Full Report

Ed School Essentials

March 2010

Evaluating the Fundamentals of Teacher Training Programs in TEXAS

National Council on Teacher Quality

All institutional ratings are available online from www.nctq.org/edschoolreports/texas

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Evaluating the Fundamentals of Teacher Training Programs in Texas

Introduction

In Texas, undergraduate teacher preparation programs graduate 9,300 new elementary, secondary and special education teachers, nearly half (43 percent) of the total number produced each year in the state.[1] This report examines 67 of those programs on a range of standards.[2] The standards bear directly on their programs' capacity to attract the most talented individuals into the teaching profession and then prepare them to teach effectively.

Over the last five years, NCTQ has been studying education schools across the country, primarily to look at the quality of the elementary reading and mathematics preparation that they provide.[3] The study in Texas is just one of a number of studies undertaken by NCTQ in preparation for a 2011 national evaluation of all education schools in the country.[4] The work in Texas, funded by Houston Endowment, is by far our largest study to date.

Where NCTQ Stands on Formal Teacher Preparation

Teacher preparation programs, or "education schools" as they are more commonly known, do not now, nor have they ever, enjoyed a particularly positive reputation, in Texas or elsewhere. Their reputation has not been improved by research findings showing little measurable value from pre-service teacher preparation, though very little of this

1 According to the Texas Education Agency, there were about 23,000 initial teacher certificates (elementary, middle school, high school and special education) awarded in 2009 to individuals completing undergraduate, graduate and alternative preparation programs. Of these, 21,450 were initial certificates for elementary teachers, middle and high school teachers in core subject areas, and special education teachers whose preparation programs are suitable for evaluation using NCTQ's standards. (The remainder of the initial certificates were given to individuals teaching in areas for which NCTQ standards are not applicable — such as a master math teacher or a dance teacher.) The education schools evaluated in this study produce about 43 percent of those 21,450 teachers. Undergraduate preparation programs produce 53 percent of elementary teachers, 22 percent of middle school teachers and 27 percent of high school teachers certified each year.

2 Two additional programs were not included in this study: Rice University and Trinity University.

3 NCTQ has issued two national reports on the reading and mathematics preparation of elementary teachers in representative samples of undergraduate education schools. The first, *What Education Schools Aren't Teaching about Reading and What Elementary Teachers Aren't Learning*, was released in May 2006. The second, *No Common Denominator: The Preparation of Elementary Teachers in Mathematics by America's Education Schools*, followed just over two years later. We have also issued reports that focused on reading and mathematics preparation of undergraduate elementary teacher candidates in five states. In addition to these studies of education schools, each year NCTQ conducts an analysis of state teacher polices, including the obligations that states have to their approved programs. The most recent edition of the *State Teacher Policy Yearbook 2009* for Texas can be found at www.nctq.org/stpy.

4 There will be two additional studies released in advance of the national study: a full pilot study in Illinois and a national study of approximately 130 education schools and the quality of their student teaching programs.

research has drilled down to the level of *individual programs* to discern if some programs, even if they are only a small minority, are adding value. Considered in the aggregate, which is what most of the research has only been able to do, the research is fairly conclusive that a teacher with very little training is apt to be effective as a teacher with a lot of preparation.

The popularity and clout of the successful Teach For America (TFA) program — a program for elite college graduates with no undergraduate education coursework who are placed in classrooms after a five-week summer training session — reinforce the view that pre-service preparation coursework does not make much difference. As much as we believe that Teach For America has brought tremendous benefits to public education, we respectfully disagree with the particular conclusion drawn from its example that preservice preparation makes no difference. Other than at the high school level, there is not much evidence that Teach For America teachers significantly outperform their peers when it comes to raising student achievement.[5] Yes, talent matters a lot, but talent alone is not sufficient when it comes to improving student outcomes.

Because NCTQ believes that high-quality formal teacher preparation is well capable of improving student outcomes (particularly reducing the deleterious impact that most first year teachers have on student achievement), our approach is perhaps unique in the current climate of "anti-ed school" sentiment. We are neither willing to work around education schools by relying only on alternative means of preparation nor willing to accept the status quo, that is, tolerate what appears to be a high number of under-performing schools of education operating at considerable taxpayer expense.

As a basic theory of change, it is simply not a realistic strategy to fuel a profession with three million members nationally by only attracting more elite students. Nor do we see proliferating "alternative certification" — much of it either not much different from traditional certification, of questionable quality, or both — as any panacea. The nation needs to be much more selective about who gets into the teaching profession, and we strenuously advocate for that goal. But teacher preparation still holds potential because even smart people can become better teachers, particularly of younger students, if they are provided with purposeful and systematic preparation.

Profile of the Institutions

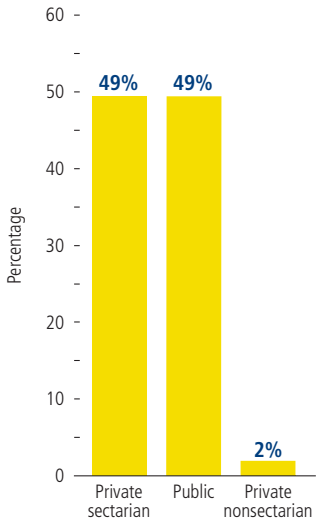
The 67 institutions in this study are categorized here by their type (private vs. public), relative teacher production and proportion of minority enrollment.

5 See page 43 of this report for a discussion of what coursework may be effective.

Teach For America (TFA) results are mixed. To date there have been a number of studies comparing the effectiveness of TFA teachers to that of teachers holding traditional certification. The majority of these studies have found that K-8 TFA teachers have a significantly positive effect on student achievement in math. In reading, the effect has been less consistent, but overall TFA teachers' influence has been found to range from no significant difference to a slightly positive effect when compared with traditionally certified peers (Raymond, M., Fletcher, S., & Luque, J. [2001]. Teach For America: An Evaluation of teacher differences and student outcomes in Houston, Texas, CREDO; Glazerman, S., Mayer, D. P., & Decker, P. T. [2004]. The effects of Teach For America on students: Findings from a National Evaluation. *Mathematica Policy Research, Inc.*; Kane, T. J., Rockoff, J. E., & Staiger, D. O. (2006). What does certification tell us about teacher effectiveness? Evidence from New York City. *NBER Working Paper Series*; Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J. [2008]. Teacher preparation and student achievement. *NBER Working Paper Series*; Noell, G. H., & Gansle, K. A. [2009]. *Teach For America teachers' contribution to student achievement in Louisiana in Grades 4-9: 2004-2005 to 2006-2007.* Louisiana State University, Baton Rouge, Louisiana.

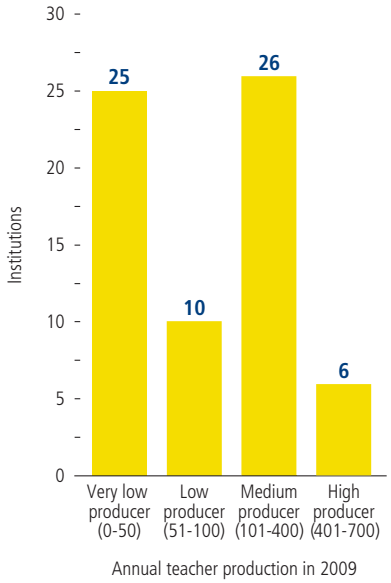
TFA high school teachers have only been the subject of one major study to date; however, this study found that TFA teachers are almost three times as effective as their traditionally certified peers, including those considered to be veteran teachers. These effects were particularly strong in math and science but were still significant in English. (Xu, Z., Hannaway, J., & Taylor, C. [2007]. Making a difference? The effects of Teach For America in high school. *National Center for Analysis of Longitudinal Data in Education Research*)

Figure 1 Type of institution housing Texas education schools



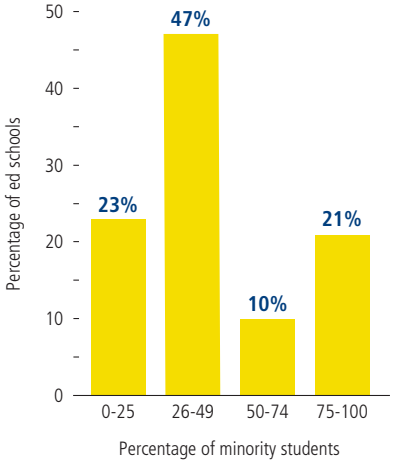
Source: Texas Education Agency

Figure 2 Ed schools grouped by total production of elementary, middle school, high school and special education teachers



Total annual teacher production from education schools: 9,300 (43 percent of total elementary, middle school, high school and special education teacher production).

Figure 3 Minority enrollment in Texas education schools



Program Approval Process in Texas

All of the teacher preparation programs housed in these 67 institutions are regulated by the state's department of education, the Texas Education Agency (TEA), through the State Board for Educator Certification (SBEC). The Texas Higher Education Coordinating Board (THECB) provides additional oversight of education schools housed in public institutions. The TEA must approve all programs, determining if they meet state requirements and provide a sufficiently rigorous curriculum to confer a Texas state teaching license on anyone who successfully completes the course of study. The state's two primary oversight mechanisms are reports on pass rates on state licensing tests and monitoring visits by TEA staff for which institutions prepare "self-reports." In its 2008 annual report regarding state oversight of education schools that Texas is required to submit to the federal government, there were no education schools designated as "at risk" or "low-performing."[6] These designations were the only sanctions available until 2009, when the TEA was given the authority to revoke program approval for education schools.

The state's regulatory framework provides important context for the focus of this paper. Most of the state regulatory weaknesses that we discuss in this report are explored in more detail in NCTQ's State Teacher Policy Yearbook 2009 (www.nctq.org/stpy). A summary of the Yearbook findings relevant to this study can be found in **Appendix A**.

Scope of this Study

To conduct this study, NCTQ evaluated the 67 programs using a set of standards specific to elementary teacher preparation,[7] secondary teacher preparation and special education teacher preparation (if applicable), as well as standards relevant to the undergraduate program as a whole.

A chronology of the study that includes discussion of communication with all institutions can be found in **Appendix B**.

To arrive at the 25 standards in this study, as well as the additional standards we will be using in our national study, we drew upon numerous sources, including strong research, consensus positions of relevant organizations and assembled experts, policies and practices of countries whose students out-perform our own, as well as those of high performing states and, for some standards, a strong dose of common sense. These standards employ practical rather than pie-in-the-sky solutions for improving teacher quality and don't involve costly institutional changes. **Unlike many systems for rating educational quality, any institution, regardless of available resources should be able to meet these standards.**

This set of standards, particularly in Texas where we have not yet applied all of them, is by no means all encompassing. Our standards only address the *design* of teacher preparation programs, and in the case of Texas, they address an assessment of some features of the program design, but not all. (For example, we did not assess the quality of student teaching programs in Texas, as critical as this component of teacher preparation is.) When applied in their entirety, the standards should assess whether all of the key *fundamentals* are in place to produce the best possible teachers. However, the standards do not now (nor will they ever) measure features such as the quality of instruction, along with many other intangible factors that go into making a strong program. That limitation being acknowledged, even the best instruction and conscientious faculty cannot overcome fundamental errors in program design.

6 Texas annual Title II report (https://title2.ed.gov/Title2DR/LowPerforming.asp). No Texas education schools have been designated "at risk" or "low performing" since 2006.

7 Elementary teacher preparation in Texas has spanned "early childhood" through grade 4 (EC-4), but it is transitioning to a span of "early childhood" through grade 6 (EC-6), with EC-4 certification expiring September 1, 2011.

Why? An institution with an open admissions policy that pays insufficient attention to candidate skill is unlikely to be able to compensate for lack of selectivity, at least without adding a lot more time. Time that faculty should spend delivering the necessary rigor and content is instead spent remediating deficient skills, such as teaching candidates how to write or perform basic math. Or, for example, if a program fails to require its secondary science teachers to take an adequate number of physics courses, it does not matter that its chemistry instruction is top notch. Secondary teachers intending to teach physics need to be adequately prepared in college-level physics.

In that sense, NCTQ's standards represent necessary, but not sufficient, conditions for producing the best possible teachers. These standards are consistent with attracting and producing the type of teacher who will do the best possible job in Texas classrooms: a highly capable and broadly educated teacher who has been trained in a systematic and rigorous manner to deliver instruction.

These standards are by no means the only way to evaluate teacher preparation. NCTQ does not carry the authority of government regulator or even that of a private accrediting organization. NCTQ's expertise is teacher quality and how to improve that quality to the highest possible level. There is nothing that prevents another organization from tackling this issue from its own perspective, including education schools themselves. (NCTQ would be the first to applaud such an effort.)

Methodology: Data Collection, Analysis and Production of Ratings[8]

Overall Process

NCTQ bases its evaluation of each individual school's program design on multiple sources. Each analysis starts with an initial review of course catalogs and the institution's website to identify much of the core data that we require for the study: institutional admissions standards and a program's own admission policy, general education course requirements, course requirements for secondary teachers in their subject area(s), professional course requirements and descriptions, graduation requirements, course schedules and teaching assignments and faculty listings.

For some standards, such as Standard 4 on elementary content preparation, we also look at course descriptions. We only look at course descriptions for the purpose of assessing the most basic elements of program design (e.g., if coursework appears to address at all a broad area such as American literature). We do not use course descriptions to assess whether, for example, a course on American literature covers any particular author or period.

For standards regarding preparation of elementary and special education teachers in reading and mathematics, we analyze syllabi and all of the required textbooks. We only use syllabi or texts to determine if a topic of major importance is addressed, never to determine if a secondary topic is addressed (more on this later).

Multiple pathways to certification

If multiple pathways to certification are offered, one with an area of specialization in mathematics and one without, we examine the pathway that prepares the teacher least adequately. Why the least? Because there will always be teacher candidates who strive to meet only the lowest expectations set by an institution. As long as those candidates are still considered qualified to graduate and earn a teaching license, the height of the bar set

8 Our data collection window closed at the end of the summer 2009 academic term. Any changes in coursework or coursework requirements that occurred after that term are not necessarily reflected in our analyses.

by the institution is critical. In fact, the institutions that set the lowest bar are most apt to provide the teachers to the neediest school districts, making it all the more important to determine the least rigorous pathway to licensure.

We also never assume that teacher candidates will make the right course selection among a set of electives. For example, if an institution offers three courses in American history to satisfy a core curriculum requirement, two addressing more narrow perspectives such as westward expansion or the role of technology and one more broadly addressing the nation's history, we believe that the latter is the appropriate course unless the teacher candidate has demonstrated mastery of the necessary material through a placement examination. If the teacher preparation program does not indicate that the broader course is required, however, we will not assume that the teacher candidate will select it and fulfill our standard for preparation in American history.

Feedback

NCTQ's analysis of institutions housing education schools is not a minor undertaking. The entire preliminary rating requires approximately 40 hours.

This estimate does not include the time dedicated to refining the ratings after receiving feedback from institutions in response to our preliminary ratings. Institutions are always invited to provide additional data that they feel is relevant to the analysis, such as course schedules that are password protected, syllabi, study guides and assessments. Also, institutions can use this opportunity to let us know if any of our data is incomplete, outdated or simply inaccurate. Furthermore, we welcome discussions with institutions seeking more detailed information about the nature of any deficiencies noted in the preliminary ratings.

Education schools in Texas have not, by and large, been receptive to our study and most did not avail themselves of these opportunities to review and comment. As noted in **Appendix B**, they made numerous criticisms of the study. Our response to these criticisms is found in **Appendix C**.

Ratings

For each standard, an institution is awarded a rating reflecting the extent to which it meets the standard. The possible ratings for most standards are: "meets our standard" (4 points), "nearly meets our standard" (3 points), "partly meets our standard" (2 points), "meets a small part of our standard" (1 point), or "does not meet our standard" (O points).

In some cases, the only possible rating is either "meets our standard" (4 points) or "does not meet our standard" (0 points). These ratings are depicted by a familiar and useful graphic: partially filled or filled circles of the kind used to designate the rating for consumer products.

More detailed descriptions of how points are earned or deducted can be found in the sections of the paper describing the methodology for each individual standard.

Special designations in ratings

Some standards — such as admissions, reading and mathematics preparation in elementary programs, and subject area preparation in secondary programs — carry more weight than others. Ratings within the elementary, secondary and special education programs were weighted by each standard's relative importance to determine that some institutions have a "strong overall design." Institutions whose ratings within their elementary, secondary or special education programs were low and which produced more than 50 teachers in any weak program were designated as institutions for which there is "attention needed." For more discussion of these calculations, see **Appendix D**.

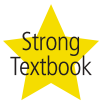
The current practice of leaving consumers in the dark supports an untenable system in which institutions that do a terrible job keep doing a terrible job, while those doing a great job are, in essence, ignored. In particular, the four education schools that are identified in this report for the overall strength of design of their preparation programs — **Dallas Baptist University**, **Southern Methodist University**, **The University of Texas – Pan American** and **The University of Texas at Austin** — deserve commendation, not to have the public assume they are part of the problem.

At the other end of the spectrum, we identify eight education schools — **Lamar University**, **Midwestern State University**, **Our Lady of the Lake University**, **Texas A&M University – Commerce, Texas Christian University**, **Texas Tech University**, **Texas Woman's University** and the **University of Houston** — that are in need of serious attention because they produce a significant number of teachers out of programs whose designs need significant improvement. Seven additional education schools — **Arlington Baptist**, **East Texas Baptist University**, **Houston Baptist**, **Howard Payne University**, **Southwestern Adventist University**, **Texas Wesleyan University** and **Wiley College** — have programs requiring significant design improvement, but we do not designate them as being in need of serious attention only because their lower teacher production numbers make them less of a priority for the state.

This identification serves an important purpose: to alert the public and policymakers that some education schools in Texas, while they may have many strengths, suffer from serious problems in the fundamental design of programs.

There are 48 schools in the middle on which we offer no general designation. There are, however, great differences in quality among these 48 schools. Nevertheless, until we return to Texas for a more comprehensive analysis that includes such key features as the content of professional preparation coursework and student teaching, we only present our findings on these institutions in the disaggregate — a useful tool for driving program improvement.

In order to indicate on rating sheets the designations described above as well as to indicate which programs demonstrate "exemplary design" in one standard or utilize strong textbooks, the rating sheets contain a number of symbols:

Symbol	Meaning
	Consistently strong design in the most important components of elementary, secondary and/or special education programs.
	Very weak design in an elementary, secondary and/or special education program producing 50 or more teachers.
	Program design relative to a particular standard is exemplary.
	All textbooks used in relevant courses provide strong support to instruction

A glossary of terms used to describe teacher preparation coursework and programs is found in **Appendix E**.

More Information on Analyses Using Course Requirements and Descriptions

Course descriptions found in course catalogs are admittedly short and cannot convey full information about the scope of a course, but they can be appropriately used in a very circumspect and circumscribed manner.

Course descriptions were considered relative to three standards in this study: professional preparation courses in elementary and in secondary teacher preparation programs, and content preparation in elementary teacher preparation programs. In the first two instances, they did not provide sufficient information to give us the confidence to provide an actual rating to the institution, merely recommendations. We had more confidence in what we learned about elementary content preparation, and therefore we issued a rating for this standard.

For evaluation of the professional part of a teacher's preparation, course descriptions were used to categorize coursework as either primarily covering academic content or primarily covering professional content. The descriptions were only used to determine if significant topics (not minor, ancillary topics) in professional preparation appeared to be addressed. For example, we could fairly look for evidence that an institution provided a course or a portion of a course in classroom management. However, we ultimately opted not to rate a program for what appears to be deficiencies in study without the capacity to also evaluate course syllabi, because a number of professional topics might legitimately be handled in combination in one course, and parsing the course description to discern whether each is covered adequately seemed to hold too great a potential for oversight.

Using course descriptions for evaluating the content coursework required of elementary teachers was a considerably easier task. In this case, the complete absence of course requirements in an area such as American history or biology was often the basis for our rating, meaning that we did not evaluate a course description at all. For example, it is an easy matter at most Texas institutions to ascertain that no world history course is required to fulfill either general education or teacher preparation requirements.

If a course that may be relevant to the elementary content standard was in fact offered, course titles can often be used to evaluate whether courses were broad enough to equip an elementary teacher to both contextualize and "add value" to the concepts to which she will be introducing her students through the Texas PK-6 curriculum. For

example, a relatively broad course in biology will be more useful for teaching elementary science than a course narrower in focus, such as one on pharmacology. Consequently, the titles themselves of these two courses would allow us to easily discern that one indeed touches on a full range of biological science ("Introduction to Biological Science") and not just a small slice of it ("Principles of Drug Action").

Examples of actual course descriptions used to evaluate elementary content coursework and how we assessed them are found in **Appendix F**.

It is only when a course relevant to an elementary content area is required that a course description need be examined to determine if it satisfies the standard. An example below illustrates how course descriptions enable us to rate an institution for its coverage of world geography. Here we were looking for a course that analyzes the world from a geographic perspective (including language, religions, customs, cultural diffusion and physical geography), emphasizing the unique qualities of the worlds regions; the spatial interaction of people, elements and regions; and major regional and global problems and prospects.

Note that only the last description shown here was rated as reflecting a course that did not provide the instruction necessary on world geography and thereby affected the institution's rating:

Sample description of a course we deem adequate:

> World Regional Geography
> An introduction to the field of geography. The course examines the physical and cultural geography of the world's regions with an emphasis on the five fundamental themes of geography.

Sample description of a course we deem only nearly adequate due to the fact that it covers physical geography and not cultural geography:

> World Geography
> An introduction to modern geography, including regions and nations of the world, major types of land surfaces, climatic regions, water and mineral resources, and world distributions of population. Map study will be given importance.

Sample description of a course we deem inadequate because it covers too many topics in addition to geography:

> Integrated Social Studies I
> This course facilitates excellence in teachers by exploring the interdisciplinary study of integrated social studies curricula, including history, geography, economics, government, citizenship, culture, and science, technology and society.

More Information on Analysis Using Syllabi and Textbooks

Analyses of syllabi have long been an accepted part of the evaluation of teacher preparation by state agencies, accrediting organizations and multiple research studies. The NCTQ methodology mirrors this practice, while relying only on experts in a particular field such as mathematics and reading to conduct the evaluations.

Here's an example that helps illustrate how this methodology works: If a syllabus for an early American history course contains no mention of topics associated with the American Revolution, one might rightfully suspect that the course is deficient, because the Revolution is considered a basic, essential topic. But it wouldn't be as troubling

to discover that Benedict Arnold was omitted from the syllabus. The professor might not have thought to list Arnold, and in any case he might end up talking about Arnold in a lecture — not unlike adding a "special" dish to a menu one night. But even if the professor doesn't do that, it would be unfair to assume that the course is deficient as a result of the omission, because Arnold is not a basic, essential topic.

Our evaluations in reading and mathematics preparation were generous in that we always gave a program the benefit of the doubt if we encountered any ambiguity.

We also make a careful review of the required textbooks, as well as any "reading packets" put together by the instructor. Assuming that instructors pick these required readings with care (and we believe that the selection of textbooks especially is not a casual decision but is quite revealing of an instructor's orientation), our evaluations probably provide a much more positive view of what instruction in a course covers than what actually may transpire.

The process for reviewing syllabi and textbooks in each of these two areas of preparation is discussed below.

Analyzing Reading Syllabi and Textbooks

Each of the syllabi that we collect is reviewed and separately rated by two reviewers in a blind review process. If a syllabus lacked sufficient detail to allow the researchers to make a reasonable judgment, the syllabus was rated as "unclear."

The reviewers looked for evidence that each of the five components of effective reading instruction (phonemic awareness, phonics, fluency, vocabulary and comprehension) was the topic of 1) part of a lecture, 2) all of a single lecture, or 3) multiple lectures. Two lectures on a single component were sufficient to receive the maximum score. The reviewers also analyzed whether students in the class were expected to demonstrate their knowledge of effective reading instruction by different kinds of assessments and assignments.[9]

When considering the lectures, the reviewers did not speculate about the quality of instruction and whether topics were taught appropriately. For example, a course that simply listed "phonics" as a lecture topic would receive full credit even though the professor could easily have lectured on the advisability of teaching phonics only when children were having difficulty sounding out a word, an instructional practice not supported by the research.

This methodology is described in more detail in Appendix A of NCTQ's national study on reading.[10]

The evaluation of the texts was a process separate from the analysis of the syllabi, which was conducted by literacy experts hired as consultants for this project. These consultants categorize each textbook as follows:

9 As the framework for both the analysis of the syllabi and the reading texts, we used four syllabi that literacy expert Louisa Moats designed for Maryland. The syllabi serve as a guide to the four reading courses required of elementary teachers in that state. See http://www.marylandpublicschools.org/NR/rdonlyres/2C7FFCC4-3F21-4B62-9406-11B06CDF2DB/7875/ReadingCourseRevisionGuidelines1.pdf

10 http://www.nctq.org/p/publications/docs/nctq_reading_study_app_20071202065019.pdf

Acceptable core textbook	The text accurately and thoroughly covers all five components of good reading instruction.
Acceptable supplemental	The text accurately and completely covers one or more, but not all, of the five components of good reading instruction and is suitable as a supplemental reading for a course.
Not acceptable core textbook	The text was intended to be a comprehensive source on good reading instruction but was inaccurate and/or incomplete.
Not acceptable supplementary	The text was intended to cover some aspect of reading instruction but did not cover even one component of good reading instruction in an accurate and complete manner.
Not relevant	The text was not intended to teach teachers how to teach reading.

A complete list of ratings for required reading textbooks in Texas teacher preparation programs can be found in **Appendix G**. The appendix also provides information about literacy experts who served as textbook reviewers.

Mathematics Syllabi and Textbooks

Elementary content course syllabi are evaluated by two trained reviewers with mathematical expertise. Each reviewer evaluates a syllabus independently for indications that the classroom instruction at least intended to cover all of the 12 topics established as essential by an advisory group to NCTQ's national math study.[11]

When syllabi are too ambiguous to warrant any conclusions about coverage, the reviewers check textbook pages assigned for class or reading to ascertain the nature of the instruction. When a third reviewer with mathematical expertise ascertained that the pair did not agree on a particular score or a rationale for a score, the pair reached consensus scores and rationales by discussion.

Samples of course syllabi and their scores are contained in Appendix E of NCTQ's national mathematics study.[12]

The evaluation of the texts was a separate process from the analysis of the syllabi, conducted by mathematicians hired as consultants for this project. Only two elementary mathematics textbooks used for courses analyzed in this study required extensive review because they had not already been reviewed in NCTQ's national mathematics study.

