Arts Writing Objectives also proved confusing, particularly those in Grades 4 and 7. Several of the Student Expectations in those two grades are repeated again and again but are listed under different objectives." *English Language Arts and Spanish Writing Objectives Reviewer, Susan Pimento*

4. "Rarely is a standard or test expectation grade-specific. The test expectations for Grades 4 and 5 are identical; the test expectations for Grades 6, 7, and 8 are very nearly identical and differ from Grades 4 and 5 only slightly, and so on it goes through the grades. By default, test developers must take responsibility for defining just what questions are 'fair game' for a fourth grader as opposed to an eighth grader, for a fifth grader as opposed to a seventh grader, etc. That could leave students (and the teachers who instruct them) unprepared for the demands of the test." *English Language Arts and Spanish Writing Objectives Reviewer, Susan Pimento*

5. "Occasionally, the deletions [difference in wording between the TEKS and assessment objectives] changes the meaning or emphasis of the expectation [student learning]." *English Language Arts and Spanish Writing Objectives Reviewer, Susan Pimento*

6. "While most TEKS and TAAS II student expectations are not difficult to understand on their face, they are difficult to interpret with precision (a direct result of the vague wording and repetition of many of the standards throughout the grades). More specificity is needed to avoid the plague of endless repetitions and to ensure comprehensive coverage of important content in Texas schools." *English Language Arts and Spanish Writing Objectives Reviewer, Susan Pimento*

7. "As things stand, many of the standards and test expectations force the teacher, student and assessment developer to guess about parameters [what skills and knowledge will be tested]." *English Language Arts and Spanish Writing Objectives Reviewer, Susan Pimento*

8. "Based on my experience, alignment [how well the test matches to expectations for student learning] is difficult to judge without seeing the items constructed [test questions] to show evidence of what is intended to be measured." *Spanish Writing Reviewer, Sharon Saez*

9. "I realize that there are legal constraints on the subject matter that must be covered in the 11th grade TAAS mathematics exam [covering only TEKS]. But my feeling is that even within these constraints, this draft is not well aligned with the objectives I describe above [fundamental mathematical skills every high school graduate should acquire] as it could be." *Mathematics Reviewer, R. James Milgram*

10. "In many other nations, and all of the high performing nations, in the TIMSS, students in the eighth grade have at least experienced, and in many cases mastered, the level of algebra and geometry knowledge described in the Proposed Objectives for Texas high school students. It is not possible to say, therefore, that these Objectives set the bar at the same level as international comparisons." *Mathematics Reviewer, Susan Eddins*

11. "However, the Grade 9 POSE [Proposed Objectives and TEKS Student Expectations for TAAS II] do not align well with the course Algebra I, and the Grade 10 POSE do not align well with the course Geometry." *Mathematics Reviewer, Don King*

12. "The most serious deletions [changes made in student expectations when TEKS were translated to test objectives] from the TEKS standards for Grades 3-8 concern problem solving and do seem to change the intent of those [state curriculum, TEKS] standards." *Mathematics Reviewer, Don King*

13. "The POSE [Proposed Objectives and TEKS Student Expectations for TAAS II] requires a great more refinement. They seem largely a summary of the material needed to pass the exit exam rather than useful grade-level specific objectives." *Mathematics Reviewer, Don King*

14. "The POSE [Proposed Objectives and TEKS Student Expectations for TAAS II] stretch out the mastery of various objectives of the courses Algebra I and Geometry over two or three grade levels. Perhaps this is an attempt to address the different circumstances of the various school districts [at what year students will take these courses]. But, it does not make good sense and puts Texas students at a disadvantage compared to the highest national and international standards." *Mathematics Reviewer, Don King*

15. "Since the POSE [Proposed Objectives and TEKS Student Expectations for TAAS II] for Grades 9-11 repeat objectives from grade to grade, students are not required to demonstrate increasingly sophisticated knowledge and skills in each of the strands as they advance from grade to grade." *Mathematics Reviewer, Don King*