The review process for all mathematics textbooks involves a preliminary screening by a mathematician to ascertain the adequacy of their treatment of the 12 essential topics. All but the weakest and/or least commonly used textbooks are reviewed twice in the three critical areas of numbers and operations, algebra and geometry and measurement. These evaluators assess the topics in each critical area on the basis of coverage, connection, integrity, the sufficiency and significance of examples and whether the text addressed methods of teaching. Our mathematician consultants consider word problems of paramount importance in elementary content coursework. They pay particular attention in their reviews to the sufficiency and appropriateness of word problems.

11 http://www.nctq.org/p/publications/docs/nctq_ttmath_fullreport_20090603062928.pdf
12 http://www.nctq.org/p/publications/docs/nctq_ttmath_fullreport_20090603062928.pdf
13 http://www.nctq.org/p/publications/docs/nctq_ttmath_fullreport_20090603062928.pdf

The rubric for evaluating textbooks, their evaluation scores, and descriptions of features of selected textbooks are found in Appendix D of NCTQ's national mathematics study.[13]

A complete list of ratings for required mathematics textbooks in Texas teacher preparation programs can be found in **Appendix H** of this report. The appendix also provides information about the mathematicians who served as textbook reviewers.

Our standards: rationales for, methodologies and findings

The next sections of this report are organized to provide the rationales, methodologies and findings for each of NCTQ's 25 standards. The standards are presented in the same order in which they appear on the rating sheet for each individual institution. Elementary teacher preparation is addressed in Standards 2-8; secondary teacher preparation is addressed in Standards 9-13; special education preparation is addressed in Standards 14-16. The table of contents on page 1 provides a full listing of the standards.

Overall Program Design Standards: Admissions Standards

Standard 1: Admits teacher candidates with strong academic records

Rationale

Most undergraduate teacher preparation programs in the United States, even those housed in college departments rather than professional schools, have an application process that takes place at the end of the sophomore or beginning of the junior year. This application process presents an opportunity to select only candidates that meet high standards, and there has been consensus for decades that attracting more capable people to the teaching profession is the *sine qua non* of education reform.

There is extensive research supporting this standard, including 1) research showing a strong correlation of teacher "verbal ability"[14] and student achievement, 2) a similarly strong correlation of the selectivity of the teacher's college and student achievement, and 3) more limited findings showing that teachers who pass their licensing tests on the first attempt produce higher levels of achievement in students.[15]

Recent studies of teachers in countries in which students outperform our own show a clear pattern of institutional and cultural forces that attract the most capable young adults into the profession. McKinsey's study of high performing educational systems indicates that other countries set a higher bar than ours, selecting from the top third of students.[16]

In a study of a group of countries that scored as well as or better than the United States on the 1999 TIMSS test of 8th grade mathematics, researchers found that in most of the countries, teacher candidate screening criteria are more rigorous and applied earlier in the certification pipeline.[17]

Texas is ahead of most states with respect to selecting qualified candidates for teacher preparation. First, since December 2008, it requires that its education programs use an assessment of basic skills that is designed for the general college population, not just for teacher candidates. Second, the state has set minimum cut-scores for admission at levels that

14 Verbal ability has been measured many different ways but is most frequently measured on the SAT or ACT, performance on licensure tests, and on simple vocabulary tests.

15 Ehrenberg, R., & Brewer, D. (1994). Do school and teacher characteristics matter? Evidence from high school and beyond. *Economics of Education Review*, 13(1): 1-17; Wayne, A., & Youngs, P. (2003). Teacher characteristics and student achievement gains: A review. *Review of Educational Research*, 71(1): 89-122; White, B. R., Presley, J. B., & DeAngelis, K. J. (2008). *Leveling up: Narrowing the teacher academic capital gap in Illinois* (IERC 2008-1). Edwardsville, IL: Illinois Education Research Council; Winkler, D. (1975). Educational achievement and school peer composition. *Journal of Human Resources*, 10,189-204.

16 McKinsey & Co., *How the World's Best-Performing School Systems Come Out on Top*.(September 2007) 16. While the applicant pool has been improving and prospective secondary teachers are generally more capable than prospective elementary teachers, our nation's teachers do not come from the top ranks of high school graduates going to college.

17 Wang, Aubrey H., et al. (2003). *Preparing teachers around the world*. Princeton, NJ: Educational Testing Service.

appear to be relatively selective when compared to the academic qualifications of applicants to education programs nationwide. However, they are certainly not as selective as they should be given that they are same cut-scores used to establish the need for remedial work for freshman entering Texas public universities.

NCTQ believes that there is a strong argument to be made for more selectivity in admissions to teacher preparation programs.

More on the Argument for Selectivity in Admissions

Countries that have education systems better than our own have much higher standards for applicants wanting to enter the teaching profession. Finland's education programs, for example, only admit the top 10 percent of their high school graduating classes. Singapore's programs only admit the top third of their high school graduating classes. We are advocating that the floor be no lower than standards admitting the top 50 percent of the college-going population — still a long way off from the practices of higher performing countries.

Does this violate our democratic tradition? Frankly, that democratic philosophy seems much more alive at the doors to education schools than at the doors to our PK-12 schools, with the result that the philosophy doesn't have a democratic effect at all. You won't find high performing school districts willing to hire teachers who were themselves poor students and have demonstrably low academic performance. Where are those teachers teaching? It is poor and minority children who are most likely to be assigned the teachers with the weakest academic backgrounds. The notion that academic background shouldn't matter that much has had disastrous consequences for poor and minority children, the ones who are most in need of a high quality education. We tend to be okay with allowing low performing teachers into the profession as long as they don't teach our own kids.

The shortages that could result are often cited as a reason not to raise admission standards, but there is little evidence from states that have raised their standards that big teacher shortages ensue. In truth, raising standards makes the profession more attractive to academically talented individuals who are otherwise put off by the profession's low standards. Massachusetts ignored warnings about shortages when it raised its standards to some of the highest in the nation and has not experienced any teacher shortages. Likewise, England found that teaching became the most popular profession among undergraduates and graduates after program standards were raised.

In fact, we can probably reduce the current number of education school students and not feel the effects at all in the classroom since many people getting teaching degrees never intend to teach. We can only surmise the popularity of teacher preparation programs is connected to the perception that it's an easy major.

Would all hopes of having a sufficient number of teachers of color be dashed with higher admission standards? While a far lower proportion of the most talented minority students choose to become teachers than do talented white students, highly selective education programs that heavily recruit talent of all colors *do* succeed in attracting minority teacher candidates. For example, 30 percent of Teach For America teachers are of color.

The long-term strategy to achieve a teaching force that better mirrors the student population is to immediately improve the educational prospects of every child by putting an effective teacher in every classroom. Those effective teachers we so desperately need will be produced by education schools with higher, not lower, admission standards. Among many other things, the fruit of more effective instruction will be many more minority high school graduates qualified to enter teaching in a decade, no matter how selective admissions have become.

Methodology

In our examination of Texas programs we looked for evidence that teacher candidates are likely to be in the top half of the college population either because of the selectivity of the institution in which the education school is housed or because of admissions standards used by the education school itself.

We used *U.S. News and World Report* ratings to determine if an institution is "more selective" or "most selective"; these levels of selectivity fully meet the standard of screening for teacher candidates in the top half of the college population without further analysis.[18]

For programs in institutions with lower selectivity in general admissions, we looked at the program's requirements relative to the Texas Higher Education Assessment (THEA), or any other academic proficiency test normed to the college population. The state's minimum cut-scores are just below the level needed to select for applicants in the upper half of the college population.[19]

Rating	Criteria for education schools not housed in "more selective" or "most selective" institutions
● Meets standard	Programs requiring minimum scores above the state's required minimum on both the reading and mathematics portions of the THEA.
◕ Nearly meets standard	Programs requiring minimum scores above the state's required minimum on one portion (reading or mathematics) of the THEA.
◑ Partly meets standard	Programs requiring the state's required minimum on both the reading and mathematics portion of the THEA.
◔ Meets a small part of standard	Programs requiring a basic skills test but with no specification of cut-scores.
○ Fails to meet standard	Programs not posting information publicly about a basic skills test or allowing course grades to substitute for adequate test scores.

Findings

Commendably, Texas is one of 15 states making a test of academic proficiency a condition for admission into education schools. Both because the test used for admissions is suitable to assess the skills of the general college-going population (not simply teacher candidates) and because cut-scores on the test are set at a fairly high level, Texas is a leader among states in terms of admissions standards. While the state's standard for admissions is by no means high enough to match that practiced in nations with higher performing education systems (admitting only the top third of high school classes into teacher preparation), two-thirds of Texas' education schools nonetheless meet or nearly meet the standard set by NCTQ recommending that institutions only accept students from the top half of their college-attending high school class. This is because the students are housed in institutions whose selectivity ensures that teacher candidates have

18 Without using additional screening, it is not likely that applicants to education schools in Texas institutions that are "selective" are in the upper half of the college population. The reason is that in such institutions, on average about half of the students have combined SAT reading and SAT mathematics scores below the nation's median combined SAT score.

19 Between 2004 and 2009, the national average score on the reading portion of the SAT has ranged from 501-508 and the national average score on the mathematics portion of the SAT has ranged from 515-520. This average is the median score, meaning that 50 percent of test-takers score above it. The cut-scores on the reading and mathematics portions of the THEA are represented as the equivalent of scores of only 500 on both the reading and mathematics portions of the SAT.

strong academic records (10 education schools), or they have established cut-scores on the admission test that exceed the state's minimum cut-scores on the reading portion of the THEA or both the reading and mathematics portions of the THEA (35 education schools).

How Texas institutions fare on this standard

NCTQ Standard 1. Admits teacher candidates with strong academic records

The standards for admission either into the institution or its teacher preparation program should select teacher candidates from only the top half of the college population.

★ **Institutions with Exemplary Design**
Texas A&M International University, The University of Texas at Dallas

● **Institutions Meet Standard**
Baylor University, Dallas Baptist University, LeTourneau University, Southern Methodist University, Southwestern University, Texas A&M University, Texas Christian University, Texas Woman's University, The University of Texas at Austin, The University of Texas at Tyler, The University of Texas of the Permian Basin, University of Dallas, University of St. Thomas

◕ **Institutions Nearly Meet Standard**
Abilene Christian University, Houston Baptist University, Jarvis Christian College, Lubbock Christian University, McMurry University, Prairie View A&M University, Rio Grande College of Sul Ross State University, Sam Houston State University, Southwestern Adventist University, Southwestern Assemblies of God University, St. Edward's University, St. Mary's University, Stephen F. Austin State University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Texarkana, Texas College, Texas Lutheran University, Texas Southern University, Texas Wesleyan University, The University of Texas – Pan American, The University of Texas at Arlington, The University of Texas at El Paso, University of Houston, University of Houston – Clear Lake, University of Mary Hardin – Baylor, University of North Texas, Wayland Baptist University, West Texas A&M University, Wiley College

◑ **Institutions Partly Meet Standard**
Angelo State University, Arlington Baptist College, Concordia University, East Texas Baptist University, Howard Payne University, Huston-Tillotson University, Midwestern State University, Our Lady of the Lake University, Paul Quinn College, Schreiner University, Tarleton State University, Texas A&M University, Texas A&M University – Kingsville, Texas State University – San Marcos, Texas Tech University, The University of Texas at Brownsville, The University of Texas at San Antonio, University of Houston – Downtown, University of Houston – Victoria, University of the Incarnate Word

◔ **Institutions Meet Small Part of Standard**
Lamar University

○ **Institutions Do Not Meet Standard**
Hardin-Simmons University, Sul Ross State University

Exemplary Design

Texas A&M International University is rated only as "less selective" by U.S. New and World Report, but the College of Education has made a clear commitment to seeking only the most qualified applicants by establishing cut-scores on the THEA of 260 in reading (30 points above the state's minimum score) and 250 in mathematics (20 points above the state's minimum score).

The University of Texas at Dallas already has applicants who are well qualified due to the selectivity of the institution in which the education school is housed, but the university has also made a clear commitment to seek only the most qualified among the applicants by establishing cut-scores on both portions of the THEA above the state minimums.

Elementary Teacher Program Standards[20]

Standard 2a: Extent to which the science of reading is covered
Standard 2b: Adherence to science of reading throughout coursework

Rationale

Although recently improved at the 4th grade level, student reading achievement in Texas remains a chronic problem, one that is unfortunately shared throughout the country. On the most recent National Assessment of Educational Progress (NAEP) assessments, 70 percent of Texas 4th graders and 72 percent of Texas 8th graders read below the proficient level.[21]

Over the past 60 years, scientists from many fields have worked to determine how people learn to read and why some people struggle. Research on reading has lead to a number of breakthroughs that can dramatically reduce the number of children destined to become functionally illiterate or barely literate adults. By routinely applying in the classroom the lessons learned from these scientific findings, most reading failure could be avoided. It is estimated that the current failure rate of 20 to 30 percent could be reduced to the range of 2 to 10 percent.

The 2000 report of the National Reading Panel entitled *Teaching Children to Read* provides a complete and incontrovertible rationale for this standard. Despite the overwhelming evidence and standards supporting instruction in the science of reading in 25 states, educators have been slow to adopt these scientifically based practices. In our first national study of teacher preparation, in a representative sample of 72 institutions, we found that only 15 percent were teaching the five instructional components of the science of reading (phonemic awareness, phonics, fluency, vocabulary and comprehension) in even the most rudimentary sense.[22]

Methodology

Our rating of Texas' institutions on reading preparation builds on the methodology employed in our national study. Preparation programs were reviewed to determine whether instruction is provided on the five components of the science of reading in any reading course required of students who aspire to teach pre-kindergarten through grade four or pre-kindergarten through grade six, whichever is relevant. We looked for such evidence both in course syllabi and required textbooks. (To date, we have reviewed about 700 such textbooks, 256 in Texas alone.) When we encountered any sort of ambiguity, we always gave the school the benefit of the doubt and gave credit for coverage. (For more information about how we analyze syllabi and textbooks, go to page 12.)

20 We evaluated only programs for the certification as a Generalist EC-4 or Generalist EC-6, not as a Bilingual Generalist EC-4 or Bilingual Generalist EC-6. We chose only to evaluate such programs offering specialization in early childhood education, special education, bilingual education, English as a Second Language or reading if no generalist certification program without specialization was offered.

21 These numbers track closely to the national averages. See http://www.nces.ed.gov/nationsreportcard/states/profile.asp.

22 http://www.nctq.org/p/publications/docs/nctq_reading_study_app_20071202065019.pdf

Rating	Criteria
● Meets standard	Coursework covers all five of the components of effective reading instruction identified by the reading science: phonemic awareness, phonics, fluency, vocabulary and comprehension strategies.
◕ Nearly meets standard	Coursework covers four of the five components of effective reading instruction identified by the reading science.
◑ Partly meets standard	Coursework covers three of the five components of effective reading instruction identified by the reading science.
◔ Meets a small part of standard	Coursework covers two of the five components of effective reading instruction identified by the reading science.
○ Fails to meet standard	Coursework covers one or none of the five components of effective reading instruction identified by the reading science.

The second rating was not included in our national study. This new rating addresses the efficiency and coherence of an institution's reading courses based on evaluation of its coverage of the science of reading across all of the required coursework relating to reading instruction. This rating captures those programs that cover the reading science in one or more courses, but also present other approaches contrary to scientifically based reading instruction.

Rating	Criteria
● Meets standard	All required courses cover one or more components of effective reading instruction identified by the reading science: phonemic awareness, phonics, fluency, vocabulary and comprehension strategies.
◕ Nearly meets standard	Nearly all required courses cover one or more components of effective reading instruction identified by the reading science.
◑ Partly meets standard	About half of the required reading courses cover one or more components of effective reading instruction identified by the reading science.
◔ Meets a small part of standard	Few of the required reading courses cover one or more components of the effective reading instruction identified by the reading science.
○ Fails to meet standard	Only one required reading course covers any aspect of the science of reading.
NA Not Applicable	Because no evidence of the science of reading being taught was discerned in either a single comprehensive course or in a combination of multiple courses (see standard #2a), no rating was applicable for this standard.

A program earns full credit on these two ratings if all five components of the science of reading are covered in the coursework and all relevant required courses address at least one of the five essential components. Ratings are lowered by neglecting to cover one or more components of the science of reading and/or requiring one or more reading courses that have as their focus early reading instruction but that omit the science of reading.

We understand that a course's intended goals and topics as reflected by syllabi and textbooks may differ from what actually happens in the classroom. However, it is reasonable to assume that college professors give thought and consideration to their syllabi and course readings, which represent the intended structure of their courses and

emphasize what they view as essential knowledge. If anything, less and not more of what the syllabi and texts suggest is apt to be covered in class.

Nonetheless, in recognition of the inherent limitations of our methodology, we always invite programs to submit additional materials. Only three did so.

Our national study contains more information on the science of reading and the methodology used in evaluating reading preparation.[23]

Findings

Over a decade ago, Texas was one of the first states to recognize the importance of preparing elementary teacher candidates in the science of reading. The state issued regulations mandating that education schools teach the five components of reading science.[24] These regulations appear to have had little effect, judging by the fact that only a quarter of the institutions for which we could evaluate reading preparation are comprehensively teaching reading science (13 of 56), only slightly more than what we observe nationally. Fully 45 percent provide so little coverage of the science of reading that they failed entirely to meet the NCTQ standard. (This proportion of failure is slightly higher than the 43 percent we found in our national study.)

However, the issue is not just whether the science of reading is taught in these programs but also if it pervades instruction, instead of being treated as one of several equally valid methods. Here our findings worsen. In all but a few programs, it appears to be a matter of chance as to whether elementary teacher candidates in Texas will be assigned to a course that teaches reading science or one that does not.

The negligence in reading instruction is compounded by the fact that a small percentage of the 256 textbooks that we reviewed (7 percent) accurately and comprehensively address all five components of the science of reading. In fact, we found only one program that steered entirely clear of unacceptable textbooks. This was not a surprising finding for us, as we now have reviewed over 700 textbooks in a number of states, finding only a small number that appropriately cover the reading science.

23 http://www.nctq.org/p/publications/docs/nctq_reading_study_app_20071202065019.pdf

24 19 TAC 7.228.30, which was adopted to be effective July 11, 1999: (b) The curriculum for each educator preparation program shall rely on scientifically-based research to ensure teacher effectiveness and align to the TEKS. The current reading regulation is found at http://www.sbec.state.tx.us/SBECOnline/standtest/standards/EC_6_ELAR_Standard%284%29.pdf

How Texas institutions fare on this standard

NCTQ Standard 2a. Extent to which the science of reading is covered

The research-based content proven to be necessary for teaching all children to read should be clearly evident in course materials such as lecture topics, assignments and textbooks.

★ **Institutions with Exemplary Design**
Texas A&M University

● **Institutions Meet Standard**
LeTourneau University, McMurry University, Southern Methodist University, Southwestern Assemblies of God University, Texas A&M University – Kingsville, Texas Southern University, The University of Texas – Pan American, The University of Texas at Austin, The University of Texas at Dallas, University of Houston – Downtown, University of North Texas, Wayland Baptist University

◕ **Institutions Nearly Meet Standard**
Baylor University, Dallas Baptist University, Lubbock Christian University, Schreiner University, St. Mary's University, Texas State University – San Marcos, University of Mary Hardin – Baylor

◑ **Institutions Partly Meet Standard**
Angelo State University, Arlington Baptist College, Tarleton State University, The University of Texas at Arlington, The University of Texas at Tyler, University of Houston – Clear Lake

◔ **Institutions Meet Small Part of Standard**
Abilene Christian University, The University of Texas of the Permian Basin, University of Houston, University of the Incarnate Word, West Texas A&M University

○ **Institutions Do Not Meet Standard**
Concordia University, East Texas Baptist University, Houston Baptist University, Howard Payne University, Lamar University, Midwestern State University, Our Lady of the Lake University, Sam Houston State University, Southwestern Adventist University, St. Edward's University, Stephen F. Austin State University, Texas A&M International University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Texarkana, Texas Christian University, Texas Lutheran University, Texas Tech University, Texas Wesleyan University, Texas Woman's University, The University of Texas at El Paso, The University of Texas at San Antonio, University of Dallas, University of Houston – Victoria, Wiley College

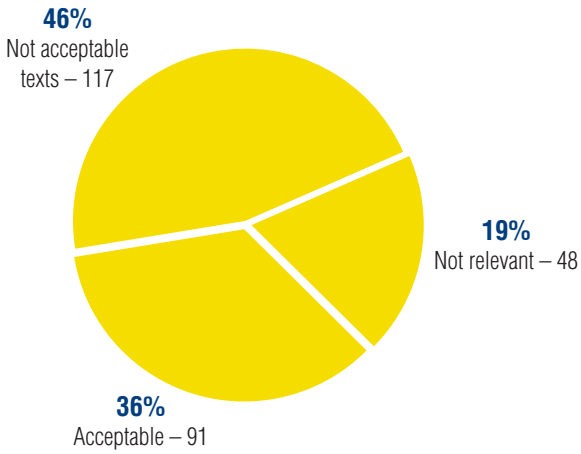
? Institutions Whose Performance Cannot Be Determined
Hardin-Simmons University, Prairie View A&M University, Huston-Tillotson University, Jarvis Christian College, Paul Quinn College, Rio Grande College of Sul Ross State University, Southwestern University, Sul Ross State University, Texas College, The University of Texas at Brownsville, University of St. Thomas

Exemplary Design

Texas A&M University received the highest possible rating for teaching each component of the science of reading. The design of this institution's coursework received the highest score in our evaluation for teaching each component of the science of reading in classroom lectures, textbook selections and teacher candidate assessments.

The graphic below depicts the distribution of our ratings of the textbooks used in Texas education schools.

Figure 4 Quality of reading texts



Most of the textbooks used to teach reading to Texas' prospective elementary and special education teachers were rated by NCTQ as inadequate because they either: 1) are intended to be a comprehensive source on good reading instruction but are inaccurate and/or incomplete, or 2) are intended to cover some aspect of reading instruction, but did not cover even one component in an accurate and complete manner.

Reviews of both the reading textbooks used in Texas can be found in **Appendix G**. The appendix also provides information about literacy experts who served as textbook reviewers.

What does one find when reviewing syllabi from programs that fail to meet both Texas' and NCTQ's reading standards? They often have course objectives that equivocate about the science of reading. For example, there might be a statement that the course objective is to develop an "understanding of different approaches to teaching children to read." Another might be assignments that do not advance student understanding of reading in general, much less the science of reading. Some examples: assignments asking teacher candidates to write a personal theory of literacy development, a letter to a former teacher or about their "philosophy of teaching."

Are preparation programs in Texas unable to adequately address the science of reading because they are not devoting enough coursework to reading preparation? The answer is an emphatic "no." While it is technically possible to teach the science of reading in only one course, NCTQ recommends two.[25] In fact, the only institution that received the highest rating on both reading standards — **Southern Methodist University** — delivers excellent instruction in only two courses.

25 One course in the fundamentals of scientifically based reading instruction and one course in how to assess and provide effective remediation strategies for struggling readers.

The number of required reading courses we evaluated for reading instruction ranged from one to seven.[26] As the table below shows, the average number of courses offered by programs that had ratings ranging from "fails to meet standard" to "fully meets standard" is about the same: between three and four courses.

Figure 5 Do more reading courses improve teacher preparation?

Rating	Average number of reading courses in program
○ Fails to meet standard	3.2 courses
◔ Meets a small part of standard	3.4
◑ Partly meets standard	3.2
◕ Nearly meets standard	4.1
● Meets standard	3.5

Texas education schools require as few as one and as many as seven reading courses for elementary certification. However, there is no relationship between the number of courses required and NCTQ's rating: programs that met our standard require an average of 3.5 reading courses, while programs that pay no attention whatsoever to the science of reading require an average of 3.2 courses.

Texas requires preparation programs to offer only six semester hours of reading instruction, but other regulations regarding majors for teacher candidates, which will be discussed shortly, help to explain the abundance of reading courses.

Not only is it unnecessary to have more than two courses that address reading instruction in an elementary teacher preparation program, requiring more can be counterproductive because it creates the possibility of coursework that contradicts the science of reading. Indeed, this is the situation we find in Texas, where only two programs' courses met our standard for adhering to the science of reading in all coursework.

26 The total number of courses addressing language arts was even higher in some education schools. For example, **Hardin-Simmons University** requires nine such courses.

How Texas institutions fare on this standard

NCTQ Standard 2b. Adherence to the science of reading throughout coursework

All of an institution's required reading courses — not just some courses — should impart the research-based content that is necessary for teaching all children to read.

★ **Institutions with Exemplary Design**
Southern Methodist University

● **Institutions Meet Standard**
Baylor University

◕ **Institutions Nearly Meet Standard**
Angelo State University, Dallas Baptist University, LeTourneau University, Texas A&M University, Texas A&M University – Kingsville, The University of Texas – Pan American, The University of Texas at Arlington, The University of Texas at Dallas, University of Houston – Clear Lake, University of Mary Hardin – Baylor, University of North Texas

◑ **Institutions Partly Meet Standard**
McMurry University, Southwestern Assemblies of God University, University of Houston – Downtown, Wayland Baptist University

◔ **Institutions Meet Small Part of Standard**
Schreiner University, St. Mary's University

○ **Institutions Do Not Meet Standard**
Arlington Baptist College, Lubbock Christian University, Tarleton State University, Texas Southern University, Texas State University – San Marcos, The University of Texas at Austin, The University of Texas at Tyler

NA **Institutions For Which Rating On This Standard Is Irrelevant**
Abilene Christian University, Concordia University, East Texas Baptist University, Houston Baptist University, Howard Payne University, Lamar University, Midwestern State University, Our Lady of the Lake University, Sam Houston State University, Southwestern Adventist University, St. Edwards University, Stephen F. Austin State University, Texas A&M International University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Texarkana, Texas Christian University, Texas Lutheran University, Texas Tech University, Texas Wesleyan University, Texas Woman's University, The University of Texas at El Paso, The University of Texas at San Antonio, The University of Texas of the Permian Basin, University of Dallas, University of Houston, University of Houston – Victoria, University of the Incarnate Word, West Texas A&M University, Wiley College

? **Institutions Whose Performance Cannot Be Determined**
Hardin-Simmons University, Huston-Tillotson University, Jarvis Christian College, Paul Quinn College, Prairie View A&M University, Rio Grande College of Sul Ross State University, Southwestern University, Sul Ross State University, Texas College, The University of Texas at Brownsville, University of St. Thomas

Exemplary Design

It is hard to beat the performance of **Southern Methodist University** in reading preparation: its two reading courses efficiently and effectively address all the components of the science of reading, and they do so consistently, earning it a rating of "meets standard" on both parts of our reading standard.