16. "In summary, the POSE [Proposed Objectives and TEKS Student Expectations] for Grades 9-11 do not reflect reasonable, rigorous progression from grade to grade, and in their current form are not grade-level appropriate for statewide testing. They need to be sharpened." *Mathematics Reviewer, Don King*

17. "The weaknesses in the POSE [Proposed Objectives and TEKS Student Expectations for TAAS II] for Grades 9-11 may prevent high school students in Texas from performing at levels comparable to students in high performing nations in algebra, geometry, and advanced mathematics topics." *Mathematics Reviewer, Don King*

18. "The POSE [Proposed Objectives and TEKS Student Expectations for TAAS II] for Grades 3-11 incorporates most of the mathematical knowledge and skills that students will need for post-secondary education and later life. To make students in Texas competitive with the highest national and international standards, some additional content should be added, chiefly in algebra and geometry. However, problem solving and mathematical reasoning do not receive adequate attention at any grade level." *Mathematics Reviewer, Don King*

19. "The fact that entire sections of the objectives and student expectations for Grades 9, 10, and 11 are absolutely identical is indeed a major flaw, both educationally, and, I should think, politically. If the TAAS II Objectives appear in public with virtually identical performance expectations for three consecutive grades, it may appear that the Texas Education Agency is advocating as a matter of policy what most researchers identify as a major flaw in our educational system." *Mathematics Reviewer, Lynn Arthur Steen*

20. "Administering high stakes tests that are not aligned with the courses students have taken is educationally ridiculous and legally questionable." *Mathematics Reviewer, Lynn Arthur Steen*

21. "As they are written, both the TEKS standards and the TAAS II Objectives lack the texture required to distinguish what is new from what is old, what is important from what is routine." *Mathematics Reviewer, Lynn Arthur Steen*

22. "The primary danger of a test designed to meet the objectives and student expectations proposed for TAAS II is that it may consist of many items [test questions] that each focus on a single expectation. This atomization of mathematics, although technically meeting the specification defined by the objectives and expectation document, would tell virtually nothing about students' real abilities to use mathematics in productive ways." *Mathematics Reviewer, Lynn Arthur Steen*

23. "One possible problem [with the Proposed Objectives and Student Expectations for TAAS II] is the vague and undifferentiated nature of the problem-solving expectations at the end of every grade level from 4 through 8. Since the language in all these sections is essentially the same, it is not at all clear whether the tasks associated with this expectation will actually advance to the preparing students for later schooling and real life." *Mathematics Reviewer, Lynn Arthur Steen*

24. "This profile of the eleventh grade TAAS II is inadequate to demonstrate the knowledge required to meet any of the three goals suggested for high school graduation [first goal-preparation for engaged citizenship; second goal-preparation for the high-performance workplace; and third goal-preparation for further education]." *Mathematics Reviewer, Lynn Arthur Steen*

25. "Several issues strike an outsider who reads the TEKS standards and related TAAS II Objectives. One is the considerable number of minute expectations undifferentiated by importance and unconnected by central themes." *Mathematics Reviewer, Lynn Arthur Steen*

26. "The lack of specificity in the high school objectives and expectations could result in dumbing down of the test." *Science Reviewer, Rollie Otto*

27. "The TEKS and the [TAAS II] expectations are overly focused on science process skills." *Science Reviewer, Rollie Otto*

28. "Some of the changes in wording of the Student Expectations in TEKS [rewording TEKS as TAAS II Assessment Objectives] have in fact changed the intent of TEKS." *Science Reviewer, Maria Lopez Freeman*

29. "I think that there needs to be more content [in the Proposed Objectives and TEKS Student Expectations for TAAS II]." *Science Reviewer, Maria Lopez Freeman*

30. "There seems to be little evidence of thinking about how the TEKS goals [and Proposed Objectives for TAAS II] at one level lead to the next one." *Science Reviewer, Andrew Ahlgren*

31. "TEKS, as currently written, focuses too much on describing what a student could do to show an understanding rather than explicitly stating what students are supposed to understand. It would be better if the TEKS specified in more instances what students are supposed to know; then the TAAS could be developed by thinking of ways students could show those understandings." *Science Reviewer, Andrew Ahlgren*