Standard 3: Prepares teacher candidates to teach mathematics

Rationale

Compared to their counterparts in other countries, the performance of American students in mathematics is mediocre. In turn, compared to their counterparts in other states, the performance of Texas' students in mathematics is mediocre, although the scores of the state's 4th and 8th grade students are slightly above the national average. On the most recent NAEP, 62 percent of Texas' 4th graders and 63 percent of its 8th graders had mathematics scores below the proficient level.[27] Since mathematics knowledge is cumulative, a critical step in improving this performance is the foundation laid throughout elementary school. Achieving results there is directly linked to the capability of elementary teachers to provide effective instruction in mathematics.

There is increasing consensus that prospective elementary teachers — who are notoriously weak in mathematical competency — are best trained by college mathematics courses that are designed specifically for teachers and that impart a deep understanding of elementary and middle school mathematics concepts. A calculus or statistics course is fine to take as an elective, but the National Council of Teachers of Mathematics (NCTM)[28] and the Conference Board of the Mathematical Sciences (CBMS)[29] recommend that aspiring elementary teachers take three semester courses in "elementary mathematics content."[30] These courses should cover four subject areas: numbers and operations, algebra, geometry and measurement, and — to a lesser degree — data analysis and probability. These recommendations, as well as those of mathematicians who advised NCTQ in its national study of the mathematics preparation of elementary teachers, form the rationale for the NCTQ standard. The standard evaluates programs on how well their coursework touches on topics that are similar to those recommended for teacher preparation by the National Mathematics Advisory Panel in its 2008 report.[31]

The nation's highest performing state on NAEP, Massachusetts, has established coursework guidelines for teacher certification programs that parallel NCTQ's standard.[32]

Despite this emerging consensus on how to prepare elementary teachers to be truly competent mathematics instructors, there is enormous variability in the nature of coursework requirements among education schools in the United States. Our national study of teacher preparation in mathematics in a representative sample of 77 institutions found that only 13 percent were doing an adequate job.[33]

27 See http://www.nces.ed.gov/nationsreportcard/states/profile.asp

28 Highly qualified teachers: A position of the National Council of Teachers of Mathematics (July 2005). *National Council of Teachers of Mathematics* <http://www.nctm.org/about/content.aspx?id=6364>.

29 The Mathematical Education of Teachers, Conference Board of the Mathematical Sciences: Issues in Mathematics, Vol. 11. (2001). *American Mathematical Society in Cooperation with the Mathematical Association of America*, p. 8.

30 We also recommend that aspiring elementary teachers take a semester course dealing with methods of teaching mathematics at the elementary level (not a methods course that addresses multiple subjects and/or multiple grade spans). Our rating process for mathematics preparation does not include consideration of methods coursework, although we do consider it when evaluating professional preparation coursework.

31 *The Final Report of the National Mathematics Advisory Panel*, (2008), U. S. Dept. of Education, p. xxi.

32 Massachusetts Dept. of Education (June 2007). *Guidelines for the Mathematical Preparation of Elementary Teachers*, p. 4; <http://www.doe.mass.edu/mtel/MathGuidance.pdf>

33 http://www.nctq.org/p/publications/docs/nctq_ttmath_fullreport_20090603062928.pdf

Methodology

NCTQ's rating of Texas' teacher preparation programs on mathematics preparation is based on examination of syllabi and required primary textbooks in coursework designed for teacher audiences. These materials were used to assess whether the coursework covers essential topics in mathematics and devotes sufficient time to those topics. It should be noted that there are far fewer mathematics textbooks than reading textbooks: About a dozen mathematics textbooks are chosen for use repeatedly, whereas the number of reading textbooks we have reviewed for our studies now totals about 700. (For more information about how we analyze syllabi and textbooks, go to page 13.)

As in the case of reading preparation, we believe that syllabi and textbooks capture the scope of knowledge that the professor thinks is important, but we would have supplemented our review with any additional materials had programs provided them to us in response to our solicitation. Only two did so.

Programs that required an eight- or nine-credit-hour[34] sequence of required elementary mathematics coursework that adequately covers essential topics in numbers and operations, algebra, geometry and data analysis and that uses an adequate textbook received full credit. Ratings were lowered if some essential topics did not appear to be taught, poor textbook selections were made, or coursework requirements were not sufficient (fewer than eight credit hours).

Rating	Criteria
● Meets standard	Coursework addresses essential elementary mathematics topics adequately, and eight to nine credit hours of coursework is required.[35]
◕ Nearly meets standard	There are minor deficiencies in either the adequacy with which elementary topics are addressed or the number of hours of required coursework.
◑ Partly meets standard	This rating represents a combination of evaluations on the adequacy with which elementary topics are addressed and the number of hours of required coursework: 1) a minor deficiency in both, or 2) a major deficiency in one and a minor deficiency in the other, or 3) a very major deficiency in one and no deficiency in the other.
◔ Meets a small part of standard	This rating represents a combination of evaluations on the adequacy with which elementary topics are addressed and the number of hours of required coursework: 1) a major deficiency in both or 2) a very major deficiency in one and a minor deficiency in the other.
○ Fails to meet standard	There are very major deficiencies in both the adequacy with which elementary topics are addressed and the number of hours of required coursework, or there is no instruction at all on elementary mathematics content.

Our national study contains more information on the elementary content coursework that is recommended for elementary teacher preparation and the methodology used to evaluate that preparation.[36]

34 All references to credit hours in this report are to semester credit hours.

35 For education schools housed in institutions that are rated as "most selective" in admissions, only six credit hours are required.

36 http://www.nctq.org/p/publications/docs/nctq_ttmath_fullreport_20090603062928.pdf

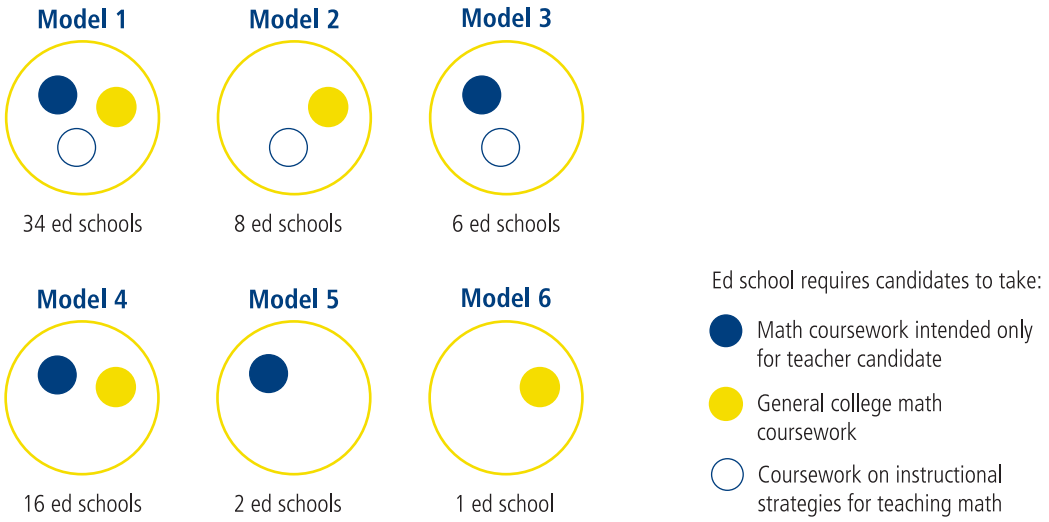
Findings

Many experts attribute America's low standing in mathematics relative to other nations to poor mathematics instruction from the start. Certainly there is abundant evidence that Texas elementary teachers are not receiving the preparation they need and deserve.

What does an adequate approach mean? We first look for evidence that the mathematics coursework covers twelve essential topics: Whole numbers and place value; fractions and integers; decimals (including ratio, proportion, percent); estimation; constants, variables, expressions; equations; graphs and functions; measurement; basic concepts in plane and solid geometry; polygons and circles; perimeter, area, surface area, volume; probability and data display and analysis.

Second, we look to see if the institution allows for sufficient time to adequately cover the topics. (Sufficient time generally equates to three courses, though two courses may be sufficient in institutions with greater selectivity in their admissions, because candidates have stronger background knowledge.) Here Texas institutions are all over the map, requiring a range of zero to three courses.

Figure 6 We found no fewer than six different models for the preparation of elementary teachers in mathematics



To make matters even more confusing, within each of these models the amount of required courses varies substantially. For example, ***Southwestern University****,* ***The University of Texas at El Paso*** *and* ***Tarleton State University*** *all use Model 1. However,* ***Southwestern University*** *requires only one math course intended for teacher candidates,* ***The University of Texas at El Paso*** *requires two and* ***Tarleton State University*** *requires three. Unless elementary teacher candidates at each campus have significantly different needs, there is no good rationale for this variance.*

In this instance, some portion of Texas institutions (15 percent) exhibit a woeful indifference to the mathematics instruction their teacher candidates receive, with a policy that declares that *any* math course will do. The end result, as figure 6 shows, is that there is a great deal of variation in the type of courses required of prospective elementary teachers.

A very small proportion of the institutions in this study (7 percent) takes an adequate approach to preparing elementary teachers to teach mathematics. While the coursework in numerous programs is supported by strong textbooks, not a single mathematics course that we evaluated utilizes either one of the elementary mathematics textbooks that received the highest rating from NCTQ's mathematician reviewers.[37]

How Texas institutions fare on this standard

NCTQ Standard 3. Prepares teacher candidates to teach mathematics

Teacher candidates, even those who excel in math, generally require three semesters of coursework in order to progress from a procedural to a conceptual understanding of the essential mathematics topics taught in the elementary grades.

● **Institutions Meet Standard**
Baylor University, Sam Houston State University, Tarleton State University, The University of Texas – Pan American

◕ **Institutions Nearly Meet Standard**
Abilene Christian University, Angelo State University, Dallas Baptist University, East Texas Baptist University, Midwestern State University, Rio Grande College of Sul Ross State University, St. Edward's University, Stephen F. Austin State University, Texas A&M International University, Texas A&M University, Texas A&M University – Corpus Christi, Texas Lutheran University, Texas Southern University, Texas State University – San Marcos, Texas Tech University, The University of Texas at Austin, The University of Texas at San Antonio, The University of Texas at Tyler, The University of Texas of the Permian Basin, University of Houston – Clear Lake, University of Houston – Victoria, University of North Texas, West Texas A&M University

◑ **Institutions Partly Meet Standard**
Concordia University, Howard Payne University, Lamar University, Schreiner University, Southern Methodist University, St. Mary's University, Texas A&M University – Texarkana, The University of Texas at Arlington, The University of Texas at Brownsville, The University of Texas at Dallas, The University of Texas at El Paso, University of Houston – Downtown. University of the Incarnate Word, Wayland Baptist University

◔ **Institutions Meet Small Part of Standard**
Arlington Baptist College, Houston Baptist University, LeTourneau University, Lubbock Christian University, Texas A&M University – Commerce, Texas A&M University – Kingsville, Texas Woman's University, Wiley College

○ **Institutions Do Not Meet Standard**
Jarvis Christian College, McMurry University, Southwestern Adventist University, Southwestern Assemblies of God University, Texas College, Texas Wesleyan University, University of Dallas, University of Houston, University of Mary Hardin – Baylor, University of St. Thomas

? **Institutions Whose Performance Cannot Be Determined**
Hardin-Simmons University, Huston-Tillotson University, Our Lady of the Lake University, Paul Quinn College, Prairie View A&M University, Southwestern University, Sul Ross State University, Texas Christian University

37 Parker, T, H., & Baldridge, S. J. (2007). *Elementary mathematics for teachers* (2nd ed.) Sefton-Ash Publishers; Parker, T, H., & Baldridge, S. J. (2008). *Elementary geometry for teachers*, Sefton-Ash Publishers; Beckman, S. (2007). *Mathematics for elementary teachers* (2nd ed.) Addison-Wesley. Baldridge and Beckmann course syllabi and other materials are posted at http://www.nctq.org/resources/math.

These relatively poor ratings in mathematics preparation may partially stem from the fact that under Texas regulations elementary teacher candidates in education schools in public institutions must take at least nine credit hours of mathematics, but the state specifies neither the requisite content of these classes nor that they must meet the needs of elementary teachers.

Ratings of both elementary content mathematics textbooks used in Texas and recommended textbooks not used in the state can be found in **Appendix H**. The appendix also provides information about the mathematicians who served as textbook reviewers.

Standard 4: Educates teacher candidates in the broad content areas relevant to elementary teaching

Rationale

This standard begins with a common sense presumption: teachers cannot teach what they don't know. Elementary teachers must be broadly educated with sufficient knowledge of the content they will need to deliver instruction in language arts, social studies, fine arts and science.[38] Not only is content understanding important in its own right, but a teacher's capacity to deliver content is important because students' content understanding improves their reading comprehension, an area in which our students languish.[39]

There is no research that directly links a teacher's liberal arts knowledge with student achievement. However, the more a person knows about many different subject areas, the stronger their levels of literacy as measured by vocabulary and scores on tests of reading comprehension; there is a body of robust research spanning many decades connecting a teacher's level of literacy and the achievement of that teachers' students.[40]

While Texas is one of only seven states that has strong standards regarding the content elementary teachers should know, some areas are lacking, particularly science, literature and world history.[41]

Methodology

Our evaluation on this standard begins with the identification of all the content coursework that institutions require students to take in order to meet general education requirements and/or education program requirements. We then use catalog course descriptions to evaluate whether the courses sufficiently focus on the following core subject areas:

- World or American literature[42]
- Writing, grammar and composition
- Children's literature
- American history and government (two courses)

38 http://www.nctq.org/stpy/reports/stpy_national.pdf , p. 70. Mathematics coursework is not included in this evaluation, since the elementary mathematics coursework we recommend is evaluated under the mathematics preparation standard, and we do not evaluate the same program feature twice under two different standards.

39 Willingham, D. T. (2006). How knowledge helps: It speeds and strengthens comprehension, learning — and thinking. *American Educator*, 30(1).

40 Ferguson, R., & and Ladd, H. (1991). *How and why money matters: An analysis of Alabama schools*. In H. Ladd (Ed.), *Holding Schools Accountable*. Washington, D.C.: Brookings Institution, 265-298; Hanushek, E. (1971). Teacher characteristics and gains in student achievement: Estimation using micro-data. *The American Economic Review*, 61(2): 280-288; McLaughlin, M., & Marsh, D. (1978). Staff development and school change. *Teacher College Record*, 80(1): 69-94; Strauss, R., & Sawyer, E., (1986). Some new evidence on teacher and student competencies. *Economics of Education Review*, (5)1, 41-48; Wayne, A., & Youngs, P. (2003). Teacher characteristics and student achievement gains: A review. *Review of Educational Research*, 71(1): 89-122; Winkler, D. (1975). Educational achievement and school peer composition. *Journal of Human Resources*, 10, 189-204.

41 The other states are California, Connecticut, Massachusetts, New Hampshire, New Jersey, Tennessee, and Virginia; see http://www.nctq.org/stpy09/

42 Not only is content knowledge in both these areas essential, but also it is impossible for one course to fully cover either world or American literature. Course selection should be designed to fill the teacher candidate's greatest areas of content weakness in literature.

- World history — ancient or modern[43]
- World cultures, religions w/geography
- Music history
- Art history
- Science (two different sciences)[44]

Programs that are adequately preparing elementary teacher candidates require coursework in each of the key content areas (approximately 27 credit hours of coursework),[45] along with an institutional policy allowing course requirements to be waived for any of these courses based on acceptable performance on an appropriately focused assessment, such as an Advanced Placement examination or a COMPASS placement test. With the exception of art history and music history (for which a deficiency lowered the rating by only 1/2 level), for each course in the list above that was not required of a teacher candidate, we lowered the rating by one level (with a lowering by one level represented by a rating change, for example, of "fully meets standard" to "nearly meets standard"). It only takes a few missing courses for an institution to receive a low or failing rating.[46]

Rating	Criteria
● Meets standard	No full deficiencies were noted in the nine elementary content areas examined.
◕ Nearly meets standard	One full deficiency was noted in the nine elementary content areas examined.
◑ Partly meets standard	Two full deficiencies were noted in the nine elementary content areas examined.
◔ Meets a small part of standard	Three full deficiencies were noted in the nine elementary content areas examined.
○ Fails to meet standard	Four or more full deficiencies were noted in the nine elementary content areas examined.

When evaluating coursework, we ask this question: If a teacher candidate who has not demonstrated any mastery of, for example, world history is required to take a particular course or is given a choice of several courses, would each provide that candidate with a good share of the foundational knowledge that makes it possible to "add value" when a variety of world history topics arise in the elementary classroom?[47] Alternatively, would the teacher candidate know little to nothing, or little beyond what was available in instructional materials and curriculum guides.

43 Course selection should be designed to fill the teacher candidate's greatest areas of content weakness in world history based on a review of transcripts.

44 Course selection should be designed to fill the teacher candidate's greatest areas of content weakness in the sciences based on a review of transcripts.

45 Ideally, music and art history coursework could be required, but correcting content deficiencies of candidates in core subjects takes precedent.

46 Allowing teacher candidates to select from a menu of course choices could lower the rating if it meant that they could opt out of coursework that is considered essential or if one of the course selections was deemed inadequate. In other words, an option that allows a candidate to choose one of a number of courses from a menu might result in a lower rating if even one of the courses was too narrow in scope.

47 For more information on recommended coursework for elementary teacher preparation, see http://coreknowledge.org/CK/resrcs/syllabusdl.htm. The Core Knowledge coursework is presented as being most effectively accommodated in courses designed only for teacher candidates, a point on which NCTQ differs in all but a few instances.

We do not, for example, consider a course in *Local Spring Flora* an appropriate elementary content course because it would provide little knowledge of value in delivering instruction meeting Texas science standards, yet this course can be taken to fulfill a teacher candidate's requirement for a science course at **Texas Wesleyan**.

We evaluated all such coursework, whether designed for the general audience or only the teacher audience. While we do not advise a "ghettoization" of content coursework in liberal arts department courses designed only for teacher audiences, we believe there may be merit in such coursework in some areas. (Certainly our standard in mathematics preparation is based on the merit in elementary mathematics coursework designed for teachers.) However, we found that in almost all instances, teacher audience coursework in liberal arts departments is designed to address only discrete elements of the Texas elementary curriculum and is neither broad nor rigorous.

For example, the following teacher-audience courses are neither sufficiently broad nor sufficiently rigorous:

> **GEOL 3302 – Dinosaurs, Volcanoes and Earthquakes.** Recent developments and theories dealing with the changing face of the Earth and some of the animals that lived on it. New views on dinosaurs, their lives and their ultimate extinction. The distribution, causes, effects, and prediction of earthquakes and volcanoes
>
> **ART 3309 – Crafts.** An introduction to art theories and methods governing the teaching of craft activities in the classroom.

For a full discussion of the means by which we analyze course descriptions, go to page 10. Because catalog course descriptions do not always capture the full scope of a course's content, we indicated to programs when we provided each with preliminary ratings that we welcomed submissions of syllabi that provide more detail than is contained in the catalog. Only one program supplied syllabi for elementary content coursework.

Appendix F describes the content coursework we reviewed in more detail and contains examples of coursework that we considered adequate.

Findings

While Texas regulations attempt to ensure that elementary teacher candidates receive the broad liberal arts education that will help them teach English, social studies, science and mathematics, the regulations fall short, as do the institutions in their wake.

We could not identify a single institution that requires its teacher candidates to take coursework across all basic subject areas. Most egregious was the lack of attention to world history and geography, a deficiency that is not only problematic for instruction in those two areas, but also that has other negative consequences in that teachers may know little about the cultural backgrounds of their own students who may come from all parts of the world.

Figure 7 Subject-area lapses in teacher preparation across Texas

Elementary content area	Institutions with inadequate coursework requirements (n=66)
Music history	61
World history	59
Art history	58
World geography	37
World/American literature	23
Children's literature	18
American history	5
Multiple sciences	4

Nearly every institution in Texas omits music history, world history and art history for a teacher's preparation.

How Texas institutions fare on this standard

NCTQ Standard 4. Educates teacher candidates in the broad content areas relevant to elementary teaching

Because they cannot teach what they do not know, teacher candidates need to have a solid grasp of literature and composition; American history, world history, art history and music history; geography; and science.

◕ **Institutions Nearly Meet Standard**
Concordia University, Texas A&M University – Kingsville, Texas A&M University – Texarkana, Texas Lutheran University, University of Dallas, University of Houston – Victoria

◑ **Institutions Partly Meet Standard**
Abilene Christian University, Angelo State University, Arlington Baptist College, Dallas Baptist University, Howard Payne University, LeTourneau University, Lubbock Christian University, Paul Quinn College, Southwestern Adventist University, Southwestern Assemblies of God University, St. Mary's University, Stephen F. Austin State University, The University of Texas at San Antonio, The University of Texas at Tyler, The University of Texas of the Permian Basin, University of the Incarnate Word

◔ **Institutions Meet Small Part of Standard**
Hardin-Simmons University, Huston-Tillotson University, Jarvis Christian College, Prairie View A&M University, Schreiner University, Tarleton State University,Texas A&M International University, Texas A&M University, Texas A&M University – Corpus Christi, Texas College, Texas Southern University, Texas State University – San Marcos, Texas Tech University, The University of Texas at Austin, The University of Texas at El Paso, University of Houston – Clear Lake, University of Mary Hardin – Baylor, University of North Texas, Wiley College

○ **Institutions Do Not Meet Standard**
Baylor University, East Texas Baptist University, Houston Baptist University, Lamar University, McMurry University, Midwestern State University, Our Lady of the Lake University, Rio Grande College of Sul Ross State University, Sam Houston State University, Southern Methodist University, Southwestern University, St. Edward's University, Sul Ross State University, Texas A&M University – Commerce, Texas Christian University, Texas Wesleyan University, Texas Woman's University, The University of Texas – Pan American, The University of Texas at Arlington, The University of Texas at Brownsville, The University of Texas at Dallas, University of Houston, University of Houston – Downtown, Wayland Baptist University, West Texas A&M University

? **Institutions Whose Performance Cannot Be Determined**
University of St. Thomas

Standard 5: Requires an area of concentration so that teacher candidates develop expertise and have second career options

Rationale

The undergraduate collegiate experience has traditionally been designed to educate students broadly and then hone their knowledge in one area through increasingly rigorous advanced (often called "upper division") coursework in a major. While there is no research evidence that such expertise in a single academic field makes a teacher more effective, intellectual development certainly can't weaken a teacher's effectiveness, and a major in an elementary content area can't hurt when teaching that content.

Yet there is another, more practical rationale for this standard. Unless a teacher candidate has a major or has fulfilled a very substantial part of the requirements for a major, the ramifications of failing student teaching will be great: the loss of a college degree. *This provides a strong disincentive for the education program to fail candidates even in the face of poor performance.*[48] Moreover, if elementary teacher candidates take it upon themselves to earn a full major, they will have a more transferable credential than an education major, which will help ease voluntary and involuntary exit from the teaching profession after hiring.[49]

The NCTQ recommendation for a concentration — essentially 18 credit hours of coursework in one subject — is conservative when compared to the recommendations of other reformers. Numerous teacher preparation reform initiatives — most notably those emanating from the college leaders that comprised the Holmes Group of the mid-1980s — have been predicated on the benefits of having teachers complement professional preparation with a full academic major. Ten states require that all elementary teacher candidates have an academic major.[50]

We are more flexible in our standard because the amount of coursework necessary to be prepared for the elementary classroom[51] may make it difficult for the prospective teacher to take a full major outside of the education department. Until more candidates for elementary teaching are more content-proficient and able to satisfy content requirements by placing out through examination, the next best thing to a major is an area of concentration. In fact, many teacher preparation programs nationwide require that elementary teacher candidates have this type of area of concentration.

Methodology

In evaluating Texas teacher preparation programs we looked for evidence that elementary teacher candidates complete a content specialization in an academic subject area sufficient to expose candidates to the rigor of higher-level collegiate coursework in an academic area, and also provide the foundation for an alternative degree

48 Teacher preparation programs claim that candidates who are poor prospects for teaching are "counseled out" prior to student teaching and that if this does not happen, they will simply decline to recommend to the state that the candidate receive initial certification. We have not seen any documentation that this happens and, if so, to what extent.

49 They could also choose to teach at the secondary level.

50 The states that require that elementary teacher candidates have an academic major are: California, Colorado, Connecticut, Massachusetts, Michigan, New Hampshire, New Jersey, New Mexico, Tennessee and Vermont.

51 As we will discuss on page 43 of the report, at a minimum this constitutes approximately 33 semester hours of professional coursework, eight to nine hours of elementary mathematics coursework and a semester of student teaching. This represents just under half of the coursework that constitutes an undergraduate degree of approximately 120 semester hours and does not account for elementary content coursework that is necessary unless teacher candidates get a better than average content grounding in high school.

and career option should teaching be revealed to be the best fit. We looked for the requirement of an academic major or at least 18 credit hours of coursework that would count toward a major in a single academic discipline other than education. We found groups of coursework most often in English and history.[52] We awarded partial credit for coursework in any one discipline of nine credit hours or more. We did not consider whether any upper division courses were required.

Rating	Criteria
● Meets standard	Eighteen or more credit hours that could count toward a major in one academic subject other than education.
◕ Nearly meets standard	At least 12 but fewer than 18 credit hours that could count toward a major in one academic subject other than education.
◑ Partly meets standard	At least nine but fewer than 12 credit hours that could count toward a major in each of two academic subjects other than education.
◔ Meets a small part of standard	At least nine but fewer than 12 credit hours that could count toward a major in one academic subject other than education.
○ Fails to meet standard	Fewer than nine credit hours that could count toward a major in any one academic subject other than education.

Findings

Elementary teacher candidates should specialize in a subject area, not just for the instructional benefits that such expertise will provide but also because it provides a "fall back" major for individuals who may not do well in their student teaching program. Many institutions are reluctant to fail a teacher candidate out of student teaching because they will lack the credits needed to graduate. In order to discourage "mercy passing" of student teachers, all elementary teacher candidates need a back-up plan.