32. "As I skimmed the expectations in the three assessment documents, I found most to be appropriate for large-scale assessment. However, I think expectations asking students to demonstrate higher order thinking may be a challenge. What will occur? Higher order thinking skills may be compromised as these expectations are turned into test items [questions]." *Social Studies Reviewer, Jesus Garcia*

33. "I interpreted the repetitiveness of identical [assessment] expectations to be a weakness in the Grades 10 and 11 assessments. More needs to be done in inserting a developmental quality to the expectations." *Social Studies Reviewer, Jesus Garcia*

34. "I would gladly volunteer to draft separate Grade 10 assessment documents..." *Social Studies Reviewer, P. Gagnon*

35. "Of crucial concern, therefore, is the extent to which the TAAS Objectives and Student Expectations reflect a coherent and fair picture of a disciplinary strand that can serve as a foundation for the understanding of Social Studies? The short answer is a qualified no for two reasons: (A) The problem of the use of correlates as it relates to the opportunity to learn material that will be assessed; and (B) The problem of the selection of appropriate material from TEKS to be part of TAAS. As it is currently formulated, I do not believe that the conjunction between the minimum requirements and TAAS, with its use of correlates and its selection of material, offers

the student a fair opportunity to learn the material that will be assessed." *Social Studies Reviewer, P. Gagnon*

36. "...it is not going to be possible to assure students and parents that taking only one course, either World History or World Geography, is adequate preparation for the Grade 10 and Grade 11 TAAS Social Studies assessments." *Social Studies Reviewer, P. Gagnon*

37. "There are questions as to whether the Proposed Objectives and Student Expectations do indeed represent the most important knowledge and skills from the TEKS. There are important knowledge and skill expectations that are missing from TAAS." *Social Studies Reviewer, P. Gagnon*

38. "Fourth, a few of the [assessment] objectives seem too vague or misleading to be useful on an assessment, even though they do accurately reflect the language of the TEKS." *Social Studies Reviewer, Diane Ravitch*

39. "My concern is the degree to which students must continue to demonstrate proficiency of the same content knowledge. As stated, this is not clear. Additionally, it is not clear how the curriculum will differ from grade to grade, therefore, it is problematic for testing. The following Proposed Objectives [for TAAS II] reflect this replication:" *Social Studies Reviewer, W. Chris Stewart*

40. "As now presented, it appears that students must continue to 'prove' that they know the same content. There is no evidence that Proposed Objectives [for TAAS II] or subsequent test items [test questions] will reflect more rigorous or demanding content." *Social Studies Reviewer, W. Chris Stewart*

41. "No. These students are not given a curriculum that adequately prepares them for the test [responding to the question 'Do the Proposed Objectives allow those students who take either World Geography or World History to be prepared to be successful on the test?']." *Social Studies Reviewer, W. Chris Stewart*

42. "The three pairs of draft assessment documents given for review, together with the TEKS 1999-98 scope and sequence of social studies courses, are fundamentally flawed, both in design and structure that - like the Articles of Confederation - cannot be improved by amendment. They hamstring the development of valid subject and grade-level assessments." *Social Studies Reviewer, Erich Martel*

43. "The goal of the planned TAAS II to test several years of content knowledge cannot be justified, and may even result in legal challenges." *Social Studies Reviewer, Erich Martel*

44. "Some [TAAS II] objectives expect very specific knowledge of particular individuals, dates, events, etc., while others are so ambiguous that they offer no direction to teachers and students." *Social Studies Reviewer, Erich Martel*

45. "There can be no justification for using criterion-referenced, i.e. mastery, tests to test subject matter not studied that year. Students can't be held responsible for specific content knowledge they learned one to three years after it was taught. Teachers (and by extension, principals) cannot be held accountable for subject matter they were not required to teach. Most important of all, such a test is not valid. In addition to the time lapse, the confusing description of the content to be studied in the TEKS Social Studies courses and the poorly worded extracts in the Proposed Assessment Objectives create a problem of validity that any textbook on measurement and evaluation quickly reveals (Mehrens & Lehman, Chapter 13)." *Social Studies Reviewer, Erich Martel*