Only three of the institutions (66) for which we had the necessary data have such a back-up plan. Most, however, would not have far to go with a few more course requirements. Half nearly met this standard (15 of them public institutions) because they require four to five courses in one discipline (usually English) that could count toward a major.

52 We counted only general audience coursework, but did not confirm that such coursework would count towards a major in the institution's liberal arts departments. General education coursework may not count towards a major.

How Texas institutions fare on this standard

NCTQ Standard 5. Requires area of concentration so that teacher candidates develop content expertise and have a second career option

Teacher candidates should develop some expertise outside of their professional studies, not only to enrich their own academic experience, but also to serve as a fallback major in the event that the student teaching experience goes poorly.

★ **Institutions with Exemplary Design**
Southern Methodist University

● **Institutions Meet Standard**
Paul Quinn College, The University of Texas at Dallas

◕ **Institutions Nearly Meet Standard**
Arlington Baptist College, Concordia University, East Texas Baptist University, Howard Payne University, Huston-Tillotson University, Jarvis Christian College, LeTourneau University, Lubbock Christian University, Prairie View A&M University, Rio Grande College of Sul Ross State University, Schreiner University, Southwestern Adventist University, St. Edward's University, St. Mary's University, Sul Ross State University, Tarleton State University, Texas A&M International University, Texas A&M University – Corpus Christi, Texas A&M University – Kingsville, Texas A&M University – Texarkana, Texas Lutheran University, Texas Wesleyan University, The University of Texas – Pan American, The University of Texas at Austin, The University of Texas at Brownsville, The University of Texas at El Paso, University of Dallas, University of Houston – Downtown, University of Houston – Victoria, University of Mary Hardin – Baylor, University of the Incarnate Word, Wayland Baptist University, Wiley College

◑ **Institutions Partly Meet Standard**
Dallas Baptist University, The University of Texas of the Permian Basin

◔ **Institutions Meet Small Part of Standard**
Abilene Christian University, Angelo State University, Hardin-Simmons University, Houston Baptist University, Lamar University, Midwestern State University, Our Lady of the Lake University, Sam Houston State University, Southwestern Assemblies of God University, Stephen F. Austin State University, Texas A&M University, Texas College, Texas Southern University, Texas State University – San Marcos, Texas Tech University, The University of Texas at Arlington, The University of Texas at Tyler, University of North Texas, West Texas A&M University

○ **Institutions Do Not Meet Standard**
Baylor University, McMurry University, Southwestern University, Texas A&M University – Commerce, Texas Christian University, Texas Woman's University, The University of Texas at San Antonio, University of Houston, University of Houston – Clear Lake

? **Institutions Whose Performance Cannot Be Determined**
University of St. Thomas

Exemplary Design

Southern Methodist University requires that all teacher candidates major in an academic subject. Its catalog states that the combination of the academic major and education minor "allows students to have two career options."

Texas regulations have a lot to do with the fact that so few institutions meet this standard. Initiatives beginning in the late 1980s attempted to rein in "professional coursework creep" — more and more required education coursework in teacher preparation programs, much of dubious value. The fact that education majors were required was considered the root of the problem. The solution was to have regulations capping the amount of professional coursework allowed[53] and to require all of those pursuing certification to complete a degree with one of the types of majors described below:

1. An *academic* discipline major in, for example, mathematics, biology or English
2. An *interdisciplinary* academic major (IAM):
   a. Of at least 48 credit hours, with 21 credit hours in advanced courses outside of the education department
   or
   b. Of at least 30 credit hours of general audience coursework made up of any three "academic" areas related to the public school curriculum that includes up to six credit hours of reading coursework as an option *and* 18 credit hours from one of five areas of education delivery/specialization, including early childhood education, special education, bilingual education,[54] English as a Second Language or reading.[55]

With rare exception, elementary teacher preparation programs offer interdisciplinary majors of one type or another, although regulations regarding majors (and the professional coursework cap) no longer applied to private institutions after 2001. While the second type of IAM does not allow a full concentration in any one academic area, these majors appear to offer the potential for a considerable amount of content coursework to be required of elementary teacher candidates.[56] However, to the extent that such potential exists, it has not been fully realized. There are three reasons for its failure:

1. Much of the IAM's "academic" coursework is what is commonly classified as professional. For example, an early childhood course in child development, a survey course on exceptional children and a course on teaching reading could each be considered an "academic subject area course" in Texas that is suitable for the IAM.

   To illustrate the impact of this way of defining "academic," consider the coursework required for the elementary generalist preparation program at **The University of Texas at Tyler**.

53 No more than 24 credit hours of professional coursework can be required, and this credit hour count includes student teaching.

54 This specialization is distinguished from another type of certification entirely, for the "Bilingual Generalist EC-6."

55 Reading can't be chosen both as an academic area and as an area of specialization.

56 In fact, NCTQ's endorsement of Texas' academic major in the *State Teacher Policy Yearbook 2009* (http://www.nctq.org/stpy09/reports/stpy_texas.pdf) is premised on its potential.

Figure 8 Required courses in **The University of Texas at Tyler's** elementary teacher preparation program

Introduction to the Teaching Profession	3
Introduction to Special Populations	3
Integrating Technology in the Classroom	3
Teaching Skills and Classroom Management I	2
Teaching Skills and Classroom Management II	2
Educational Psychology: Learning	3
Introduction to Early Childhood Education	3
Child Growth and Development	3
Creativity, Play and Learning	3
Pre-Kindergarten and Elementary Literacy	3
Literacy in the Elementary Classroom	3
Assessment and Literacy Diagnosis Practicum	3
Corrective Reading in the Classroom	3
Teaching Social Studies in the Classroom	3
Curriculum in Early Childhood	3
Educational Strategies for Individuals with Special Needs	2
Teaching Mathematics in the Elementary School	3
Teaching Science in the Elementary School	3
Student Teaching	6
Student Teaching Seminar	0
Children's Literature	3
Science elective	4
World Regional Geography	3
Geology	3
College Algebra	3
Math Statistics	3

professional coursework – 57 credit hours

academic content – 19 credit hours

Of the 76 credit hours of required coursework, we could identify only 19 credit hours that were clearly academic in nature, well short of the 30 credits that are needed to constitute a full major. The university insists that some portion of the remaining 57 credits is "academic" even though all of the coursework appears pedagogical in nature. Clearly, the university is not offering genuine interdisciplinary academic major, and if the credit hours of professional coursework satisfy an 18-24 credit hour cap imposed by the Higher Education Coordinating Board, it is only because Texas defines such coursework very narrowly.

2. Coursework in the IAM can be taken in a number of disciplines. For example, the IAM at **Texas A&M University – Commerce**[57] contains coursework in health and kinesiology, science, one of the arts, mathematics and special education. Again, with this scattering of coursework among subjects, generating a concentration in any one of them is less likely.[58]

57 See **Appendix I** for the catalog description.

58 In fact, since this university offers an area of specialization, only three subjects are supposed to be represented in the major (and this is emphasized in state regulations by the fact that the word "three" is underscored), rather than the five subjects that are actually represented in the major.

3. Much of the coursework in the typical IAM does not count as coursework toward a concentration in NCTQ's standard because it could not count toward a major, regardless of its merit for teacher preparation.[59] In fact, coursework in the IAM is supposed to be the type that can count toward a major, and Texas guidelines appear explicit on this point: A memorandum from the Texas Higher Education Coordinating Board indicates that the only courses that can be included are those that will "count toward a degree for persons majoring in that or in other disciplines, but who are not seeking teacher certification."[60] Nonetheless, many programs have coursework designed only for teacher candidates in the IAM, seemingly out of compliance with what appear to be very clear guidelines.[61] For example, of the courses just mentioned in the IAM of **Texas A&M University – Commerce**, all six are designed only for teacher audiences. In fact, three of them have the phrase "for elementary teachers" in their titles.[62] (More discussion of this program can be found on page 49.)

While we do not have data on the requirements associated with the education majors of the past that were considered so problematic, the majors that have become their substitutes may have made little or no difference in terms of the quantity of content preparation. In fact, categorizing coursework as either "academic" or "professional" to satisfy both the requirements of the IAM and a cap on professional coursework appears to be as much a game of semantics as anything else. (The professional coursework cap is discussed further in our standard on professional preparation.)

It's also clear that the particular approach Texas has taken to regulate the coursework of teacher preparation affects how likely it is that public Texas institutions will satisfy our standard. The bottom line is that while it's possible for a Texas education school to satisfy or nearly satisfy NCTQ's concentration standard (and about half do, including 15 public institutions), it is not encouraged by the nature of Texas regulations either in theory, in practice, or in both.

59 We might count it toward the standard on overall content preparation.

60 www.thecb.state.tx.us/index.cfm?objectid=0F358028-E036-005D-88604658DC775CF4

61 While NCTQ does not recommend that such courses be counted in an elementary teacher concentration, we do recommend that teachers take three courses designed for teachers in elementary content mathematics.

62 See **Appendix I** for a full listing of coursework in this program.

Standard 6: Offers all required courses at least once a year

Rationale

As may be evident, the coursework requirements associated with an elementary education certification program are not trivial. Completing these extensive requirements becomes quite difficult if courses are not offered at least once a year. This not only makes it more difficult to complete a program in four years, it also may be a disincentive for the most capable and ambitious individuals to consider elementary teaching as a profession.

Methodology

In evaluating Texas' teacher preparation programs, we looked for evidence that each and every required course in the elementary preparation program is offered at least once in an academic year to make it possible for students to complete the full program in a timely fashion. We checked course schedules to determine if there was at least one offering of each required course in any three consecutive fall, spring or summer terms, generally terms between fall 2008 and spring 2009.

Rating	Criteria
● Meets standard	All required courses are offered at least once a year.
○ Fails to meet standard	One or more courses is unavailable in a year.

Findings

It is only fair that institutions make required courses available to their students each year. On this point, Texas institutions do a good job. Only one elementary teacher preparation program of the 63 we could evaluate on this standard failed to offer every required course at least once a year.

How Texas institutions fare on this standard

NCTQ Standard 6. Offers all required courses at least once a year

It must be possible to complete the requisite program in a timely manner.

● **Institutions Meet Standard**

Abilene Christian University, Angelo State University, Arlington Baptist College, Baylor University, Concordia University, Dallas Baptist University, East Texas Baptist University, Hardin-Simmons University, Houston Baptist University, Howard Payne University, Huston-Tillotson University, Jarvis Christian College, Lamar University, LeTourneau University, Lubbock Christian University, McMurry University, Midwestern State University, Our Lady of the Lake University, Prairie View A&M University, Rio Grande College of Sul Ross State University, Sam Houston State University, Schreiner University, Southern Methodist University, Southwestern Adventist University, Southwestern Assemblies of God University, Southwestern University, St. Edward's University, St. Mary's University, Stephen F. Austin State University, Tarleton State University, Texas A&M International University, Texas A&M University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Kingsville, Texas A&M University – Texarkana, Texas Christian University, Texas College, Texas Lutheran University, Texas Southern University, Texas State University – San Marcos, Texas Tech University, Texas Wesleyan University, Texas Woman's University, The University of Texas – Pan American, The University of Texas at Arlington, The University of Texas at Austin, The University of Texas at Brownsville, The University of Texas at Dallas, The University of Texas at El Paso, The University of Texas at San Antonio, The University of Texas at Tyler, The University of Texas of the Permian Basin, University of Dallas, University of Houston, University of Houston – Clear Lake, University of Houston – Downtown, University of Houston – Victoria, University of Mary Hardin – Baylor, University of North Texas, Wayland Baptist University, West Texas A&M University

○ **Institutions Do Not Meet Standard**

University of the Incarnate Word

? **Institutions Whose Performance Cannot Be Determined**

Paul Quinn College, Sul Ross State University, University of St. Thomas, Wiley College

Standard 7: Prepares teacher candidates for the profession (not rated)

Rationale

An elementary teacher's content knowledge is necessary, but not sufficient. The teacher instructs a diverse group of students in a challenging classroom environment that is increasingly porous to a range of local, state and national prescriptions and dictates. A coherent, systematic and rigorous professional preparation can make this task manageable.

A January 2010 study of **The University of Texas** system's teacher graduates found that school district personnel noted the need for more skills in classroom management and teaching diverse learners in particular.[63]

Research on the value of current pre-service education implies, however, that it may add little to teacher effectiveness, although it may reduce attrition of first year teachers.[64] Three potential reasons for its lack of efficacy have been posited: 1) the coursework lacks rigor and true content; and/or, 2) the academic caliber of the teacher candidates to whom it is directed is below the level at which it can be utilized,[65] and/or 3) pre-service preparation is premature — teachers can't learn the abstract information that they can't apply.

All three potential reasons appear reasonable to us and the first can easily be demonstrated. We did not have available for review full sets of syllabi from professional coursework from all undergraduate programs, but we did obtain such sets from students at a number of Texas campuses as well as a set of syllabi from those made available publicly. Information from this collection of syllabi illustrates that professional coursework is often off the mark. The textbox below contains extracts from these syllabi.

Classroom Mismanagement

NCTQ's review of syllabi collected from Texas campuses provides a glimpse of the reasons why so many programs fail to prepare teacher candidates for the disciplinary and organizational challenges of K-12 classrooms:

- **Cart Before the Horse:** Undergraduate programs are, by definition, comprised of young adults only a couple of years removed from being high school students themselves. This means that, as of yet, they have *no professional experience*. Yet programs continually ask these neophytes to compose "personal philosophy" statements covering all aspects of a profession whose ranks they have yet to join. Even worse, we found that an assignment in one program asks students to develop a "personal classroom management vision" that includes components "compatible with your beliefs." Our response? Train your students first, provide them with sufficient classroom experience and *then* encourage them to develop a "management vision."

63 *Preparing Texas teachers: A study of the University of Texas System Teacher Preparation Programs* (January 2010). Institute for Public School Initiatives, The University of Texas System.

64 Chaney, B. (1995). Student outcomes and the professional preparation of 8th grade teachers. NSF/NELS: 88 Teacher transcript analysis. Rockville, MD; Goldhaber, D., & Brewer, D. (2000). Does teacher certification matter? High school certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22, 129-145; Monk, D. (1994). Subject area preparation of secondary mathematics and science teachers and student achievement. *Economics of Education Review*, 12(2):125-145; Richard M. Ingersoll, University of Pennsylvania, original analysis for the National Commission on Teaching and America's Future of the 2000-01 Teacher Followup Survey.

65 Posited by Dan Goldhaber.

- **Questionable Content:** The teaching of cognitive science is an important part of a candidate's training and should be grounded, accordingly, in evidence-based courses. But we found evidence that some programs give equal weight to pseudo-sciences such as "learning styles" and "brain theory." In addition, courses covering the social sciences are often far from scientific. One syllabus, describing a course on "society and social issues," listed as one of its goals, to "explore our own identities, biases and prejudices."
- **Begging the Question:** In many circles, standardized testing has become anathema, with little attention given to the way tests are designed, administered and factored into student assessment and discussion that questions whether they have any merit. Unfortunately, at least some teacher training programs in Texas appear to be no different. Their perspective on standardized testing is decidedly negative, resulting in courses such as "high stakes testing and schooling" in which the message is that it's time for testing to go.
- **Getting Off Track:** Coursework — especially for those courses given ambiguous, unfocused labels — often does everything but "stick to the knitting." Consider that a required course in "culture, community, society and schools" at one public university devoted 10 days of class meetings to the discussion of the book *Fast Food Nation*, an examination of the history and influence of the U.S. fast-food industry. A day or two, maybe, but 10?
- **Unmet Needs:** Courses we examined on educating students with special needs fall far short of their ostensible purpose. One course, for example, covers only one of 10 instructional objectives on the needs of students with learning differences and requires zero assignments on the subject. Another course listed 12 outcome skills, including "establishing and maintaining rapport with individuals with exceptional learning needs," but mentioned nothing about how to teach such individuals. And in a description of an education psychology course, half the topics listed for a major assignment were off topic, including what a teacher candidate might do if a 7-week-old infant won't stop crying.
- **No Method to This Madness:** "Methods" coursework should, by definition, cover the ways in which a candidate learns how to convey content in a classroom. It follows that, ideally, such a course should include practice teaching and a set of standards for its evaluation — even, possibly, the measurement of a candidate's students' performance. But all too often, most of these components are missing from teacher training coursework in Texas, with the sole means of evaluation being a "self-reflective" essay written by the candidate.
- **Out of Left Field:** Field experiences are so highly valued by undergraduate education schools that they're often thrown together without sufficient forethought. It makes sense, for example, that a classroom management course would include field practice. But should 35 percent of the grade for a course examining "major social, economic, historical, political, and philosophical issues related to American education" include a 10-hour field experience capped by the candidate writing, once again, a "personal philosophy of education"? We don't think so.
- **Regressive Education:** Activities better suited to middle school students are found in nearly every teacher training program for which we had syllabi. One group assignment, for example, asks candidates to play a game from a foreign culture. Another assignment has each candidate interview five students about their understanding of social studies. Yet another requires that candidates write two "critical thinking" letters each to former elementary teachers.

A comprehensive professional preparation program is called for, geared specifically to the needs of the new teacher, including the following in *rigorous* coursework: instruction in core subjects to students of diverse abilities and backgrounds, including children with special needs; creating and managing an orderly and productive classroom; understanding of the educational policy landscape characterizing public education in the United States in this new century; foundational knowledge in child development; and a good orientation in student assessments and data-driven instruction.[66] Specifically, the coursework for which we looked addressed the following topics, although only in the case of mathematics methods (a full course is necessary) and methods coursework (two to three courses might be offered) is a full course necessary to adequately cover the topic:

- Mathematics methods
- Methods coursework (involving field work) covering science, social studies and writing in some combination, with the use of technology in instruction and instruction for English language learners addressed in conjunction with subject-specific pedagogy coursework.
- Child development
- Classroom management[67]
- Assessment[68]
- Teaching diverse learners, especially special education students[69]
- Education policy challenges

Professional coursework should be crafted to prepare that teacher for a challenging workplace environment, but with an eye to keeping requirements within bounds. Programs should conduct frequent reviews to ensure that a tendency for professional coursework creep does not lead to a ballooning of requirements.

Texas state requirements for teacher preparation at all levels appear to address all of these topics and add only two minor additional topics (legal and ethical aspects of teaching and a very small fraction of a credit hour of licensing test preparation).[70] Professional coursework (defined as coursework pertaining to assessment, teaching

66 The requirement of reading methods and a strong clinical experience are not included in this list, since the coursework we recommend is evaluated under the reading preparation and student teaching standards, and we do not evaluate the same program feature twice under separate standards. Professional coursework in reading pedagogy could comprise one course in the fundamentals of scientifically based reading instruction and one course in how to assess and provide effective remediation strategies for struggling readers. Student teaching should comprise a full-time full semester commitment with a carefully screened cooperating teacher that is preceded by early and efficient exposure to field work.

67 Another standard addresses whether the institution appropriately distinguishes the content specific to elementary and secondary teacher preparation programs.

68 Note that this course is not the same as a course designed to teach how to assess reading difficulties.

69 Another standard addresses whether the institution appropriately distinguishes the content specific to elementary and secondary teacher preparation programs.

70 Texas requirements cover reading methods; teaching-learning processes, including measurement and evaluation of student achievement; human growth and development; knowledge of skills concerning the unique needs of special learners; legal and ethical aspects of teaching to include the recognition of a response to signs of abuse and neglect in children; structure, organization and management of the American school system, with emphasis upon the state and local structure in Texas; educational computing, media and other technologies.

strategies or curriculum development) in education schools in public institutions is capped by regulation at no more than 24 credit hours.[71]

As will be discussed in the Findings section for this standard, Texas does not classify some of the coursework NCTQ recommends as "professional," labeling it instead as "academic content," and this has the effect of camouflaging a considerable amount of professional coursework.

Methodology

Based on catalog descriptions, we looked for evidence of coursework of the type listed or addressing the listed topics.

Full descriptions of the types of coursework for which we looked and examples of course descriptions that we believe represent coursework that adequately addresses a given topic are found in **Appendix J**. For those skeptical of the type and amount of information that can be gleaned from course descriptions, we refer you to more discussion of our analysis of course descriptions on page 10.

That discussion addresses elementary content coursework, but the same principles hold for professional coursework: is it usually possible to discern from even cursory course descriptions the general scope of coursework. For example, we think it is clear which of the two courses described below is better designed to equip a prospective high school social studies teacher to understand adolescent development issues relevant to her classroom:

> **Adolescent Development and Cognition.** This course focuses on theory of adolescent growth and development and its application in the classroom. The study of how adolescents learn and the conditions under which they learn best guide this course.
>
> **Child Growth and Development.** This course deals with basic concepts of human development and behavior. Emphasis is given to the physical, cognitive and social development of the child from conception through adolescence.

However, valuable as course requirements and course descriptions can be, we did not rate programs because we felt that course descriptions were not adequate to the task of assessing whether topics that could appropriately be addressed in some combination in one course were indeed receiving adequate coverage in coursework that might be described in a paragraph.[72]

Given the potential for a pattern among education schools to require an ever increasing amount of professional

71 Our *State Teacher Policy Yearbook 2009* has commented on the problem with Texas law. Texas has imposed severe limits for teacher preparation programs in public institutions on what it terms "professional" coursework, which it defines as teaching strategies, models of instruction, curriculum development, assessment and classroom management, as well as student teaching. Only between 18 and 24 credit hours of professional coursework are allowed, depending on the nature of the preparation program. To understand how restrictive this limit is, consider that although student teaching is rarely counted for the full-time full semester commitment that it is in terms of credit, the usual six credit hours for student teaching alone might use up to one-third of this credit allotment. Despite state regulations capping professional coursework, four education schools in public institutions — **Sam Houston State University**, **Texas State University-San Marcos**, **The University of Texas-Pan American**, **The University of Texas at Tyler** — appear to be addressing all of these professional topics.

72 This is not an issue in assessing our elementary content standard in which we are looking for a full course dedicated to each topic.

coursework, which we term "professional coursework creep,"[73] we also counted the number of hours associated with our recommended types of courses as well as any others that were delivered in education programs to teacher audiences.[74] This is the total that NCTQ defines as the hours associated with "professional preparation," and it should be less than 50 credit hours.[75]

Why 50 credit hours? Even if every topic listed above represented a separate course (and it is not necessarily the case that each topic needs its own three- credit-hour course), coursework addressing all of the topics we've listed — plus an additional six hours in reading pedagogy not addressed in this section — would entail only about 33 credit hours. Thus 50 credit hours, 17 hours above our "core" count, seems a very generous upper bound for professional course loads. We noted on rating sheets whether programs require 50 or more credit hours of preparation.

The risk of not keeping professional coursework within bounds is that excessive professional requirements discourage talented individuals from pursuing teacher preparation — and public school teaching.

Findings

In the Texas field trial, we did not rate programs on this standard, in spite of its importance, because most institutions did not offer us a full set of syllabi. While we did not rate programs, however, we noted potential inadequacies in professional preparation using the *most generous interpretations of course content. We also did not consider course quality at all.*

We should describe how our evaluation translates into the language used in the rating sheet. For example, if in examination of an elementary preparation program we find no course description that includes any mention of assessment and education policy challenges, whereas the topic of special education is addressed in a course description but not in the context of instruction, our statement in the rating sheet would distinguish between the two types of findings. It would state that we were able to "identify key professional topics inadequately addressed in this sequence, most notably 1) assessment and 2) education policy challenges." No mention would be made of any possible inadequacy in special education because we consider our finding too tentative.

The most common inadequacy that we observed among the 67 institutions is coursework addressing educational policy challenges. Just over half of the institutions (51 percent) do not appear — at least from course descriptions — to be addressing the education reform issues that are major topics at the local, state and national levels. Placing a teacher in the classroom who is unfamiliar with issues ranging from the achievement gap and how it has engendered mandates for standardized testing to charter schools is a recipe for professional confusion and discontent. For example, the difficulties

73 http://www.nctq.org/stpy09/reports/stpy_texas.pdf, p. 41.

74 This count did not include any hours for student teaching or student teaching seminars because programs differ greatly in how they allocate semester hours to this semester-long experience. Regardless of how it should be counted for purposes of computing tuition, it should be counted as 12 credit hours in any count of professional coursework. We also did not include in this count content courses designed for teachers, such as the elementary mathematics courses designed for teachers that we recommend. This type of coursework (of which preparation programs contain a considerable amount in science, music and art as well as elementary mathematics courses) needs to be accounted for somehow in analyzing teacher preparation, but it is not conventionally categorized as professional preparation so we will not do so. We believe that this content coursework designed for teachers can play a valuable role in teacher preparation at all levels, and to the extent that it does, it should be acknowledged to be part of the preparation program. It can be categorized as "content-mediating" coursework in elementary programs because it will likely not be part of a major, whereas it might be noted as a special part of a major in middle school teacher programs and an add-on to a major in secondary programs.

75 Note that our definition of "professional coursework" does not conform to the definition used in Texas regulations.

associated with restructuring schools that are designated as "failing" under NCLB provisions can only be compounded when teachers have no background that prepares them to understand the rationale for this radical reform initiative.

The next most common inadequacy is related to mathematics methods. Thirty-three institutions do not require a full semester course devoted entirely to elementary mathematics methods; instead they cover multiple subjects or multiple grade spans in one course. For example, a single course might cover elementary mathematics and science methods.

Other potential inadequacies that were noted and the proportion of institutions in which they were noted are: assessment (33 percent); classroom management (12 percent); teaching diverse learners, child development, methods of instruction in science, social studies and/or writing (all 9 percent). If our evaluation is at all on target, it suggests that as many as one-third of Texas' teachers could enter classroom without knowledge of the multifaceted role of assessment in schools to ensure standards-based instruction, including a solid grasp on the terminology that is important to understand student performance data from standardized testing (such as "standard deviation" and "normed versus criterion-referenced" tests) and the ways to use test data to inform instructional planning in their own classrooms, as well as when planning with colleagues across a grade-level or a department.

In spite of the fact that professional topics appear to be getting short shrift in many institutions, most (58 percent) require 50 or more credit hours of professional preparation. The bar graph below illustrates the distribution of programs requiring 50 or more semester hours of professional coursework.

Figure 9 Evidence of professional coursework creep in Texas education schools?

Professional coursework credit hours	Education schools in public institutions	Education schools in private institutions
Fewer than 50	12	17
50-60	18	12
61-70	4	4

Even though professional coursework in education schools in public institutions is capped by regulation, we found evidence that the cap is essentially ignored. The publics have as much professional coursework as the privates.