46. "Given the tremendous ambiguity in the proposed TAAS II assessment base, it will be difficult to construct challenging questions with any assurance that students will have had the opportunity to learn the necessary information." *Social Studies Reviewer, Erich Martel*

47. "I spent a long time looking at this [Grade 10 assessment] and found it so confusing that I can't even begin to make any reasonable recommendation other than to quash it, as I suggested above." *Social Studies Reviewer, Erich Martel*

APPENDIX VII

TAKS - GRADE 10 SOCIAL STUDIES
ASSESSMENT OBJECTIVES: CONTENT and PROCESS
Assessment Objectives that Require no Knowledge of History, Geography or Government
10 of 29 Objectives Require Students to Use Information Given in Question

8.3 Social Studies Skills. The student applies critical-thinking skills to organize and use information acquired from a variety of sources including electronic technology. The student is expected to:
(A) use primary and secondary sources to acquire information about the United States;
(D) identify points of view from the historical context surrounding an event and the frame of reference which influenced the participants;
(F) identify bias in written and visual material.

8.10 Geography. The student uses geographic tools to collect, analyze, and interpret data. The student is expected to:
(B) answer questions about geographic distributions and patterns shown on maps, graphs, and charts.

WG5 Geography. The student understands how political, economic, and social processes shape cultural patterns and characteristics in various places and regions. The student is expected to:
(B) analyze political, economic, social, and demographic data to determine the level of development and standard of living in nations.

WG6 Geography. The student understands the types and patterns of settlement, the factors that affect where people settle, and processes of settlement development over time. The student is expected to:
(A) observe patterns in the size and distribution of cities using maps, graphics, and other information.

WH12 Geography. The student understands the impact of geographic factors on major historic events. The student is expected to:
(B) interpret historical maps to identify and explain geographic factors that have influenced people and events in the past.

WG21 Social Studies Skills. The student applies critical-thinking skills to organize and use information acquired from a variety of sources including electronic technology. The student is expected to:
(C) interpret maps to answer geographic questions, infer geographic relationships, and analyze geographic change.

WH25 Social Studies Skills. The student applies critical-thinking skills to organize and use information acquired from a variety of sources including electronic technology. The student is expected to:

(C) analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and drawing inferences and conclusions.

WH26 Social Studies Skills. The student communicates in written, oral, and visual forms. The student is expected to:
(C) interpret visuals including graphs, charts, timelines, and maps.

Assessment Objectives that Require Students to Demonstrate Knowledge
19 of 29 Objectives Require Students to Know History, Geography, and Government

8.1 History. The student understands traditional historic points of reference in U.S. History through 1877. The student is expected to:
(C) explain the significance of the following date: 1776, 1787 and 1861-1865.

8.3 History. The student understands the foundation of representative government in the United States. The student is expected to:
(A) explain the reasons for growth of representative government and institutions during the colonial period.

8.4 History. The student understands significant political and economic issues of the revolutionary era. The student is expected to:
(B) explain the roles played by significant individuals during the American Revolution, including Thomas Jefferson and George Washington;
(C) explain the issues surrounding the American Revolution, including declaring independence, and the Articles of Confederation;

8.16 Government. The student understands the American beliefs and principles reflected in the U.S. Constitution and other important historic documents. The student is expected to:
(A) identify the influence of ideas from historic documents including the Magna Carta, the English Bill of Rights, the Declaration of Independence, and the Federalist Papers; and
(C) identify colonial grievances listed in the Declaration of Independence and explain how those grievances were addressed in the U.S. Constitution and the Bill of Rights.
(D) analyze how the U.S. Constitution reflects the principles of limited government, republicanism, checks and balances, federalism, separation of powers, popular sovereignty, and individual rights.

8.17 Government. The student understands the process of changing the U.S. Constitution and the impact of amendments on American Society. The student is expected to:
(B) describe the impact of the 19th century amendments including the 13th, 14th, and 15th amendments on life in the United States.

8.18 Government. The student understands the dynamic nature of the powers of the national government and state governments in a federal system. The student is expected to:
(B) describe historical conflicts arising over the issue of state's rights, including the Nullification Crisis and the Civil War.