Quite a few programs require coursework above the 50 hours we recommend as ample. Texas has attempted to limit professional coursework in teacher preparation programs with a cap that is very low, in fact, arguably unrealistically low.[76] Why hasn't the cap worked? We see two reasons for the failure.

First, the "interdisciplinary academic major" discussed with regard to Standard 5 (on concentrations) provides two means by which coursework that NCTQ defines as professional can be defined otherwise in Texas as "academic subject areas": 1) in the interdisciplinary part of the major, which can include numerous courses in reading, special education and child development and 2) in the area of specialization found in some IAMs, which can include courses in childhood education, bilingual education, English as a second language, special education and reading.

76 The cap was instituted in 1987 and at first regulated all programs, but since 2001 has only regulated public institutions.

The second source of heavy coursework requirements may lie in the expansion of coursework that does not appear to fit into any regulated category of coursework. For example, by our count, **Sam Houston State University** requires 67 credit hours of professional coursework for its elementary generalist program. Fully 43 hours of education-related coursework is grouped and labeled with the catch-all phrase "degree specific requirements," a category that has no basis in Texas regulations. (See **Appendix K** for a full listing of these requirements at Sam Houston State.)

Déjà Vu?

"If those in the colleges of education would quit bellyaching and worrying about their little niche in life and start making sure that the courses they teach are the very critical elements of pedagogy, we would all be better off for it."

Texas State Senator Carl A. Parker, chairman of the Texas Senate's education committee and sponsor of legislation establishing the "Interdisciplinary Academic Major," as quoted in Education Week*, March 15, 1989*

The undergraduate education major that used to be ubiquitous in Texas was believed to contribute to the phenomenon NCTQ terms "professional coursework creep," the tendency for education programs to pile on more and more requirements for education coursework. To exemplify the problem, a December 9, 1987, *Education Week* article cited East Texas State University at Commerce (now **Texas A&M University – Commerce**) as requiring majors in elementary education to take 33 hours of education coursework, including student teaching.

A new "interdisciplinary academic major," described on page 38 was implemented in 1991 for public institutions and eliminated the education major. At the time of its implementation, a limit of 18 semester hours (now up to 24 for some programs) was also put on "professional" coursework, defined primarily as methods coursework and student teaching. A loophole was created for additional "specialization" coursework in bilingual education, English as a second language, early childhood education or special education.

So — the plan to control professional coursework by eliminating the education major…how has that gone?

Teacher candidates in **Texas A&M University – Commerce**'s (TAMU – Commerce) elementary generalist program now take 27 hours of coursework designated as "professional," including student teaching, although it's fairer to call it 29 hours since it's likely that the same or more student teaching that counted for eight hours in 1987 now counts for only six hours.[77] That total is short of the 33 education major hours of 1987, almost leading us to conclude that while the professional coursework appears to exceed the limit established by regulations, it has indeed been controlled.

Well, no. Beyond professional coursework and student teaching, **TAMU – Commerce** requires 12 hours of "internship" courses and six hours of "residency" courses. Now we're up to 47 hours, but not 47 *professional* hours according to Texas definitions. Add in the "specialization" — 12 hours of early childhood education courses — and the total amount of education-related coursework comes to 59 hours! That's 30 semester hours of *something* that we've added on to what Texas calls the *real* professional coursework and apparently a lot more than the 33 semester hours in the education degree of the past.

Is Texas controlling professional coursework creep — as NCTQ and the rest of the world defines it — with its limits on professional coursework and regulations on majors? Not so much.

77 The **TAMU-Commerce** elementary program can be found in **Appendix I**.

Standard 8: Student teaching effectively prepares teacher candidates for the challenges of the classrooms

Rationale

Student teaching is the capstone experience for professional preparation of teaching. It should be preceded by a succession of field experiences whose lessons are integrated into professional coursework. It should be full time for a full semester, and a significant portion of it should occur under the direct supervision of the teacher preparation program rather than being outsourced to enable the student teacher to take advantage of a foreign, urban or otherwise novel placement, no matter how valuable that placement might be.[78] It should be arranged with a cooperating classroom teacher who has been carefully screened by the preparation program to ensure that he or she has demonstrated both the capacity to increase student learning above the average and to mentor an adult. In fact, the only aspect of student teaching arrangements that have been shown to have an impact on student achievement is the positive effect of selection of the cooperating teacher by the preparation program rather than the student teacher or school district staff.[79]

Methodology

NCTQ's evaluation of Texas institutions relative to its full student teaching standard will take place in 2011. In this first evaluation we only assessed whether programs offered a full semester of full-time student teaching.

We considered a program full time if no other coursework other than a student teaching seminar was required during the semester of student teaching, or if no other coursework was listed as occurring during the semester of student teaching on any recommended degree plan. If a course other than a seminar was required, we indicated that the program was not full time for a full semester.

In some cases, the course or courses that programs require be taken simultaneously with student teaching were cited by programs as relevant to or specifically linked to student teaching, such as a classroom management course. Nonetheless, to require coursework and student teaching simultaneously does a disservice to both, either reducing the amount of reading and number of assignments that can be associated with the course(s) or reducing the time and attention the teacher candidate can devote to what is a very properly challenging classroom experience. To the extent that student teachers require support, seminars accompanying student teaching can serve as the mechanism for essential debriefings on classroom experiences and the means of making connections to material covered in earlier coursework.

We would have considered student teaching less than a full semester if course descriptions indicated that it lasted for fewer than 12 weeks, but no programs required less than 12 weeks.[80]

Findings

In the Texas field trial, we did not rate programs on this standard in spite of its critical importance, as we were still in the process of field testing the standard in a large national study that we will be publishing in summer 2010.

78 A short-term non-local placement is acceptable if most of the student teaching experience takes place under close supervision. Alternatively, preparation programs can establish true satellite campuses to oversee non-local placements.

79 Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J. (2008). Teacher Preparation and Student Achievement, *CALDER Center, Working Paper 20.* www.caldercenter.org/PDF/1001255_teacher_preparation.pdf

80 Texas regulations require 12 weeks of full-time student teaching.

We can note that many institutions appear to be failing to budget sufficient time and attention to the student teaching experience. It is important that the experience be full time. In our overview we found that more than half of the programs (55 percent) require coursework unrelated to student teaching at the same time, with 21 institutions requiring 1-3 credits of such coursework and 15 institutions requiring more than three credits. **LeTourneau University**'s eight credits of coursework placed the greatest coursework demand on student teachers.

Secondary Teacher Program Standards

Standard 9: Prepares high school teacher candidates to teach their subject area(s)

Standard 10: Prepares middle school teacher candidates to teach their subject area(s)

Rationale

For decades teacher preparation and higher education reformers have been attempting to improve the rigor of undergraduate teacher preparation programs by promoting the requirement of full academic majors for prospective teachers. For example, the Holmes Group of the mid-1980s, a group of college leaders, advocated for the benefits of having teachers cap the solid preparation represented by an academic major with professional preparation.

While a full academic major may be more difficult to achieve in conjunction with an elementary teacher preparation program, or actually competes with its aim of adequately broad content preparation, it should not be a difficult proposition for the preparation of secondary teachers. Certainly candidates for secondary certification at the master's degree level have full academic majors earned before they enter education programs, as do most certification candidates in five-year teacher preparation programs. Moreover, the definition of a "highly qualified teacher" under the federal No Child Left Behind statute requires that all secondary teachers either major in the subject they teach or pass a rigorous test in that subject.

NCTQ has long endorsed an academic major for all secondary teachers, with the qualification for middle school teachers that two minors provide needed flexibility in staffing.[81] The first rationale is practical: Unless a teacher candidate has fulfilled a very substantial part of the requirements for a college major outside of education or teacher-specific subjects such as social studies, the ramifications of failing student teaching will be great: the loss of a college degree. This provides a strong disincentive for the education program to fail candidates even in the face of poor performance.[82]

The second rationale is research-based and relates to the connection of subject matter understanding to instructional efficacy. The support for this principle is strong at the high school level, where there is direct research indicating that sufficient coursework preparation in mathematics and science makes high school teachers more effective, although

81 http://www.nctq.org/stpy/reports/stpy_national.pdf, P. 72

82 Teacher preparation programs claim that candidates who are poor prospects for teaching are "counseled out" prior to student teaching, and that if this does not happen, they will simply decline to recommend to the state that the candidate receive initial certification. We have not seen any documentation that this happens and, if so, to what extent.

one study points to a potential ceiling effect at six mathematics courses for middle school mathematics teachers.[83] There has been little or no research on other subject areas that provides confirmation of any connection between subject matter preparation and instructional efficacy.

Certainly Texas students could use the boost that might come from having teachers who know their subject matter. While 8th graders in Texas score above the national average on the National Assessment of Education Progress (NAEP) in mathematics and at the national average in reading, they are below the national average in science and writing.[84] Moreover, Texas high school seniors post combined mathematics and reading scores on SAT and ACT tests that are below the national averages.[85]

Methodology for assessing the subject matter preparation of secondary (grades 8-12) teachers

On the face of it, evaluating teacher preparation at the secondary level relative to this standard would seem relatively straightforward because subject matter preparation and professional preparation are more compartmentalized than in elementary preparation. Indeed, when considering certification in English, mathematics and history, evaluating preparation is straightforward. We evaluated each Texas secondary preparation program that offered certification in English (actually English, language arts and reading), mathematics and history by a very simple standard: Did the program require at least 30 credit hours (the commonly accepted definition of a major) in English, mathematics or history coursework, respectively?[86]

The complications in evaluating subject matter preparation for secondary teachers arise because all or virtually all states, Texas included, offer certification in "composite" areas.[87] A secondary teacher candidate in Texas who wishes to teach history can do so with history certification or with certification in the composite area of "social studies."

83 Chaney, B. (1995). Student outcomes and the professional preparation of 8th grade teachers. *NSF/NELS: 88 Teacher transcript analysis. Rockville, MD*: Westat; Goldhaber, D., & Brewer, D. (1996). Why don't schools and teachers seem to matter? Assessing the impact of unobservables on educational productivity? *Journal of Human Resources 32*, 503-23 ERIC: ED400237; Goldhaber, D., & Brewer, D. (October 1998). Why should we reward degrees for teach¬ers? *Phi Delta Kappan*, 134-138; Goldhaber, D., & Brewer, D. (2000). Does teacher certification matter? High school certification status and student achievement. *Educational Evaluation and Policy Analysis, 22*, 129-145; Monk, D. (1994). Subject area preparation of secondary mathematics and science teachers and student achievement. *Economics of Education Review*, 12(2):125-145; Rothman, A., (1969). Teacher characteristics and student learning. *Journal of Research in Science Teaching, 6*(4), 340-348; Rowan, B., Chiang, F., & Miller, R.J. (October 1997). Using research on employees' performance to study the effects of teachers on students' achievement. *Sociology of Education, 70*, 256-284; Wenglinsky, H. (2000). *How teaching matters: Bringing the classroom back Into discussions of teacher quality*. Princeton, NJ: Educational Testing Service, http://www.ets.org/re¬search/pic/teamat.pdf

84 http://www.nces.ed.gov/nationsreportcard/states/profile.asp.

85 In 2009 the combined SAT mathematics and reading score in Texas was 992, while the national average was 1016; the composite ACT score in Texas was 20.8, while the national composite score was 21.1.

86 This standard conforms to the standard we recommend in the *State Teacher Policy Yearbook 2009*. Courses that counted included all content courses in the discipline, regardless of how many were lower or upper division. Courses in our count that might not count toward a major include courses that count toward general education requirements. We did not include courses designed for teacher candidates. The latter is the coursework that we suggest be termed "content-mediating" that may form a very important part of preparation for the high school teacher in addition to the coursework for the major.

87 These types of certification have evolved in response to the need for high school administrators, particularly those in small high schools or small school districts, to have the flexibility to assign teachers to classes for which a full class load is rarely available or for which teachers are in short supply. They have no other rationale. While they put an adult in front of students in classes, they do nothing to ensure that that adult has more than a superficial knowledge of the subject of instruction. Our recommendations address other approaches to solving this problem.

Social studies certification enables that candidate to be licensed to teach not only history but also government, economics and geography, all subjects that are part of the Texas high school curriculum.

Likewise, in the sciences there are two routes in Texas to certification in chemistry and biology. One is through single subject certification areas (chemistry and "life science" certification), and the other is through a composite certification route ("science") that also allows a certificate-holder to teach physics and geology. Another route to teaching both chemistry and physics is "physical science" certification. *In fact, Texas offers no single subject certification in physics.*

Leaving aside the obvious undesirability of composite certification and possible alternatives, by what standard should teacher preparation for composite certification be judged? Certainly requiring a major in each of two to four subjects is unrealistic, but requiring anything less than at least two minors (15 credit hours each) for physical science certification and at least three minors for social studies and science certifications is clearly inadequate.[88] We propose a standard that secondary certification programs preparing a teacher to teach three or more subjects require at least a minor in at least three subjects.

In our evaluation of institutions, we checked for coursework requirements in each of four different types of grades 8-12 certification programs, three single-subject and one composite:

- Certification in English, language arts and reading
- Certification in history
- Certification in mathematics
- Certification in science or social studies or, if not offered, physical science

Nearly all of the 67 programs offer certification in each of these four areas. For every certification program that does not meet the relevant standard regarding a major or a combination of minors, the program's rating on this standard was lowered by one level, for example, from "meets standard" to "nearly meets standard."

Rating	Criteria
● Meets standard	The preparation offered in each of the four certification areas examined is adequate.
◕ Nearly meets standard	The preparation offered in three of the four certification areas examined is adequate.
◑ Partly meets standard	The preparation offered in two of the four certification areas examined is adequate.
◔ Meets a small part of standard	The preparation offered in one of the four certification areas examined is adequate.
○ Fails to meet standard	The preparation offered in none of the four certification areas examined is adequate.

88 In fact, one Texas program, **Texas State University – San Marcos** meets this standard in social studies and **West Texas A&M University** comes very close to requiring adequate preparation in science, but in general, secondary teacher candidates in science and social studies major in one subject and take a smattering of courses in the other three and then pass a licensing test with about 25 questions on that subject — all of which can be missed without jeopardizing a passing score.

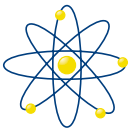
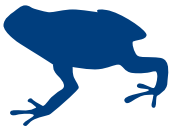
Findings with regard to the subject matter preparation of high school (grades 8-12) teachers

Texas institutions are doing a good job preparing high school teachers in English, history and mathematics; by and large, secondary teacher candidates preparing to teach those subjects are required to take at least 30 credit hours in their discipline, an amount of coursework that represents a typical major. Largely due to flawed Texas state regulation, teacher shortages in science and the inherent difficulty posed by an overly broad social studies certification, teachers are not being as well prepared in science and social studies.

Nine out of 10 institutions in Texas offer this option to teacher candidates, certifying them to teach **four** disciplines of science and/or social studies even though this option either: 1) concentrates requirements in one discipline, with very skimpy preparation in the others, or 2) only requires a smattering of courses in each discipline, developing no real competency in any single one. It is not clear which choice does more of a disservice to high school students.

Two institutions illustrate the problem in certification in science. At **The University of Texas at Austin**, a teacher candidate can take a substantial 24 credit hours in physics, but only six credit hours in each of biology and geology. At **Texas A&M University**, future teachers take coursework in all four disciplines of science they will teach, but no more than eight credit hours in any one area.

Figure 10 Three models for preparing high school science teachers

	Biology	Physics	Chemistry	Geology	
The University of Texas at Austin	6 hours 	24 hours 	12 hours 	6 hours 	This example depicts coursework required of a teacher candidate focusing on the physical sciences.
The University of Texas of the Permian Basin	30 hours 	8 hours 	12 hours 	8 hours 	This example depicts coursework required of all candidates for science certification. Ten additional hours in biology, chemistry, environmental science or geography are also required.
Texas A&M University – Kingsville	16 hours 	8 hours 	12 hours 	8 hours 	This example depicts the coursework required of all candidates seeking science certification. Four additional hours in any science are also required.

Does any combination of coursework prepare a teacher to teach biology, physics, chemistry and geology?

These majors, which are quite popular with school district administrators because it makes it possible to assign teachers to multiple subjects, pose nearly insuperable preparation problems. Recognizing that it is not feasible to require a high school science teacher to take the ideal preparation and earn a major in physics, biology, chemistry and earth science, the modified standard that we applied here would require a high school teacher to earn at least a minor in each of at least three subjects to be qualified to teach the subject and then pass a test in each of the areas, as required by federal law. Nonetheless, only one institution, **Texas State University – San Marcos** — even met this modified standard in its social studies certification program, and none met it in science certification (with **West Texas A&M University** coming closest to meeting the standard).

How Texas institutions fare on this standard

NCTQ Standard 9. Prepares high school teacher candidates to teach their subject area(s)
All children deserve to have teachers who are well versed in each and every one of the subjects they teach, regardless of teacher shortages.

★ **Institutions with Exemplary Design**
Texas State University – San Marcos

● **Institutions Meet Standard**
Schreiner University, Texas Wesleyan University, Wiley College

◕ **Institutions Nearly Meet Standard**
Abilene Christian University, Baylor University, Concordia University, Dallas Baptist University, East Texas Baptist University, Hardin-Simmons University, Houston Baptist University, Howard Payne University, Huston-Tillotson University, Jarvis Christian College, Lamar University, LeTourneau University, Lubbock Christian University, McMurry University, Midwestern State University, Our Lady of the Lake University, Rio Grande College of Sul Ross State University, Sam Houston State University, Southern Methodist University, Southwestern Adventist University, Southwestern Assemblies of God University, St. Edward's University, St. Mary's University, Stephen F. Austin State University, Sul Ross State University, Tarleton State University, Texas A&M International University, Texas A&M University – Commerce, Texas A&M University – Texarkana, Texas Lutheran University, Texas Southern University, Texas Woman's University, The University of Texas – Pan American, The University of Texas at Arlington, The University of Texas at Austin, The University of Texas at Brownsville, The University of Texas at El Paso, The University of Texas at San Antonio, The University of Texas at Tyler, The University of Texas of the Permian Basin, University of Houston – Clear Lake, University of Houston – Downtown, University of Houston – Victoria, University of Mary Hardin – Baylor, University of North Texas, Wayland Baptist University

◑ **Institutions Partly Meet Standard**
Angelo State University, Texas A&M University, Texas A&M University – Corpus Christi, Texas A&M University – Kingsville, Texas Christian University, Texas Tech University, West Texas A&M University

◔ **Institutions Meet Small Part of Standard**
Arlington Baptist College, Southwestern University, University of Dallas

○ **Institutions Do Not Meet Standard**
Paul Quinn College, Prairie View A&M University, Texas College, The University of Texas at Dallas, University of Houston, University of St. Thomas, University of the Incarnate Word

Exemplary Design

Texas State University – San Marcos offers unusually strong preparation in the composite certification area of social studies. The institution requires a major in history, geography or political science and at least 15 hours of coursework in the two disciplines that are not selected for a major.

Methodology for evaluating the subject matter preparation of middle school (grades 4-8) teachers:

Texas certifies middle school teachers in three different types of certification:

1. Single-subject (mathematics; English, language arts, reading;[89] social studies; science),
2. Dual subject (mathematics/science and English, language arts, reading/social studies), and
3. Generalist.[90]

The generalist certification allows a middle school teacher to teach any subject in grades 4-8, whether as a classroom teacher in an elementary school or as a mathematics, English, social studies or science teacher in a middle school.[91]

Not every preparation program offers certification of these three types. Twelve institutions offer all three types, 23 offer only two types and 28 offer only one (typically, single-subject). We assessed one certification of each type offered at each institution. For single subject certification, we examined coursework required in science, or if science was not offered, in social studies.[92] For dual subject certification, we examined coursework in mathematics/science or, if that was not offered, in English/social studies.

The table below illustrates how we applied our general standard of a major or two minors[93] to coursework in each type of certification:

89 NCTQ classifies the "English, language arts, reading" certification area as "single subject" because we do not categorize reading as a content area.

90 In the four institutions that offer only a "bilingual generalist" rather than a "generalist," we evaluated subject area preparation for the bilingual generalist.

91 Federal law requires that secondary teachers meet a "highly qualified" standard by having a major in their subject or taking a rigorous test in their subject. By virtue of passing the middle school generalist test that Texas has designated as a rigorous test of each core subject (despite the fact that it covers all core subjects as well as reading yet produces a global score) generalists are classified by Texas as "highly qualified teachers." We do not believe that this is valid under federal law.

92 We evaluated preparation in mathematics, in turn, if no social studies certification was not offered, or preparation in English, if mathematics certification was not offered.

93 As in our evaluation of subject area preparation in the secondary certification area, a major represents 30 credit hours and a minor 15 credit hours. However, unlike our count of coursework for a major or minor for high school preparation, beyond including general education coursework in our count of coursework, we also included coursework designed for teacher audiences.

Figure 11 NCTQ criteria used to rate the subject-area preparation for middle school certification

Single subject certification	Full credit given if:	Partial credit given if:
Science	1) 30 credit hours in biology, chemistry or physics OR 2) a total of 30 hours in science coursework, with at least 15 hours in one discipline and a strong selection of courses in the others.*	Partial credit given for coursework constituting almost a major, a minor, or a portion of a minor in a single discipline.
Social Studies	1) 30 credit hours in history, government, economics or geography OR 2) a total of 30 hours in social science coursework, with at least 15 hours in one discipline and a strong selection of courses in the others.*	Partial credit given for coursework constituting almost a major, a minor, or a portion of a minor in a single discipline.
Mathematics	30 credit hours in mathematics	Partial credit given for coursework constituting almost a major, a minor, or a portion of a minor.
English, language arts, reading	30 credit hours in English	Partial credit given for coursework constituting almost a major, a minor, or a portion of a minor.
Dual subject certification		
Mathematics/science	15 credit hours in mathematics and 15 hours in biology, chemistry, physics or geology.	Partial credit given for close to two minors, a minor and a portion of a minor, or a portion of a minor.
English, language arts, reading/social studies	15 credit hours in English and 15 hours in history, government, economics or geography.	Partial credit given for close to two minors, a minor and a portion of a minor, or a portion of a minor.
Generalist certification	15 credit hours in each of: English, mathematics, a science, a social science.	Partial credit given for one to three minors or close to four minors.

* By "strong selection" we mean coursework that is primarily upper division and general audience rather than teacher audience.

While one institution did so, it is difficult to receive full credit under the standard for the generalist certification (a minor in each of the four core subjects). It is fortunate that recent changes in Texas elementary certification that extend it from 4th to 6th grade will make it unnecessary to produce middle school generalists since elementary generalists will be able to teach 5th and 6th grade classes in elementary schools, classes in which only middle school generalists have been able to teach to date.

If a program offers two or three different types of certification and received two or three different ratings, the overall rating is based on the rating of the certification type that receives the lowest score. Our rationale: Teachers licensed to teach middle school with any type of certification can teach any subject in middle school providing they pass a licensing test covering the four core subjects as well as reading, making it sensible to evaluate a program based on its weakest preparation type.

Rating	Criteria
● Meets standard	The weakest of the preparation program types examined in the single subject, dual subject, and/or generalist certification areas meets the relevant standards outlined above.
◕ Nearly meets standard	The weakest of the preparation program types examined in the single subject, dual subject, and/or generalist certification areas nearly meets the relevant standards outlined above.
◑ Partly meets standard	The weakest of the preparation program types examined in the single subject, dual subject, and/or generalist certification areas partly meets the relevant standards outlined above.
◔ Meets a small part of standard	The weakest of the preparation program types examined in the single subject, dual subject, and/or generalist certification areas meets a small part of the relevant standards outlined above.
○ Fails to meet standard	The weakest of the preparation program types examined in the single subject, dual subject, and/or generalist certification areas does not meet the relevant standards outlined above.

Findings on the subject matter preparation of middle school (grades 4-8) teachers:

A problem found in most states is the ambivalent regulations in place to prepare middle school teachers. Texas is no exception. Only 18 percent of the institutions in the 62 we evaluated for middle school content preparation require middle school teacher candidates to take coursework sufficient to meet or nearly meet our standard in each of the subjects for which they will be certified to teach in the certification path we evaluated. The others institutions fall short, many because they offer certification to teach four core subjects as a "generalist," and this poses nearly insuperable preparation problems.

The number of institutions receiving each rating within the three types of middle school certification

Rating	Institutions offering single subject	Institutions offering dual subject	Institutions offering generalist
● Meets standard	**12**	**9**	**1**
◕ Nearly meets standard	**8**	**4**	**1**
◑ Partly meets standard	**16**	**9**	**6**
◔ Meets a small part of standard	**10**	**5**	**8**
○ Fails to meet standard	**7**	**2**	**9**

The data in the table illustrates that while there are many weak single subject and dual subject certification programs, ratings for generalist programs show a pattern of weakness.

How Texas institutions fare on this standard

NCTQ Standard 10. Prepares middle school teacher candidates to teach their subject area(s)
All children deserve to have teachers who are well versed in each and every one of the subjects they teach, regardless of teacher shortages.

★ **Institutions with Exemplary Design**
Houston Baptist University

● **Institutions Meet Standard**
Huston-Tillotson University, Jarvis Christian College, Southwestern Assemblies of God University, Texas Wesleyan University, The University of Texas at Austin

◕ **Institutions Nearly Meet Standard**
Dallas Baptist University, Lamar University, Texas A&M University – Texarkana, Texas State University – San Marcos, Wayland Baptist University

◑ **Institutions Partly Meet Standard**
Abilene Christian University, Hardin-Simmons University, Howard Payne University, Lubbock Christian University, McMurry University, Our Lady of the Lake University, Prairie View A&M University, Sam Houston State University, Southern Methodist University, St. Edward's University, Tarleton State University, Texas A&M University, Texas Christian University, Texas Lutheran University, Texas Tech University, Texas Woman's University, The University of Texas – Pan American, The University of Texas at Brownsville, The University of Texas at Tyler, University of Houston – Clear Lake, University of Houston – Victoria, University of Mary Hardin – Baylor

◔ **Institutions Meet Small Part of Standard**
Angelo State University, Arlington Baptist College, Baylor University, Concordia University, LeTourneau University, Midwestern State University, Rio Grande College of Sul Ross State University, Schreiner University, Sul Ross State University, Texas A&M International University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Kingsville, The University of Texas at Arlington, University of North Texas

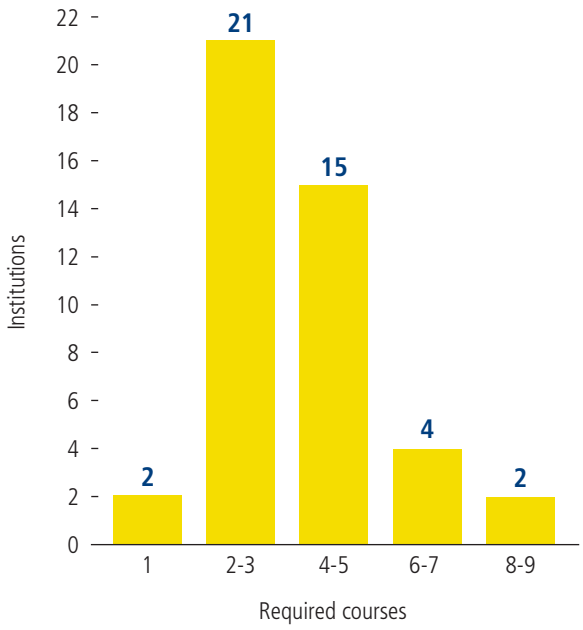
○ **Institutions Do Not Meet Standard**
East Texas Baptist University, Southwestern Adventist University, Southwestern University, St. Mary's University, Stephen F. Austin State University, Texas Southern University, The University of Texas at Dallas, The University of Texas at El Paso, The University of Texas at San Antonio, The University of Texas of the Permian Basin, University of Dallas, University of Houston, University of Houston – Downtown, West Texas A&M University

? **Institutions Whose Performance Cannot Be Determined**
Paul Quinn College, Texas College, University of St. Thomas, University of the Incarnate Word, Wiley College

Within certification areas, the amount of subject area preparation required of middle school teacher candidates varies enormously. For example, a middle school candidate seeking social studies certification is required to take only four history courses at **Rio Grande College of Sul Ross University**, while a comparable candidate at **Texas A&M – Texarkana** is required to take 12 history courses, eight of them upper division. The number of history courses most commonly required is four.

The table below illustrates the range of biology courses required of middle school candidates seeking certification in science. Of the 46 science certification programs evaluated, 34 require less than a minor in biology, but even more notably, the lack of consensus about how much preparation is sufficient to teach to Texas standards is startling:

Figure 12 How much biology coursework do teachers need to teach middle school science?



Texas institutions do not seem to agree on how many biology courses a middle school teacher needs. Depending on where a teacher candidate receives her training in the state, she may have to take as few as one course or even up to nine courses, approximately a full biology major.

Exemplary Design

Houston Baptist University's preparation program for certification in science requires a total of 35 credit hours of coursework in science, with a minor in biology (including upper division coursework) and the remaining credit hours in physics and chemistry. This preparation program is the one for which Houston Baptist received its rating in this standard.

Two other institutions have noteworthy designs in specific preparation programs, but because of the ratings methodology they were rated for this standard on weaker preparation programs: **The University of Texas of the Permian Basin**'s noteworthy preparation is for certification in both science and mathematics; it requires a biology major and a mathematics minor. **Lamar University**'s noteworthy preparation is for certification as a generalist; it requires at least a minor in biology, English and mathematics and at least three history courses.

Standard 11: Offers all required courses (high school certification) at least once a year

Rationale

While the coursework requirements associated with secondary certification are not as extensive as those for elementary certification, they are not trivial. Completing all requirements becomes quite difficult if courses are not offered at least once a year. This not only makes it more difficult to complete a program in four years, it also may be a disincentive for the most capable and ambitious individuals to consider secondary teaching as a profession.

Methodology

In evaluating Texas' teacher preparation programs, we looked for evidence that each and every required course in the secondary preparation program is offered at least once in an academic year to make it possible for students to complete the full program in a timely fashion. We checked course schedules to determine if there was at least one offering of each required course in any three consecutive fall, spring or summer terms, generally terms between fall 2008 and spring 2009.

Rating	Criteria
● Meets standard	All required courses are offered at least once a year.
○ Fails to meet standard	One or more courses is unavailable in a year.

Findings

It is not difficult for secondary teacher candidates to complete required coursework. While we could not access course schedules for seven institutions, only one secondary teacher preparation program fails to offer every required course at least once a year.

How Texas institutions fare on this standard

NCTQ Standard 11. Offers all required courses (high school certification) at least once a year (grades 8-12)

It must be possible to complete the requisite program in a timely manner.

● **Institutions Meet Standard**

Abilene Christian University, Arlington Baptist College, Baylor University, Concordia University, Dallas Baptist University, Hardin-Simmons University, Houston Baptist University, Howard Payne University, Huston-Tillotson University, Jarvis Christian College, Lamar University, LeTourneau University, Lubbock Christian University, McMurry University, Midwestern State University, Our Lady of the Lake University, Prairie View A&M University, Rio Grande College of Sul Ross State University, Sam Houston State University, Schreiner University, Southern Methodist University, Southwestern Adventist University, Southwestern Assemblies of God University, Southwestern University, St. Edward's University, St. Mary's University, Stephen F. Austin State University, Tarleton State University, Texas A&M International University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Kingsville, Texas A&M University – Texarkana, Texas Christian University, Texas College, Texas Lutheran University, Texas Southern University, Texas State University – San Marcos, Texas Tech University, Texas Wesleyan University, Texas Woman's University, The University of Texas – Pan American, The University of Texas at Arlington, The University of Texas at Austin, The University of Texas at Brownsville, The University of Texas at Dallas, The University of Texas at El Paso, The University of Texas at San Antonio, The University of Texas of the Permian Basin, University of Dallas, University of Houston, University of Houston – Clear Lake, University of Houston – Downtown, University of Houston – Victoria, University of Mary Hardin – Baylor, University of North Texas, University of the Incarnate Word, Wayland Baptist University, West Texas A&M University

○ **Institutions Do Not Meet Standard**

East Texas Baptist University

? **Institutions Whose Performance Cannot Be Determined**

Angelo State University, Paul Quinn College, Sul Ross State University, Texas A&M University, The University of Texas at Tyler, University of St. Thomas, Wiley College

Standard 12: Prepares high school teacher candidates for the profession (not rated)

Rationale

A secondary teacher's content knowledge is certainly necessary, but not sufficient. The teacher instructs a diverse group of students in a challenging classroom environment that is increasingly porous to a range of local, state and national prescriptions and dictates. A coherent, systematic and rigorous professional preparation can make this task manageable.

The rationale for professional preparation of secondary teachers is the same as for elementary teachers and is discussed on page 43.

Methodology

Based on catalog descriptions, we looked for evidence of coursework of the following types or addressing the following topics, with topics possibly combined in courses, since each does not require a full semester for adequate coverage. (We refer you to a discussion of our analysis of course descriptions on pages 10 and 46. Full descriptions of the types of coursework for which we looked and examples of course descriptions can be found in **Appendix J**.)

- Subject-specific methods coursework (involving field work), with the use of technology in instruction and instruction for English language learners addressed in conjunction with this coursework
- Reading across the content areas
- Adolescent development
- Classroom management[94]
- Assessment[95]
- Teaching diverse learners, especially special education students[96]
- Education policy challenges

We did not rate programs because we felt that course descriptions were not adequate to the task for assessing whether topics that could appropriately be addressed in some combination in one course were indeed receiving adequate coverage in coursework that might be described in a paragraph.[97]

Given the potential for a pattern among education schools to require an ever increasing amount of professional coursework, which we term "professional coursework creep,"[98] we also count the number of credit hours associated

94 Another standard addresses whether the institution appropriately distinguishes the content specific to elementary and secondary teacher preparation programs.

95 Note that this course is not the same as a course designed to teach how to assess reading difficulties.

96 Another standard addresses whether the institution appropriately distinguishes the content specific to elementary and secondary teacher preparation programs.

97 This is not an issue in assessing our elementary content standard in which we are looking for a full course dedicated to each topic.

98 http://www.nctq.org/stpy09/reports/stpy_texas.pdf , p. 41.

with these types of courses as well as any others that were delivered in education programs to teacher audiences.[99] This is the total that NCTQ defines as the credit hours associated with "professional preparation," and it should be fewer than 30 credit hours in a secondary preparation program.

Why 30 credit hours? Even if every topic listed above represented a separate course (and it is not necessarily the case that each topic needs its own three-semester-credit-hour course), coursework addressing all of the topics we've listed would entail only about 21 credit hours. Thus 30 hours, nine hours above our "core" count, seems a very generous upper bound for professional course loads. We noted on rating sheets whether programs require 30 or more credit hours of preparation.

Excessive professional requirements are likely to discourage talented individuals from pursuing teacher preparation — and public school teaching.

Findings

In the Texas field trial, we did not rate programs on this standard, in spite of its importance, because most institutions did not provide us with full sets of syllabi. While we did not rate programs, however, we did note potential inadequacies in professional preparation *even using the most generous interpretations of course content. We did not consider course quality at all.*

We should describe how our evaluation translates into the language used in the rating sheet. For example, if in an examination of a secondary preparation program we find that no course description includes any mention of assessment and education policy challenges, whereas the topic of special education is addressed in a course description but not in the context of instruction, our statement in the rating sheet would distinguish between the two types of findings. It would state that that we were able to "identify key professional topics inadequately addressed in this sequence, most notably 1) assessment and 2) education policy challenges." No mention would be made of any possible inadequacy in special education because we consider our finding too tentative.

The most common deficiency is coursework in subject-matter specific methods courses (67 percent of institutions). This means that prospective secondary mathematics teachers do not take a course in methods of teaching mathematics and are instead offered a course in which methods of instruction in all subjects are covered or no methods course is offered at all.

Second to this deficiency is coursework addressing educational policy challenges. The majority of programs (52 percent) do not appear — at least from course descriptions — to be addressing the education reform issues that are major topics at the local, state and national levels. Placing a secondary teacher in the classroom who is unfamiliar with issues ranging from the achievement gap and how it has engendered mandates for standardized testing to charter schools is a recipe

99 This count did not include any hours for student teaching or student teaching seminars because programs differ greatly in how they allocate semester hours to this semester-long experience. We did not count content courses designed for teachers, such as the elementary mathematics courses designed for teachers that we recommend. This type of coursework (of which there is a considerable amount in science, music and art beyond elementary mathematics courses) needs to be accounted for somehow in analyzing teacher preparation, but it is not conventionally categorized as professional preparation so we will not do so. We believe that this content coursework designed for teachers can play a valuable role in teacher preparation at all levels, and to the extent that it does, it should be categorized and counted. It can be categorized as "content-mediating" coursework in elementary programs because it will likely not be part of a major, and it can be noted as a special part of a major in a middle school program and as a valuable addition to the major in a secondary programs.

for professional confusion and discontent. For example, the difficulties associated with restructuring schools that are designated as "failing" under NCLB provisions can only be compounded when teachers have no background that prepares them to understand the rationale for this radical reform initiative.

Other deficiencies noted and the proportion of institutions in which they were noted: teaching diverse learners (33 percent), assessment (25 percent), adolescent development (15 percent), classroom management (10 percent), reading across the content areas (6 percent).

Fifteen percent of the institutions (nine private and one public) require 30 or more credit hours of professional preparation.

Standard 13: Student teaching effectively prepares high school teacher candidates for the challenges of the classroom (evaluation pending)

See page 50 for a discussion of the rationale for this standard and the methodology used in our evaluation.

Findings

In the Texas field trial, we did not rate programs on this standard in spite of its critical importance because we were still in the process of field testing the standard in a large national study that we will be publishing in summer 2010.

We can note that many institutions appear to be failing to budget sufficient time and attention for the student teaching experience. It is important that the experience be full time. In our overview we found that in nearly half of programs (48 percent), coursework unrelated to student teaching is either required or allowed at the same time. We found 20 institutions requiring 1-3 credits of such coursework and 12 institutions requiring more than three credits. **Schreiner University**'s nine credits of coursework placed the greatest coursework demand on student teachers.

A Note on Special Education Teacher Preparation

As we discuss in our *State Teacher Policy Yearbook 2009*,[100] any teacher getting certified to teach special education must have content expertise in addition to specialized training in teaching students with disabilities. Both state and federal requirements expect special education students to meet the same high standards as other students; thus, special education teachers must have content preparation. In the elementary grades, the teacher candidate should meet the same content coursework requirements discussed in Standard 4 (elementary teacher content preparation) on page 31. Any teacher getting certified to teach secondary special education should graduate "highly qualified" in at least two subjects, and the most efficient route to doing so is for teacher candidates to take the equivalent of two subject area minors and pass tests in those areas.[101]

Although content preparation should be similar, the professional preparation of special education teachers should not be identical to other teachers. The array of professional coursework specific to special education should cover the needs of the special education student, general special education practices and language development strategies, as well as special education foundations, ethical practice and professional communication.

While recognizing their critical importance, we have yet to include in our current evaluation of special education teacher preparation any consideration of these necessary areas of content and professional preparation. These areas of preparation will be addressed in future studies.

Standard 14: Prepares teacher candidates to teach early reading

Rationale

As important as it is for every elementary teacher to know the most effective strategies for teaching children to read, expertise in this area is of paramount importance for special education teachers, since reading disabilities account for about 80 percent of all learning disabilities.[102] In recognition of this fact, Texas has rigorous standards that fully address the use of the science of reading by special education teachers.[103]

Methodology

The analysis of early reading preparation in special education programs is conducted exactly as is the analysis of reading preparation in elementary programs. (See page 19 for a full discussion of that standard; for more information about how we analyze syllabi and textbooks, go to page 12.) NCTQ has previously used this methodology to evaluate

100 http://www.nctq.org/stpy09/reports/stpy_texas.pdf, p 28

101 http://www.nctq.org/stpy09/reports/stpy_national.pdf, p. 135

102 Snow, p. 89

103 http://www.sbec.state.tx.us/SBECOnline/standtest/standards/allspeced.pdf

the preparation of special education teachers in a study of teacher preparation programs in Indiana.[104] Essentially we looked for evidence that the five components of effective early reading instruction are embedded in the required coursework for prospective teachers pursuing supplemental special education certification, dual certification or EC-12 special education certification programs at the 42 Texas institutions at which these programs are offered. Although we recognize that special education teachers need deeper skills and knowledge to address students' reading difficulties, our analysis is limited for now only to these core foundational elements.

Full credit was awarded to programs in which all five components of the science of reading are covered in the coursework and all relevant required courses address at least one of the five essential components: phonemic awareness, phonics, vocabulary, fluency and comprehension. Programs that neglect to cover one or more components of the science of reading, and/or that require one or more reading course with a focus on early reading instruction but without the science of reading, received a lower or failing rating.

Findings

Nearly a third of the 34 special education programs we evaluated require *fewer* courses in reading for prospective special education teachers than are required in their general elementary program. Forty-one percent of the programs failed on all measures.

104 http://www.nctq.org/p/publications/docs/nctq_full_study_indiana_reading_20090729023658.pdf

How Texas institutions fare on this standard

NCTQ Standard 14. Prepares teacher candidates to teach early reading

All special education teachers, regardless of whether they are teaching toddlers or teenagers, need coursework in the research-based strategies shown to dramatically reduce the number of children needing remediation in reading.

★ **Institutions with Exemplary Design**
Baylor University

● **Institutions Meet Standard**
LeTourneau University, Texas A&M University, Texas A&M University – Kingsville, Texas Southern University, Texas State University – San Marcos, The University of Texas – Pan American, The University of Texas at Austin, University of North Texas, Wayland Baptist University

◕ **Institutions Nearly Meet Standard**
University of Mary Hardin – Baylor

◑ **Institutions Partly Meet Standard**
Angelo State University, Tarleton State University, The University of Texas at Tyler

◔ **Institutions Meet Small Part of Standard**
Abilene Christian University, Texas A&M University – Commerce, The University of Texas at El Paso, The University of Texas of the Permian Basin, University of Houston, West Texas A&M University

○ **Institutions Do Not Meet Standard**
Houston Baptist University, Lamar University, Our Lady of the Lake University, Sam Houston State University, Stephen F. Austin State University, Texas A&M International University, Texas A&M University – Corpus Christi, Texas A&M University – Texarkana, Texas Christian University, Texas Tech University, Texas Woman's University, The University of Texas at San Antonio, University of Houston – Clear Lake, University of Houston – Victoria

NA **Institutions For Which Rating On This Standard Is Irrelevant**
Arlington Baptist College, Concordia University, Dallas Baptist University, East Texas Baptist University, Howard Payne University, Lubbock Christian University, McMurry University, Paul Quinn College, Rio Grande College of Sul Ross State University, Schreiner University, Southern Methodist University, Southwestern Adventist University, Southwestern Assemblies of God University, St. Edward's University, St. Mary's University, Sul Ross State University, Texas College, Texas Lutheran University, Texas Wesleyan University, The University of Texas at Arlington, The University of Texas at Dallas, University of Dallas, University of Houston – Downtown, University of the Incarnate Word, Wiley College

? **Institutions Whose Performance Cannot Be Determined**
Hardin-Simmons University, Huston-Tillotson University, Jarvis Christian College, Midwestern State University, Prairie View A&M University, Southwestern University, The University of Texas at Brownsville, University of St. Thomas

Exemplary Design

Baylor University requires special education teacher candidates to take a course in *Language Arts for Students with Special Needs* in addition to the reading courses taken by elementary teacher courses. Unlike many language arts courses, this course focuses on reading instruction, with coverage of all five components of the science of reading.

Standard 15: Prepares teacher candidates to teach elementary mathematics

Rationale

While not as commonly discussed as the prevalence of reading disabilities, sizeable numbers of students with learning disabilities perform below their grade-level counterparts in mathematics.[105] Special education teachers require the same foundation in elementary mathematics concepts as elementary teachers, a preparation that is described on page 26. Texas regulations require that special education teachers know and understand the same areas of mathematics as we endorse (numbers and operations, algebra, geometry and data analysis and probability), albeit without specifying the coursework that would develop that understanding.

Methodology

Our rating of special education programs on mathematics preparation uses the methodology employed in our national mathematics study as a foundation.[106] Because most special education programs require the same mathematics coursework as is found in the elementary program, syllabi and required primary textbooks in elementary mathematics coursework designed for teacher audiences in the elementary program were assessed to determine 1) if courses required in special education programs cover essential topics in mathematics and 2) if the courses devote sufficient time to those topics. (For a discussion of the rating methodology for elementary mathematics coursework, see page 27.) The scope of our analysis does not involve more advanced mathematics instruction, which special education teachers working in a secondary school may also find necessary.

In the event that coursework requirements differed between the special education and general elementary programs, the special education program rating reflects the nature of the differences. For example, the substitution of a business mathematics course in the special education program for an elementary mathematics course in the elementary program would lower the rating, while the addition of an algebra course designed for middle school teachers in the special education program would raise it.

Special education programs requiring an eight- or nine-credit-hour sequence of elementary mathematics coursework that adequately covers essential topics in numbers and operations, algebra, geometry and data analysis and the use of an adequate textbook met the standard. Programs in which some essential topics did not appear to be taught, poor textbook selections were made or coursework requirements were not sufficient (fewer than eight credit hours) received a lower or failing rating.

(See page 27 for a full discussion of that standard; for more information about how we analyze syllabi and textbooks, go to page 13.)

Findings

Four of the 34 special education programs we evaluated do require adequate mathematics preparation, slightly above the proportion in elementary preparation programs. However, six of the 34 special education programs provide little or no preparation on elementary and middle school mathematics topics.

105 The performance of special education students on the mathematics Texas Assessment of Knowledge and Skills trails other student demographic groups from grade 3 to grade 11.

106 http://www.nctq.org/p/publications/docs/nctq_ttmath_fullreport_20090603062928.pdf

How Texas institutions fare on this standard

NCTQ Standard 15. Prepares teacher candidates to teach elementary mathematics

Special education teachers, regardless of whether they are teaching toddlers or teenagers, generally need three semesters of coursework in order to progress from a procedural to a conceptual understanding of fundamental mathematics topics.

● **Institutions Meet Standard**
Abilene Christian University, Baylor University, Sam Houston State University The University of Texas – Pan American

◕ **Institutions Nearly Meet Standard**
Angelo State University, Midwestern State University, Stephen F. Austin State University, Tarleton State University, Texas A&M International University, Texas A&M University – Corpus Christi, Texas Southern University, Texas State University – San Marcos, Texas Tech University, The University of Texas at Austin, The University of Texas at San Antonio, The University of Texas at Tyler, The University of Texas of the Permian Basin, University of Houston – Clear Lake, University of Houston – Victoria, University of North Texas, West Texas A&M University

◑ **Institutions Partly Meet Standard**
Lamar University, Texas A&M University – Texarkana, The University of Texas at Brownsville, The University of Texas at El Paso, Wayland Baptist University

◔ **Institutions Meet Small Part of Standard**
Houston Baptist University, LeTourneau University, Texas A&M University – Commerce, Texas A&M University – Kingsville, Texas Woman's University

○ **Institutions Do Not Meet Standard**
Jarvis Christian College, Texas A&M University, University of Houston, University of Mary Hardin – Baylor, University of St. Thomas

NA **Institutions For Which Rating On This Standard Is Irrelevant**
Arlington Baptist College, Concordia University, Dallas Baptist University, East Texas Baptist University, Howard Payne University, Lubbock Christian University, McMurry University, Paul Quinn College, Rio Grande College of Sul Ross State University, Schreiner University, Southern Methodist University, Southwestern Adventist University, Southwestern Assemblies of God University, St. Edward's University, St. Mary's University, Sul Ross State University, Texas College, Texas Lutheran University, Texas Wesleyan University, The University of Texas at Arlington, The University of Texas at Dallas, University of Dallas, University of Houston – Downtown, University of the Incarnate Word, Wiley College

? **Institutions Whose Performance Cannot Be Determined**
Hardin-Simmons University, Huston-Tillotson University, Our Lady of the Lake University, Prairie View A&M University, Southwestern University, Texas Christian University,

Standard 16: Offers all required courses at least once a year

Rationale

We evaluated the frequency with which the required courses in Texas' undergraduate special education programs are offered. Completing extensive coursework becomes quite difficult if all courses are not offered at least once a year. This not only makes it more difficult to complete a program in four years, it also may be a disincentive for the most capable and ambitious individuals to consider special education as a profession.

Methodology

In evaluating Texas' teacher preparation programs, we looked for evidence that every required course in the special education preparation program is offered at least once in an academic year to make it possible for students to complete the full program in a timely fashion. We checked course schedules to determine if there was at least one offering of each required course in any three consecutive fall, spring or summer terms, generally terms between fall 2008 and spring 2009.

Rating	Criteria
● Meets standard	All required courses are offered at least once a year.
○ Fails to meet standard	One or more courses is unavailable in a year.

Findings

It is not difficult for special education teacher candidates in Texas to complete required coursework. While we could not access course schedules for three institutions, only two special education teacher preparation programs out of 31 failed to offer every required course at least once a year.

How Texas institutions fare on this standard

NCTQ Standard 16. Offers all required courses at least once a year

It must be possible to complete the requisite program in a timely manner.

● **Institutions Meet Standard**
Abilene Christian University, Angelo State University, Baylor University, Hardin-Simmons University, Houston Baptist University, Huston-Tillotson University, Jarvis Christian College, LeTourneau University, Midwestern State University, Our Lady of the Lake University, Prairie View A&M University, Sam Houston State University, Southwestern University, Stephen F. Austin State University, Tarleton State University, Texas A&M International University, Texas A&M University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Kingsville, Texas A&M University – Texarkana, Texas Christian University, Texas Southern University, Texas State University – San Marcos, Texas Tech University, Texas Woman's University, The University of Texas at Austin, The University of Texas at Brownsville, The University of Texas at El Paso, The University of Texas at San Antonio, The University of Texas of the Permian Basin, University of Houston, University of Houston – Clear Lake, University of Houston – Victoria, University of Mary Hardin – Baylor, University of North Texas, West Texas A&M University

○ **Institutions Do Not Meet Standard**
The University of Texas – Pan American, Wayland Baptist University

NA **Institutions For Which Rating On This Standard Is Irrelevant**
Arlington Baptist College, Concordia University, Dallas Baptist University, East Texas Baptist University, Howard Payne University, Lubbock Christian University, McMurry University, Paul Quinn College, Rio Grande College of Sul Ross State University, Schreiner University, Southern Methodist University, Southwestern Adventist University, Southwestern Assemblies of God University, St. Edward's University, St. Mary's University, Sul Ross State University, Texas College, Texas Lutheran University, Texas Wesleyan University, The University of Texas at Arlington, The University of Texas at Dallas, University of Dallas, University of Houston – Downtown, University of the Incarnate Word, Wiley College

? **Institutions Whose Performance Cannot Be Determined**
Lamar University, The University of Texas at Tyler, University of St. Thomas

Overall Education School Standards: Outcome Standards[107]

Standard 17: Systematically seeks and uses feedback from school districts
Standard 18: Utilizes available data sytems to monitor performance of graduates

Rationale

All teacher preparation programs should track the performance of their graduates in order to inform and improve the preparation they provide. In states such as Louisiana and Florida, state education agencies are developing this ability using their longitudinal data systems and have begun to provide teacher preparation programs with the results. The most sophisticated methods of tracking use value-added methodology to determine if the graduates of one institution produce higher student gains on average than others do. In Texas, the capacity of the Texas Education Agency or any other entity to conduct this sort of analysis is still limited. As was mentioned earlier, Texas does not have a data system that can be used to provide evidence of teacher effectiveness. While it has assigned unique student identifiers that connect student data across key databases across years, and it has the capacity to match student test records from year to year to measure student academic growth, it cannot match individual teacher records with individual student records.[108]

Nevertheless, teacher preparation programs can and should attempt to undertake less complex tracking systems and collect information on the performance of their graduates from hiring school districts. Follow-up surveys of program graduates that provide self-assessments of the effectiveness of preparation are important but insufficient; school district personnel who hire program graduates are critical sources of feedback.

Methodology

For each program, NCTQ identified school districts through phone surveys that had hired graduates from each institution. (We were unsuccessful in identifying hiring school districts in the case of five institutions.) Using a very

107 Our study originally contained a standard related to the proportion of required undergraduate coursework taught by permanent faculty. Programs were rated down if they had a high proportion of such courses taught by temporary rather than permanent faculty. The standard was eliminated for two reasons. First, it was difficult to ascertain whether instructors assigned to teach such courses were permanent or temporary due to the fragmented nature of information in course catalogs and websites. Second, we were informed by numerous "insiders" that having a high proportion of adjunct teaching assignments can be preferable to a high percentage of permanent faculty teaching assignments, given the incompetence of many permanent faculty members.