8.20 Citizenship. The student understands the rights and responsibilities of citizens of the United States. The student is expected to:
(A) define and give examples of unalienable rights; and
(B) summarize rights guaranteed in the Bill of Rights.

8.22 Citizenship. The student understands the importance of the expression of different points of view in a democratic society. The student is expected to:
(B) describe the importance of free speech and press in a democratic society.

WG1 History. The student understands how geographic contexts (the geography of places in the past) and processes of spatial exchange (diffusion) influenced events in the past and helped to shape the present. The student is expected to:
(A) analyze the effects of physical and human geographic patterns and processes on events in the past and describe their effects on present conditions, including significant physical features and environmental conditions that influenced migration patterns in the past and shaped the distribution of culture groups today; and
(B) trace the spatial diffusion of a phenomena and describe its effects on regions of contact such as the spread of bubonic plague, and the diffusion and exchange of foods between the New and Old Worlds.

WG8. Geography. The student understands how people, places, and environments are connected and interdependent. The student is expected to:
(B) compare ways that humans depend on, adapt to, and modify the physical environment using state, national, and international human activities in a variety of cultural and technological contexts.

WG10 Economics. The student understands the distribution and characteristics of economic systems throughout the world. The student is expected to:
(C) compare the ways people satisfy their basic needs through the production of goods and services such as subsistence agriculture versus marked-oriented agriculture or cottage industries versus commercial industries.

WG18 Culture. The student understands the ways in which cultures change and maintain their continuity. The student is expected to:
(A) describe the impact of general processes such as migration, war, trade, independent inventions, and diffusion of ideas and motivations on cultural change.

WH12 Geography. The student understands the impact of geographic factors on major historic events. The student is expected to:
(B) analyze the effects of physical and human geographic factors on major events in world history.

WH23 Geography. The students understands how major scientific and mathematical discoveries and technological innovations have affected societies throughout history. The student is expected to:

(A) give examples of technological innovations that occurred at different periods in history and describe the changes produced by these discoveries and innovations.

ABOUT THE AUTHOR

Chris Patterson joined the Texas Public Policy Foundation (TPPF) in March 2001 as Director of Education Research. She is responsible for developing reports on public education in Texas, publishing an education newsletter, and coordinating research conducted by independent education experts. She also serves as an expert resource for parents, educators, and policy leaders and participates in conferences and talk radio to disseminate information about education reform.

Chris was previously employed by the Foundation in 1996, and returns after a three-year hiatus during which she was the Director of Education Policy for The Lone Star Foundation in Austin and Executive Director of Education Connection of Texas in San Antonio.

She has published numerous research reports on textbooks, curricula, instructional practices, student performance, and school governance including: *Curriculum Equity in the Classroom* (co-authored with Dr. Manuel Berriozabal); *Governance Matters-Elected Schools are Essential for Texas Public Schools* (co-authored with the Honorable Geraldine Miller); *Arizona's Blueprint for Charter School Success-Perspectives on Education Reform for Texas and the Nation; Creative Solutions to Curriculum Problems-A Parent's Guide to the Texas Education Code; Selecting First Grade Reading Programs by Using Scientific Research Findings for Reading Success; The National Science Foundation Systemic Initiatives* (co-authored with Michael McKeown and David Klein) in Sandra Stotsky's *What's at Stake in the Standards Wars*; *Mathematics Textbook Selection for Texas Elementary and Middle Schools; School-to-Work Implementation in Texas; School-to-Work in Texas as the Showcase for National Reform; School-to-Work and the Coming Collision; Texas Essential Knowledge and Skills-Action Guide for New State Curriculum Standards; Design for Mediocrity-A Report on Current Education Reforms in Texas Public Schools;* and *Parents' Handbook for Academic Success.*

Chris and her husband have two sons. One attends public school in San Antonio; the other attends Baylor University. In 1996, the Patterson family moved from New York State where Chris was the Executive Director of the Regional Action Phone, a crisis intervention and suicide prevention hotline. Chris holds a bachelor's degree in Psychology and Labor Relations Certification from the Cornell University School of Management Studies.