108 On June 19, 2009, Governor Perry signed legislation that will change the nature of information about the performance of teacher preparation program graduates dramatically. Senate Bill No. 174 requires the State Board of Educator Certification to propose rules establishing standards to govern the approval of all educator preparation programs based on information on the performance of students taught by beginning teachers for the first three years following certification. The bill also requires that such information, as well as the results of surveys given to school principals that evaluate programs' effectiveness in preparing teachers, be made available.

simple questionnaire sent to the superintendents of two such districts, we asked whether programs sought out and received data from the hiring district(s) on 1) the job performance of graduates and 2) the performance of graduates' students. In the case of 12 institutions we did not receive any responses to our survey.

Rating	Criteria
● Meets standard	Programs for which our survey provided evidence that they sought and received data from one or more hiring district(s) on the job performance of graduates and/or the performance of graduates' students.
○ Fails to meet standard	Programs for which our survey provided no such evidence with regard to data on the job performance of graduates and/or the performance of graduates' students.

The presence of school district personnel on advisory committees established by education schools was not considered relevant when rating this standard, although such cooperation is certainly valuable. Evidence that such personnel delivered data on the performance of graduates or their students *would* have been relevant if it had been provided. To supplement the survey data collected from school districts, all institutions were provided the opportunity to demonstrate that they routinely collect such data.

Findings

All but three programs do not routinely collect data from school districts on the performance and retention of their graduates.

How Texas institutions fare on this standard

NCTQ Standard 17. Systematically seeks and uses feedback from school districts

Mirroring a similar commitment now found in K-12 education, higher education institutions must embrace data driven decision making and accountability in preparing teachers.

● **Institutions Meet Standard**
The University of Texas of the Permian Basin, University of Houston – Downtown, Wayland Baptist University

○ **Institutions Do Not Meet Standard**
Abilene Christian University, Angelo State University, Arlington Baptist College, Baylor University, Concordia University, Dallas Baptist University, East Texas Baptist University, Hardin-Simmons University, Houston Baptist University, Howard Payne University, Huston-Tillotson University, Jarvis Christian College, Lamar University, Lubbock Christian University, McMurry University, Midwestern State University, Our Lady of the Lake University, Paul Quinn College, Prairie View A&M University, Sam Houston State University, Schreiner University, Southwestern Adventist University, Southwestern Assemblies of God University, St. Edward's University, Stephen F. Austin State University, Sul Ross State University, Tarleton State University, Texas A&M International University, Texas A&M University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Kingsville, Texas A&M University – Texarkana, Texas Christian University, Texas Southern University, Texas Tech University, Texas Wesleyan University, Texas Woman's University, The University of Texas – Pan American, The University of Texas at Arlington, The University of Texas at Austin, The University of Texas at Dallas, The University of Texas at El Paso, University of Houston – Victoria, University of Mary Hardin – Baylor, West Texas A&M University, Wiley College

? **Institutions Whose Performance Cannot Be Determined**
LeTourneau University, Rio Grande College of Sul Ross State University, Southern Methodist University, Southwestern University, St. Mary's University, Texas College, Texas Lutheran University, Texas State University – San Marcos, The University of Texas at Brownsville, The University of Texas at San Antonio, The University of Texas at Tyler. University of Dallas, University of Houston, University of Houston – Clear Lake, University of North Texas, University of St. Thomas, University of the Incarnate Word

How Texas institutions fare on this standard

NCTQ Standard 18. Utilizes available data systems to monitor performance of graduates

Mirroring a similar commitment now found in K-12 education, higher education institutions must embrace data driven decision making and accountability in preparing teachers.

● **Institutions Meet Standard**

Angelo State University, Texas A&M International University, The University of Texas – Pan American, The University of Texas of the Permian Basin, University of Houston – Downtown, Wayland Baptist University

○ **Institutions Do Not Meet Standard**

Abilene Christian University, Arlington Baptist College, Baylor University, Concordia University, Dallas Baptist University, East Texas Baptist University, Hardin-Simmons University, Houston Baptist University, Howard Payne University, Huston-Tillotson University, Jarvis Christian College, Lamar University, Lubbock Christian University, McMurry University, Midwestern State University, Our Lady of the Lake University, Paul Quinn College, Prairie View A&M University, Sam Houston State University, Schreiner University, Southwestern Adventist University, Southwestern Assemblies of God University, St. Edward's University, Stephen F. Austin State University, Sul Ross State University , Tarleton State University, Texas A&M University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Kingsville, Texas A&M University – Texarkana, Texas Christian University, Texas Southern University, Texas Tech University, Texas Wesleyan University, Texas Woman's University, The University of Texas at Arlington, The University of Texas at Austin, The University of Texas at Dallas, The University of Texas at El Paso, University of Houston – Victoria, University of Mary Hardin – Baylor, West Texas A&M University, Wiley College

? **Institutions Whose Performance Cannot Be Determined**

LeTourneau University, Rio Grande College of Sul Ross State University , Southern Methodist University, Southwestern University, St. Mary's University, Texas College, Texas Lutheran University, Texas State University – San Marcos, The University of Texas at Brownsville, The University of Texas at San Antonio, The University of Texas at Tyler, University of Dallas, University of Houston, University of Houston – Clear Lake, University of North Texas, University of St. Thomas, University of the Incarnate Word

Overall Education School Standards: Institutional Features Standards

Standard 19: Assigns faculty to teach in their area of expertise

Rationale

Those who teach college courses in any particular subject should have a depth of professional knowledge that precludes teaching a wide range of disparate topics. Programs that assign faculty to teach outside of their area of expertise are ill-serving their students, as well as their instructors. While it is possible for an elementary practitioner to be an excellent instructor in a variety of subjects, and student teaching and other field placements should be designed to expose the prospective teacher to such practitioners, it is highly unlikely that any one individual would have the specialized professional training that would equip them to teach, for example, both reading pedagogy and mathematics pedagogy in an elementary preparation program in a rigorous, research-based manner. With rare exceptions, having one person teach both of these topics is apt to do a disservice to preparation in one, if not both, of these core subjects.

Methodology

In our evaluation of programs, we examined non-clinical teaching responsibilities for all faculty members, as indicated by course assignments as well as information posted by individual faculty on personal web pages. We identified those instructors that taught combinations of reading and mathematics methods courses, or combinations of reading or mathematics methods courses with several other unrelated types of professional coursework.

Rating	Criteria
● Meets standard	Programs for which we could not identify any instructors 1) teaching a combination of reading and mathematics methods courses or 2) teaching either mathematics or reading methods courses as well as two or more other unrelated courses.
○ Fails to meet standard	Programs where we found at least one instructor meeting one or both of the above criteria.

Findings

We found instances of faculty teaching disparate coursework in 11 percent of the institutions in our sample.

The number of different courses taught by any one instructor at these institutions could be quite large. We found one faculty member at **Arlington Baptist College** teaching the following courses:

- Measurement and Evaluation
- Discipline and Classroom Management
- Early Childhood Education
- Art Education
- Principles and Methods of Teaching
- EC-4 Elementary Science
- EC-8 Social Studies
- EC-8 Language Arts
- Essentials of Math I
- Organizing Games and Modified Sports

How Texas institutions fare on this standard

NCTQ Standard 19. Assigns faculty to teach in their area of expertise

Only the most extreme examples of unsuitable assignments are noted, such as an instructor teaching both reading and mathematics methods.

● **Institutions Meet Standard**

Abilene Christian University, Angelo State University, Baylor University, Concordia University, Dallas Baptist University, East Texas Baptist University, Hardin-Simmons University, Houston Baptist University, Huston-Tillotson University, Jarvis Christian College, Lamar University, Lubbock Christian University, McMurry University, Midwestern State University, Our Lady of the Lake University, Paul Quinn College, Prairie View A&M University, Sam Houston State University, Southern Methodist University, Southwestern University, St. Edward's University, St. Mary's University, Stephen F. Austin State University, Sul Ross State University , Tarleton State University, Texas A&M International University, Texas A&M University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Kingsville, Texas A&M University – Texarkana, Texas Christian University, Texas College, Texas Lutheran University, Texas Southern University, Texas State University – San Marcos, Texas Tech University, Texas Wesleyan University, Texas Woman's University, The University of Texas – Pan American, The University of Texas at Arlington, The University of Texas at Austin, The University of Texas at Brownsville, The University of Texas at Dallas, The University of Texas at El Paso, The University of Texas at San Antonio, The University of Texas at Tyler, The University of Texas of the Permian Basin, University of Dallas, University of Houston, University of Houston – Clear Lake, University of Houston – Downtown, University of Houston – Victoria, University of Mary Hardin-Baylor, University of North Texas, University of the Incarnate Word, Wayland Baptist University, West Texas A&M University, Wiley College

○ **Institutions Do Not Meet Standard**

Arlington Baptist College, Howard Payne University, LeTourneau University, Rio Grande College of Sul Ross State University, Schreiner University, Southwestern Adventist University, Southwestern Assemblies of God University

? **Institutions Whose Performance Cannot Be Determined**

University of St. Thomas

Standard 20: Offers grade-span specific coursework as appropriate

Rationale

The content of certain areas of professional preparation differs depending on the grade levels in question. There are some topics, such as assessment or educational policy challenges, for which it may be reasonable to have elementary and secondary teacher candidates share a class because the content is common across grade levels. However, it does a considerable disservice to the candidates to have them learn about classroom management techniques, or the means of instructing students with disabilities, in a single class whose curriculum addresses students from preschoolers to high school seniors. How much can a prospective high school mathematics teacher learn from a discussion about how to deal with a 3-year-old having a tantrum? One-room schoolhouses are exceedingly rare today. As a result, classes that mix elementary and secondary teacher candidates are not only unnecessary, they also prevent prospective teachers from receiving the most relevant training.

Methodology

In our evaluation of programs we looked for evidence that coursework in classroom management and special education is grade-span specific so as to efficiently address issues that are most salient in particular student age ranges. We noted whether teacher candidates take the same classroom management and special education courses regardless of the grade level they are preparing to teach.

An important note: When elementary and secondary teacher candidates were required to take the same course, and multiple sections of the course were offered in any given term, we assumed that one or more sections was designated for each group and did not lower a program's rating.

Rating	Criteria
● Meets standard	Programs offering separate classroom management and special education courses for their elementary and secondary certification programs.
◑ Partly meets standard	Programs in which only one of the two types of courses is unique to a grade span.
○ Fails to meet standard	Programs in which neither type of course is unique to a grade span.

Findings

More than a quarter of the institutions we evaluated require the same special education and/or classroom management classes of their elementary and secondary teacher candidates without differentiating grade levels. (This number may actually be substantially higher, since we assumed that if the same course were required of each, but multiple sections were offered, elementary and secondary teacher candidates were directed to different sections.)

How Texas institutions fare on this standard

NCTQ Standard 20. Offers grade-span specific coursework as appropriate

A single class with curriculum addressing students from preschoolers to high school seniors cannot adequately prepare both elementary and secondary teacher candidates in areas such as classroom management or instructing students with disabilities.

★ **Institutions with Exemplary Design**
Texas Tech University

● **Institutions Meet Standard**
Abilene Christian University, Angelo State University, Baylor University, Dallas Baptist University, Hardin-Simmons University, Howard Payne University, Lamar University, LeTourneau University, McMurry University, Midwestern State University, Prairie View A&M University, Sam Houston State University, Schreiner University, Southern Methodist University, Southwestern Adventist University, St. Edward's University, Stephen F. Austin State University, Tarleton State University, Texas A&M International University, Texas A&M University, Texas A&M University – Commerce, Texas A&M University – Corpus Christi, Texas A&M University – Kingsville, Texas Christian University, Texas College, Texas Lutheran University, Texas Southern University, Texas State University – San Marcos, Texas Tech University, Texas Woman's University, The University of Texas at Arlington, The University of Texas at Austin, The University of Texas at Brownsville, The University of Texas at Dallas, The University of Texas at El Paso, The University of Texas at San Antonio, The University of Texas at Tyler, The University of Texas of the Permian Basin, University of Dallas, University of Houston, University of Houston – Clear Lake, University of Houston – Downtown, University of Houston – Victoria, University of North Texas, University of the Incarnate Word, West Texas A&M University

◑ **Institutions Partly Meet Standard**
Concordia University, East Texas Baptist University, Houston Baptist University, Jarvis Christian College, Lubbock Christian University, Our Lady of the Lake University, Rio Grande College of Sul Ross State University , Southwestern Assemblies of God University, St. Mary's University, Sul Ross State University, Texas A&M University – Texarkana, University of Mary Hardin-Baylor, Wayland Baptist University

○ **Institutions Do Not Meet Standard**
Arlington Baptist College, Huston-Tillotson University, Southwestern University, Texas Wesleyan University, The University of Texas – Pan American

? **Institutions Whose Performance Cannot Be Determined**
Paul Quinn College, University of St. Thomas, Wiley College

Exemplary Design

Texas Tech University has completely separate sequences of professional coursework for elementary and high school teacher candidates. High school teacher candidates have courses designed only for secondary instruction on classroom management, teaching diverse learners, adolescent development, assessment and education policy challenges.

Standard 21: Ensures that teacher candidates are prepared to teach in a global society

Rationale

Teachers may be the most important source of a global perspective for the students they teach. Without exposure to such perspective, they may not gain an understanding that "the world is flat" (in the words of Thomas Friedman) and that America is competing in many dimensions with other rising powers. This is of great concern to many, but especially to the nation's CEOs. Yet we suspect that most teachers by temperament and training may be more, not less, provincial than their adult counterparts outside of education. (Some studies indicate that the majority of teachers work in schools within 50 miles of the schools they attended as children.)

College is a time when opportunities for study abroad or striking up an acquaintance with a foreign student can substantially broaden ones understanding of other cultures, but the heavy course demands of an undergraduate education program (including a semester devoted to student teaching) make this more problematic for the prospective teacher than for fellow students taking other courses of study.

If a jam-packed professional preparation program makes it difficult for teachers to have the opportunity to share discussions and activities with people from distant countries, contemplate global issues in coursework, or fit in a learning experience abroad, many aspects of the instruction they offer their students will be subtly impoverished.

Methodology

In our evaluation we looked for evidence that education programs have acknowledged the importance of a global perspective in their program requirements, or that the institutions in which those programs are housed have features conducive to the development of this perspective in all students, including teacher candidates.

What factors demonstrate an institution's commitment to imparting a global perspective?[109] Following are the indicators that we field-tested in Texas:

1. Required coursework that ensures that teacher candidates graduate with a solid understanding of physical and cultural geography and foreign language.
2. Availability of numerous electives that enhance the global perspective.
3. Opportunities to study abroad, especially in education-focused programs.
4. The presence of a significant number of undergraduate foreign students on campus.

Findings

Programs were not rated on this standard. Information relative to the standard is offered to the institution and the public in order to plant a seed of thought as to what expectations relative to this standard might legitimately be held for education schools and the institutions in which they are housed. Comments are provided on programs

109 While an understanding of the diversity students bring to a classroom is also important, this standard deals with the development of a sensibility that opens up the classroom to the world.

that appear to be exemplary for courses they offer (geography, world cultures and religions or foreign languages), for infusing a global perspective (foreign students are a relatively large proportion of the undergraduate student body) or for scheduling "teach abroad" programs so as to fit them into the teacher preparation program's required coursework and fieldwork.[110]

While only three institutions have a relatively large proportion of foreign undergraduate students, 43 percent have foreign language requirements and 64 percent require coursework related to world cultures or geography. Programs to look to for guidance on how to provide a global perspective include **Angelo State University** (which has a one-month exchange program to teach in German classrooms); **Texas Christian University** and **Texas Tech University** (where two to four weeks of student teaching can be done abroad); or **Texas A&M University** (which has summer study-abroad programs specifically for education majors).

In this exploratory examination, there were only 13 campuses (19 percent) where we were not able to identify much in the way of coursework, required or elective, or other institutional characteristics, such as an opportunity to study abroad or a high proportion of foreign students, that might broaden a teacher candidate's perspective to encompass the global society.

110 It is important that teaching abroad not substitute for a local student teaching period of at least five weeks; none of the teach-abroad programs in Texas institutions do so.

Elementary, Secondary and Special Education Program Standards

Standards 22-25: Exit standards

Rationale

If teachers are to teach well, they must acquire many essential teaching skills as well as a solid understanding of content. Licensing examinations are required by states to ensure that teachers meet a *minimum* standard of subject-matter knowledge.[111] There is research correlating a teacher's ability to pass a licensure test with student achievement.[112] Licensing tests are the best lever available to the state to ensure that institutions preparing teachers are following guidelines established by state regulations.

Unfortunately, with the exception of most secondary level licensing tests, current U.S. teacher licensing examinations are generally not up to the task because they have common weaknesses, both substantive and structural. At the elementary level, the content tests used for licensing are too easy to pass. At all levels, different subjects are often tested together, with one overall score determining if a candidate passes. The better alternative of having separate scores provided for each subject and establishing minimum passing scores for each is rarely used.

For example, the typical elementary content test includes reading pedagogy, English/language arts, science, social studies and mathematics, while the typical middle school and high school social studies test covers history, government, geography and economics. Because passing score requirements, known as "cut-scores," are not set for each subject on these tests, a high score in one subject area can compensate for a low score in another. At the elementary school level, one result is that candidates who have little to no skills in mathematics — typically the subject area with the lowest performance — can still pass and receive a license.

In addition, many states have loopholes that allow teacher candidates who have not yet passed a licensing exam to teach for as many as three years, and sometimes more.

111 Sometimes basic skills tests are also a part of the licensing process. However, they suffer from the weakness of being too easy (testing elementary and middle school level proficiency) and may not be required until after program completion, meaning that programs devote valuable time to remediating teacher candidates who are deficient. While licensure examinations are not common in other countries in which students out-perform our own, the screening criteria are applied earlier in the certification pipeline, before the students can be admitted to a preparation program. McKinsey & Co., *How the world's best performing school districts come out on top* (September 2007) 18.

112 White, B. R., Presley, J. B., & DeAngelis, K. J. (2008). *Leveling up: Narrowing the teacher academic capital gap in Illinois* (IERC 2008-1). Edwardsville, IL: Illinois Education Research Council.

In Texas, new teachers who have satisfied all requirements for the initial teacher certification *except the examination requirements* are allowed to teach under a nonrenewable permit for up to one year or under an emergency permit *for up to three years*.

Some states are beginning to remedy these deficiencies. The nation's highest performing state on NAEP, Massachusetts, requires that elementary teachers pass stand-alone mathematics and reading tests. Virginia, Connecticut and California require that all elementary teaches pass a stand-alone reading test. Several other states are considering even more broad-ranging changes in licensing tests.

Texas has developed its own series of 38 licensing tests, the Texas Examinations of Educator Standards (TExES). Many of the TExES tests suffer from the same flaws found in their counterparts in other states: elementary content tests that are too easy, different subjects tested together, and one global passing score rather than separate passing scores for each subject.

Teacher preparation programs need not wait for state action to improve licensure tests. Any preparation program for which the certification test is inadequate should attempt to remedy its weaknesses with its own exit test for content. State regulations do not preclude any program from taking this initiative. In fact, there is a precedent for this type of initiative: Many education schools already compensate for the weaknesses in state licensing tests by requiring the tests as a condition of program admission rather than waiting for graduation and licensure.

Methodology and Findings

We examined the sets of TExES licensing tests required for certification at the elementary, middle and high school levels to determine their adequacy for assessing the content knowledge of teacher candidates in every subject they will be licensed to teach. If we found licensing tests inadequate, we examined the exit requirements of teacher preparation programs to see if the programs filled the vacuum with their own exit assessments of content knowledge.

Licensure tests for elementary teachers

The TExES Generalist EC-4 (soon to be the Generalist EC-6) is the only content assessment required for elementary licensure. While few practice questions are provided, this assessment of elementary content does not appear to be sufficiently rigorous.

Compare, for example, sample (1) below, taken from practice items posted by Texas to prepare teacher candidates for the elementary generalist test,[113] and sample (2), taken from comparable Massachusetts items:[114]

These problems are based on the same concepts in probability, but the second is less routine and assesses a deeper understanding.

113 http://www.texes.ets.org/assets/pdf/testprep_manuals/101_generalistec_4_55004_web.pdf

114 http://www.mtel.nesinc.com/PDFs/MA_FLD003_SubtestII_PRACTICE_TEST.pdf

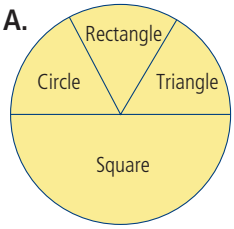
Problem taken from TExES Preparation Manual-Generalist EC-4 (#21)[115]

Students in Mr. Gonzales's class have sorted and counted a collection of blocks by shape.

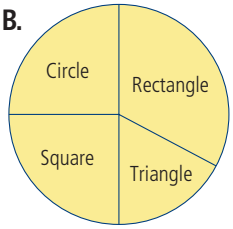
Shape	Number of blocks
Circle	15
Rectangle	15
Triangle	10
Square	20
Total	60

The students would like to build a spinner to simulate the probability of randomly selecting a block of a given shape. Which of the following spinners could they use?

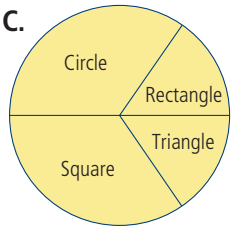
A.



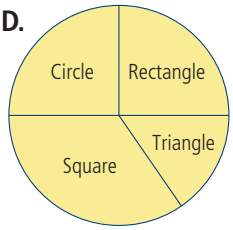
B.



C.



D.



Problem taken from Massachusetts General Curriculum (03) Practice Test: Mathematics (#45)[116]

Use the spinner below to answer the question that follows.

The host of a party tells her guests that every time the spinner above lands on the section labeled "Fruit Basket," a guest will win a large basket of fruit. If the 180 guests at the party each spin the spinner once, what is the best estimate of the number of fruit baskets that the host will be giving away?

A. 7 **B.** 14 **C.** 36 **D.** 72

115 http://www.texes.ets.org/assets/pdf/testprep_manuals/101_generalistec_4_55004_web.pdf

116 http://www.mtel.nesinc.com/PDFs/MA_FLD003_SubtestII_PRACTICE_TEST.pdf

Nor does the TExES elementary test offer stand-alone cut-scores for the five subjects covered: mathematics, language arts, science and social studies, as well as reading pedagogy. Each test contains only about 15 mathematics problems, all of which can be missed by a teacher candidate without jeopardizing a passing score. This test provides no assurance that candidates have sufficient and appropriate content knowledge in each subject area.

As a result, any program graduating elementary teacher candidates whose assessment for content knowledge relies on this test failed this standard.[117] Since all Texas elementary teacher preparation programs rely only on this licensing test, all failed this standard.

Licensure tests for middle school teachers

While the TExES tests for middle school teachers appear to be rigorous, only a few fully meet this standard, since the majority cover multiple subjects without separate cut-scores. The two most problematic types of tests are 1) the TExES Generalist 4-8[118] (which has the same flaws as the Generalist EC-4 and EC-6 test), and 2) tests for dual subject certification (such as the TExES Mathematics/Science test).

Any program graduating middle school teacher candidates whose assessment for content knowledge relies on the TExES Generalist 4-8 failed this standard. Any program graduating middle school teacher candidates whose assessment for content knowledge relies on the 4-8 dual subject tests received a rating of "nearly meets standard."

Licensure tests for secondary teachers

Content tests for secondary teachers should be rigorous and focused on one subject only. If certification is offered in composite subjects such as science or social studies, teacher candidates should take separate subject area tests in all of the relevant subjects. (For example, a social studies teacher should take tests in history, government, economics and geography, as is required in Georgia.) The TExES tests for secondary school teachers appear to serve as rigorous assessments of content, and the majority test only single subjects, but a few, such as the tests for physical science, science and social studies, cover multiple subjects without separate cut-scores.

Any program graduating secondary teacher candidates whose assessment for content knowledge relies on one or more of the TExES tests of composite subjects received a rating that was lowered to "nearly meets standard."

Licensure of special education teachers

Content tests for special education teachers should mirror those for elementary teachers: They should be rigorous and have stand- alone cut-scores.

Texas offers two choices for content assessment for special education certification. Special education candidates can take the Generalist EC-4 test, which has already been discussed above and is inadequate to the task. Alternatively, candidates can take a Special Education EC-12 test, whose mixture of a smattering of content in a test focused on special education pedagogy makes it even less adequate to assess content knowledge.

117 The U.S. Department of Education recently ruled that some middle school teachers in Texas must take this test. For a discussion of the rationale for this ruling, see "JUST WHEN WE FORGOT WHAT HQT EVEN MEANS!" at http://www.nctq.org/p/tqb/viewBulletin.jsp?bulletinId=0&volume=latest

118 NCTQ recommends the elimination of the "Grades 4-8 Generalist" certification, so it goes without saying that the corresponding licensing test that covers English/language arts and reading, mathematics, science and social studies should be retired.

Any program graduating special education teacher candidates whose assessment for content knowledge rests with either of these tests fails this standard. Since all Texas special education teacher preparation programs rely only on these licensing tests, all failed this standard.

How Texas institutions fare on this standard

NCTQ Standards 22-25: Exit Tests

If the state fails to establish rigorous licensure requirements, institutions are still obligated to ensure that their graduates meet high standards. For example, if the state does not require a licensure test that measures candidates' knowledge of every subject taught, institutions must fill this vacuum.

	Elementary (EC-4/EC-6) programs	Middle school programs	High school programs	Special education programs
○ Number of institutions not meeting exit standards	**67**	**24**	**0**	**42**
◕ Number of institutions nearly meeting exit standards	**0**	**13**	**63**	**0**
● Number of institutions meeting exit standards	**0**	**27**	**13**	**0**

Other data reported

While not required to do so by the state, some preparation programs in Texas have sought or obtained national accreditation.[119] On each rating sheet we have indicated if programs have obtained either NCATE or TEAC accreditation. Our indication of accreditation does not represent a rating of any kind.

Each rating sheet also identifies the correspondence with institutions in which we asked for confirmation of coursework requirements, syllabi or responses to preliminary ratings. See **Appendix B** for more discussion of this correspondence.

119 The proportion of education schools that have obtained or are candidates for national accreditation is far lower in Texas than it is nationwide: Twenty-six percent of Texas education schools are accredited or are candidates for accredidation versus 57 percent nationwide.

Recommendations for Reform

More so than many other states, Texas officials over the years have taken on an activist role, forcing change on education schools. Many changes — such as requiring preparation in the science of reading, the elimination of the education major and caps on professional coursework — have been met with sharp, ideological opposition. While the overt opposition has died down, the results have been mixed at best. Institutions have found ways to work around the spirit in which these regulations were intended. Technical compliance has become the name of the game, with the result that any substantive improvements are an illusion.

What can Texas officials do to encourage more genuine reform?

REGULATORY REMEDIES

1. **Make outcomes the basis for achieving reform,**
2. **Continue to raise admissions standards,**
3. **Improve the content preparation of elementary teacher candidates,**
4. **Eliminate the cap on professional coursework credits,**
5. **Modify the middle school generalist certification,**
6. **Fix composite certifications,** and
7. **Use licensing tests to drive reform.**

Make outcomes the basis for achieving reform

The latest effort by the Texas legislature to hold its individual education schools accountable, SB 174, moves Texas in the right direction: Identify a set of outcomes and hold schools accountable for meeting those outcomes. Rules for this ground-breaking legislation took effect on April 18, 2010.

Continue to raise admissions standards

Commendably, Texas is one of 15 states making a test of basic skills proficiency a condition for admission into education schools. Because Texas' test assesses the skills of the general college population (not simply teacher candidates), and cut-scores are set at a fairly high level, Texas is a leader among states for admissions standards. Two-thirds of the education schools surveyed meet or nearly meet NCTQ's standard, which calls for accepting only students from the top academic half of the college population. Of the remaining third, all but two — **Hardin-Simmons University** and **Sul Ross State University** — still exceed the standard set in most states.

By raising the Texas standard even slightly, all teacher candidates in the state, not just most, would comfortably be in the upper half of the nation's college population in terms of both mathematics and reading. A few courageous trailblazers — **Dallas Baptist University**, **Texas A&M International University**, **Texas Woman's University**, **The University of Texas at Dallas**, **The University of Texas at Tyler** and **The University of Texas of the**

Permian Basin — have already raised their admissions standard to this level. The state should follow their lead and raise the cut-scores on the THEA — the test of college readiness now most commonly used as an admissions test — to the level used by **Texas A&M International University**: 260 in reading and 250 in mathematics.

Texas' current admissions standards for education schools rely on a test of college readiness, rather than a test of the prospective teacher's academic status at the end of the sophomore year of college, when admission is actually granted. A test of the latter type would be well suited to evaluate whether teacher candidates have the content knowledge necessary for teaching. Tests that evaluate teacher candidates on their general education preparation are readily available and include the Collegiate Assessment of Academic Proficiency (CAAP). Texas could be a national leader in teacher preparation by adopting a test such as the CAAP as an education school admission test and setting the 50th percentile as the appropriate cut-score.

Improve the content preparation of elementary teacher candidates

Texas' attempt to ensure appropriate content preparation at teacher preparation programs through its regulations regarding "interdisciplinary academic majors" has been ineffective.

NCTQ recommends a simpler alternative. Shore up the existing weaknesses in the current standards for elementary content preparation[120] and require that every elementary teaching candidate take at least 18 credit hours of coursework which could lead to a major in one discipline.

Eliminate the cap on professional coursework credits

Because Texas' definition of "professional coursework" is very narrow, this cap may not reduce the total number of required preparation courses so much as cause some aspects of preparation to be overemphasized and others to receive short shrift. To prevent education coursework requirements from creeping upward, we recommend: 1) an honest accounting of all courses addressing vital areas of professional preparation (methods, child development, classroom management, assessment, special education and education policy challenges) and 2) a state mandate demanding that programs with excessive requirements show measurably superior results.

Modify the middle school generalist certification

As currently designed, the middle school (grades 4-8) generalist certification, a popular option offered in just over a third of the education schools in this study, is untenable.[121] Those seeking to teach in grades 5 and 6 could instead pursue an elementary generalist certification. But the state should never license teachers for grades 7 or 8 who have not taken adequate coursework and separately demonstrated their knowledge of each of the four subjects they will teach.

120 As discussed in *NCTQ's State Teacher Policy Yearbook 2009* (http://www.nctq.org/stpy09/reports/stpy_texas.pdf), Texas should consider additional specificity regarding its standards in literature and world history in particular and structure its licensing test so that it reports passing scores. It should also allow teacher candidates to test out of core coursework requirements so that qualified candidates may pursue other course selections and not be forced to retake survey courses they may have already had in high school.

121 We have been told that this strange certification spanning elementary and middle school grades was conceived for the least sensible reason imaginable: to have the three certification grade spans (elementary, middle and secondary) all cover the same number of grades regardless of the fact that Texas does not organize its schools in this way.

Fix composite certifications

Either the state should eliminate its high school science and social studies certifications, or institute stand-alone tests for each subject for which licensing is provided so long as the level of rigor in the new tests is at least as rigorous as that of the current licensing tests.[122] As the tests stand now, a secondary teacher candidate with little knowledge of economics, for example, could answer all 16 economics questions on the social studies licensing test incorrectly and still be issued a license allowing him or her to teach economics in Texas' high schools. In contrast, **Georgia** now requires that secondary teachers (grades 6-12) who wish to be certified in social studies pass stand-alone tests in each subject they will teach: history, economics, geography and political science.[123] **Texas State University – San Marcos**' social studies certification program, which requires a major in history, political science or geography and 15 hours each in the other two fields, shows that rigorous preparation in multiple subjects is possible.

Use licensing tests to drive reform

Only teachers with sufficient knowledge of the content they teach can adequately support students through the challenging instruction that we increasingly expect in our schools. Tests have their drawbacks, but they are the best means available to provide information on the content knowledge of Texas teachers. Texas licensing tests can generally be improved by:

- Ensuring rigor, which is now lacking in the content test at the elementary level.
- Scoring all subjects separately and developing cut-scores for each subject.[124]
- Indicating publicly what percentage of questions answered correctly is represented by each cut-score.
- Periodically releasing full tests for public review.

The most important first step is to move to stand-alone licensing tests in reading and mathematics for elementary and special education teacher candidates. Currently, almost half of Texas' elementary teacher preparation programs are ignoring Texas regulations on preparing elementary teachers in the science of reading. The nation's mathematics deficiencies have been well documented, a problem that undoubtedly begins with elementary teachers' own lack of knowledge in mathematics.[125] The most effective means to enforce the regulations are to create and require rigorous stand-alone licensing tests that assess understanding of the science of reading and elementary mathematics topics.

122 The National Task Force on Certification in Physics has recently issued a report urging states to "remove general science teacher certification and replace it with endorsements in individual subject areas." *National Task Force on Certification in Physics: Report Synopsis*, January 28, 2010, American Association of Physics Teachers. http://www.aapt.org/aboutaapt/reports/upload/PTEC_Task_Force_Report.pdf

123 Information on Georgia's licensing tests can be found at http://www.gace.nesinc.com/

124 At least one other state (Florida) is moving toward an elementary licensing test that is capable of also providing separate scores for English/language arts, social studies and science. Texas should do the same.

125 NCTQ's national study on the mathematics preparation of elementary teachers discusses this and can be found at http://www.nctq.org/p/publications/docs/nctq_ttmath_fullreport_20090603062928.pdf

For examples of regulatory frameworks that ensure that elementary teachers are prepared to teach the science of reading, Texas should look to **Virginia**, **California**, **Connecticut** or **Massachusetts**.[126] For an example of a regulatory framework in mathematics, **Massachusetts** offers the only viable model.[127]

INSTITUTIONALLY BASED REMEDIES

1. **Adopt exit standards,**
2. **Improve elementary mathematics preparation,**
3. **Teach the science of reading,** and
4. **Improve content preparation.**

Adopt exit standards

Nothing prevents education programs or a consortium of education programs from developing and administering exit assessments of appropriate rigor in the areas in which current licensing tests are deficient. We would argue that any teacher preparation program that continues to offer certification programs for which current licensing tests are inadequate without requiring its own exit tests is not doing its part to improve teacher quality. We recommend that the Texas programs with exemplary ratings on reading and mathematics preparation programs take the lead in obtaining and administering suitable reading pedagogy and elementary mathematics exit tests.

Improve elementary mathematics preparation

Texas can also ensure that mathematics preparation of elementary teachers is improved by specifying the nature of coursework that preparation programs should offer by requiring three mathematics courses addressing elementary and middle school topics and one mathematics methods course focused on elementary topics — numbers and operations, in particular.[128] **Massachusetts** is also a model for developing a regulatory framework that accomplishes these goals in the area of mathematics preparation, with extensive regulatory guidance (and a rigorous, stand-alone mathematics test).[129]

126 Only a very small number of licensing tests actually verify teacher candidates' knowledge of the science of reading. Stotsky, S. (2006). Why American students do not learn to read very well: The unintended consequences of Title II and Teacher Testing. *Third Education Group Review*, 2(2); and Rigden, D. W. (2006). *Report on licensure alignment with the essential components of effective reading instruction*. Washington, D.C.: Reading First Teacher Education Network.

127 The guidelines can be found at Massachusetts Dept. of Education, *Guidelines for the Mathematical Preparation of Elementary Teachers* (June 2007), p. 4: http://www.doe.mass.edu/mtel/MathGuidance.pdf. Sample test items can be found at http://www.mtel.nesinc.com/PDFs/MA_FLD003_SubtestII_PRACTICE_TEST.pdf

128 NCTQ's national study on the mathematics preparation of elementary teachers can be found at http://www.nctq.org/p/publications/docs/nctq_ttmath_fullreport_20090603062928.pdf. Resources for instructors teaching elementary content mathematics courses for elementary teacher candidates can be found at http://www.nctq.org/resources/math/

129 The guidelines can be found at Massachusetts Dept. of Education, *Guidelines for the Mathematical Preparation of Elementary Teachers* (June 2007), p. 4: http://www.doe.mass.edu/mtel/MathGuidance.pdf. Sample test items can be found at http://www.mtel.nesinc.com/PDFs/MA_FLD003_SubtestII_PRACTICE_TEST.pdf

Teach the science of reading

Teacher preparation programs should take the following steps to improve reading preparation for both elementary and special education teacher candidates:

- Build faculty expertise in the science of reading
- Ensure that the overall program design allows for sufficient and proper coverage of scientifically based reading instruction, with a coordinated sequence of teacher training in reading.
- Provide guidance to help instructors select strong textbooks from the vast number of available options.

Improve content preparation

College administrators, liberal arts department chairs and education program administrators should configure general education and education program requirements to cover the broad liberal arts preparation required by elementary teachers, with requirements for coursework that can be skipped to account for teacher-candidate strengths or targeted to correct weaknesses.

As an operating principle, 80 percent of non-education courses should be taught by permanent liberal arts faculty.

Appendices

Appendix A: Findings from NCTQ's State Teacher Policy Yearbook 2009

Texas' state's regulatory framework provides important context for the focus of this paper. Most of the state regulatory weaknesses that we discuss in this report are explored in more detail in NCTQ's State Teacher Policy Yearbook 2009 (www.nctq.org/stpy). The following summarizes findings relevant to this study.

- Texas lags in developing a data system that can be used to provide evidence of teacher and teacher preparation program effectiveness. The capacity to link data on student academic growth to teacher preparation programs will not be available before 2012.
- Current standards for teacher preparation programs related to their graduates' passage rates on licensure exams are not meaningful measures of program performance. This situation will soon change to provide more meaningful measures. In spring 2009, the state passed legislation requiring programs to report not only pass rates on licensure tests but also: participants' satisfaction with the training and support received in the program, including their preparedness to teach upon completion; program completers' impact on K-12 student learning; retention rates for program completers; employer satisfaction data.
- NCTQ notes positively that Texas requires that approved undergraduate teacher preparation programs only accept teacher candidates who have passed a basic skills test and that the state sets the minimum score for this test.
- Commendably, Texas requires that teacher preparation programs prepare elementary teacher candidates to teach to the state's elementary student standards. However, NCTQ notes that it is quite hard to monitor or enforce these standards, absent a licensing test that 1) is directly aligned to state student learning standards; and 2) reports teacher performance in each subject area, so that teachers cannot fail a subject area or two and still pass the test.
- Texas properly requires that teacher preparation programs address the science of reading. However, as will be discussed, the licensing test used to assess proficiency in reading instruction is structured so as to make it possible to answer many of the reading questions incorrectly and still pass the test.
- While NCTQ endorses the Texas requirement that elementary education candidates take at least nine semester credit hours of mathematics, we observe that the state specifies neither the requisite content of these classes nor that they must meet the needs of elementary teachers. Also, as with reading, it may be possible to fail the mathematics portion of the licensing test and still pass the test.
- Because Texas does not monitor the number of credit hours that preparation programs require, it is difficult to ensure efficient delivery of content to teacher candidates.

- Texas allows new teachers who have satisfied all requirements for the initial teacher certification, except the examination requirements, to teach under a nonrenewable permit for no more than one year. The state also allows teachers who have not met licensure requirements to teach under an emergency permit for up to three years.
- Texas's requirements do not ensure that special education teachers are prepared to teach content-area subject matter due to a variety of failures related to mandates regarding subject matter preparation, the nature of licensure tests and the fact that dual certification (in which special education teachers must attain licensure in both special education and a specific subject area) is not required.
- Commendably, Texas requires all new teachers to pass a pedagogy test based on its own standards.
- Lastly, NCTQ notes positively that Texas does not require its teacher preparation programs to attain national accreditation in order to receive state approval, nor does it allow them to substitute national accreditation for state program approval.

Appendix B: Study chronology and communications

June 2008 — NCTQ begins analysis

NCTQ begins a study of the preparation of elementary and special education teacher candidates in reading and mathematics in undergraduate teacher preparation programs. NCTQ identifies which higher education institutions in the state offer approved programs for preparing such teachers at the undergraduate level. Using course catalogues, NCTQ identifies required courses relevant to the study and begins collecting syllabi directly from Texas campuses or asking students at those institutions to provide them in exchange for about $25 per syllabus. **See attached letter from NCTQ**

October 2008-May 2009 — Confirmation of course requirements

Letters seeking confirmation that NCTQ has identified the correct coursework in reading and mathematics preparation of elementary and special education teacher candidates are sent to all but three programs.[1] Thirty-one of 64 programs do not respond to any of these confirmation requests. Only one institution raises any concerns or objections. **See attached letter from NCTQ**

March 2009-September 2009 — Collection of missing syllabi

To obtain syllabi that we have not been able to otherwise collect, NCTQ sends letters to 27 college or university presidents and one dean in March 2009,[2] followed by open records requests for syllabi sent to presidents of public institutions in May 2009. We make follow-up emails and phone calls. Twenty-one of the 27 programs respond, providing the missing syllabi.

June 2009 — Study scope expanded

In order to address a broader range of teacher preparation issues, NCTQ expands the initial scope of the study to include additional standards beyond those pertaining to the preparation of elementary and special education teachers in reading and mathematics. Because the data needed for these additional standards do not include syllabi, NCTQ does not inform institutions of this decision until fall 2009 when preliminary ratings are provided.

October 29, 2009[3] — Preliminary ratings released to institutions

All education schools are sent preliminary ratings on all standards with a comprehensive explanation of our ratings methodology. We ask that institutions review the ratings for accuracy and provide to us by November 27, 2009 any data that might not be reflected in our analysis. Institutions are also invited to submit a 200-word response to their ratings for publication as a general comment in our report. This deadline is subsequently extended to January 4, 2010. Sixty-four of the 67 education schools do not respond to the invitation to review the ratings and/or provide any additional data not reflected in our analysis. **See attached letter from NCTQ**

1 LeTourneau University, Rio Grande College of Sul Ross State University and the University of Houston – Clear Lake were inadvertently not sent requests for course confirmation.

2 We suspended our attempts to collect syllabi from nine colleges or universities which each account for less than one percent of the annual production of elementary teachers by undergraduate teacher preparation programs.

3 Postmark date; letter is dated October 27, 2009

November 24, 2009 — **TACTE response**

The Texas Association of Colleges of Teacher Education (TACTE) responds to the October preliminary ratings by issuing a joint statement signed by all but five of the 67 programs. (See attached letter.) Of the signatories, 57 also send us individual letters reiterating some or all of the points made in the joint letter, with the understanding that the letters constitute the 200-word comments which we had offered to print in the report. (These letters can be found at the conclusion of each institution's rating sheet.) Of the 57 deans who send individual letters, 42 ask to be withdrawn from the study, requests that are not honored. (NCTQ's response to all comments and the request to be withdrawn from the study can be found in Appendix C of the report.) **See attached first letter from TACTE**

December 9, 2009 — **NCTQ communication with college presidents**

With the exception of the presidents of the three education schools which did respond to the preliminary ratings reports, we send a letter to college or university presidents informing them that their education school's dean has not responded to our solicitations. We ask for the president's assistance to facilitate communication. Two presidents respond favorably, but in only one case does the dean of the education school contact us. **See attached letter from NCTQ**

January 4, 2010 — **Deadline for responding to preliminary ratings**

One additional institution elects to respond to the invitation to review the ratings and provide to us any data not reflected in our analysis, bringing the total such institutions to four of 67.

February 22, 2010 — **Communication with non-responsive deans**

The 63 education schools that have not responded to the October preliminary ratings are sent a letter informing them of the report's release date and indicating that a copy of a second, refined set of ratings is available for review upon request. Six institutions request copies of the refined ratings and one of the six provided review and comment; 57 schools of 63 do not respond. **See attached letter from NCTQ**

March 17, 2010 — **Communication from TACTE**

TACTE's executive committee sends a second letter to NCTQ claiming that any refinement of ratings from their preliminary status raises additional questions of credibility and does not follow accepted research standards.

NCTQ's response to all comments can be found in Appendix C of the report. **See attached second letter from TACTE**

APRIL 29, 2010 — **REPORT RELEASE**

For more information about NCTQ's teacher preparation studies, please see FAQs posted on our website: http://www.nctq.org/p/response/evaluation_faq.jsp

National Council on Teacher Quality

SAMPLE COURSE REQUIREMENT CONFIRMATION LETTER

December 10, 2008

(address)

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and and Melinda Gates Foundation
Laura Schwalbe
KIPP: Star College Prep Charter School
Daniel Willingham, *University of Virginia*

Dear _____:

NCTQ is a nonprofit and nonpartisan organization dedicated to increasing the number of effective teachers in the United States by advocating for systemic reforms of the teaching profession. We are currently undertaking a study that includes [NAME OF INSTITUTION]. This study analyzes the preparation to teach [READING/READING AND MATHEMATICS/MATHEMATICS] provided to elementary candidates in undergraduate teacher preparation programs in Texas.

The purpose of this letter is to give you an opportunity to review the information that we have gathered and which will form the basis of our analysis of your institution and to identify any errors in fact or interpretation. By January 7, 2009 we ask that you complete and return the enclosed checklist.

We have used the information from your website and course catalog to ascertain the *required* coursework in [THIS/THESE] areas. (By *required* we mean coursework that must be taken by all prospective teachers in your elementary program to meet [GENERAL/SPECIAL] program requirements, regardless of any area of concentration.) Because requirements can change, ***we request that you verify on the enclosed checklist whether each course listed is in fact required.*** If we missed any required courses, please add those that are missing.

In addition to examining your catalog for course requirements, we have obtained syllabi and required textbooks and course packets for all of the listed courses that we considered relevant to our study. ***We welcome any additional materials you or the course instructors would like to supply that you feel are necessary to a comprehensive understanding of your coursework, such as tests, final exams, assignments or lecture notes.***

A self-addressed, stamped envelope is enclosed to return your checklist response. You can also fax the checklist to us at 202.393.0095 or email an

1420 New York Avenue NW, Suite 800, Washington DC 20005
tel 202.393.0020 - fax 202.393.0095 - www.nctq.org

electronic copy to jgreenberg@nctq.org. If you do not return the completed checklist by January 7th, **we will assume that our listing of course requirements is correct.**

Please feel free to contact me at 202.393.0020 or jgreenberg@nctq.org if you have any questions. I encourage you to visit our website (http://www.nctq.org/p/) to learn more about us.

Thank you for your cooperation!

Sincerely,

Julie Greenberg
Study Director

National Council on Teacher Quality

LETTER OF INTRODUCTION FOR SYLLABUS COLLECTOR

January 2009

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Michael Goldstein
The Match School, Massachusetts
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Ellen Moir, *New Teacher Center*
Robert H. Pasternack, *Shoreview Inc.*
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Michelle Rhee
District of Columbia Public Schools
Stefanie Sanford
Bill and Melinda Gates Foundation
Laura Schroeder
KIPP: Sun College Prep Charter School
David Willingham, *University of Virginia*

To Whom It May Concern:

This letter provides an introduction to <name who is assisting the National Council on Teacher Quality (NCTQ), a nonpartisan research and advocacy organization located in Washington, DC. On behalf of NCTQ, <name> is traveling to colleges and universities inTexas, collecting syllabi for mathematics and reading courses required of prospective elementary teachers.

NCTQ is dedicated to increasing the number of effective teachers in the United States by working on systemic reform of the teaching profession. In particular, we are committed to bringing greater transparency to the three sets of institutions that have the greatest impact on teacher quality: state government, colleges of education, and teachers unions.

NCTQ is currently undertaking a study to better understand the mathematics and reading preparation provided by undergraduate programs in Texas to future elementary teachers. One aspect of this study involves the collection of syllabi and purchase of textbooks used in these courses in all colleges and universities with undergraduate teacher preparation programs. We hope to learn how programs differ and the range of mathematics content and instruction on reading methods that prospective teachers encounter during preparation.

We do not reference any syllabus in the study in a manner that allows for identification of the course or program for which it is relevant unless we have obtained permission to do so from its author. Further, as we are aware that professors have spent much time and effort to design their courses, we collect syllabi only for purposes of our own evaluation and will not release them to any individual person or organization for any other purpose. The ownership rights of instructors will be fully protected.

NCTQ is dedicated to fair research that is backed by empirical evidence. To that end, your cooperation in the data collection stage of the project is greatly needed and appreciated. If you have any questions or concerns, please feel free to contact us directly (kwalsh@nctq.org or 202-393-0020). We certainly welcome any comments and feedback you might have as we proceed.

Most sincerely,

Kate Walsh
President

1420 New York Avenue NW, Suite 800, Washington DC 20005
tel 202.393.0020 · fax 202.393.0095 · www.nctq.org

National Council on Teacher Quality

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Daniel Willingham, *University of Virginia*

COVER LETTER FOR MAILING OF PRELIMINARY RATINGS

October 27, 2009

<address block>

Dear <name>:

As you are aware from earlier correspondence, the National Council on Teacher Quality (NCTQ) is currently conducting a study of undergraduate teacher preparation programs in Texas at the request of members of the Texas legislature. The study will be released in December 2009. The purpose of this letter is to provide as a courtesy to you the results of our analysis for your institution.

Should you feel that any of our findings are in error, you are welcome to submit any additional materials or information. Please direct any additional materials or questions to me at nctqtexas@nctq.org or 202/393-0020 no later than Friday, November 27, 2009.

Ratings for each of the 67 Texas colleges or universities in our study, including <institution>, will be displayed on separate pages in our final report. Each rating page will be divided into sections covering:

- Overall rating and ratings of the elementary and secondary preparation programs
- Admissions standards
- Elementary teacher program
- Secondary teacher program
- Special education teacher program (if applicable)
- Outcomes
- Institutional features
- Exit standards

Attached sheets provide <institution>'s draft rating for standards in each of these sections. Ratings are based on data available from catalogues and other materials on <institution>'s website, syllabi, textbooks and surveys. A guide to ratings methodologies is also attached.

We also invite you to submit a comment to me at nctqtexas@nctq.org -- whether agreeing or dissenting with our findings—that will be published in our final report. As we are on deadline for publication, we need to receive these comments no later than Friday, November 27, 2009. While we will make every effort to include comments in their entirety, we cannot guarantee that comments exceeding 200 words can be printed in full. We reserve the right to edit comments exceeding that length or for editorial consistency.

Thank you for your cooperation.

Sincerely,

Julie Greenberg
Study Director

1420 New York Avenue NW, Suite 800, Washington DC 20005
tel 202.393.0020 · fax 202.393.0095 · www.nctq.org

LETTER FROM THE TEXAS ASSOCIATION OF COLLEGES FOR TEACHER EDUCATION

November 24, 2009

Julie Greenburg
National Council on Teacher Quality
1341 G Street NW, Suite 720
Washington, DC 20005

Dear Ms. Greenburg:

This letter is written on behalf of the Texas Association of Colleges for Teacher Education (TACTE). Our organization is comprised of deans of education at both public and private universities throughout the State of Texas. The primary goal of the TACTE is to promote effective teaching and quality education through efforts to improve teacher education, the teaching profession, and schools. We work in harmony with the objectives of the American Association of Colleges for Teacher Education (AACTE) and the member teacher preparation institutions as they apply in and for the State of Texas. Specifically, this letter is in response to the NCTQ's study of teacher preparation programs in Texas.

The TACTE has a strong record of embracing accountability measures. The standards used by the NCTQ to evaluate our programs are not in alignment with state and national criteria that constitute accepted best practice for education preparation programs. The NCTQ did not inform the institutions about the procedures or standards that would be used in the study and employed unethical procedures. As a result, this study would not have been approved by an Institutional Review Board at any university as meeting federal guidelines for research with human subjects. Moreover, the study does not recognize accreditation of our programs by the Southern Association of Colleges and School (SACS), the Texas Education Agency (TEA), the Texas Higher Education Coordinating Board (THECB), the National Council for Accreditation of Teacher Education (NCATE), the Teacher Education Accreditation Council (TEAC), and others.

All of my colleagues listed below and those on the subsequent pages are in explicit agreement with the content of this letter.

Sincerely,

M.J.Rosato

Dr. Michael J. Rosato
Howard Payne University
TACTE President

Dr. John Miazga
Angelo State University
TACTE President Elect

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University of Mary Hardin-Baylor
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Dr. Donna Townsend
Southwestern Assemblies of God

Dr. Michael Kamen
Southwestern University

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Sul Ross University - Alpine

Dr. Barbara Tyler
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Dr. Jill Burk
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Dr. Humberto Gonzalez
Texas A&M International University

Dr. Doug Palmer
Texas A&M University

Dr. Brent Mangus
Texas A&M University – Commerce

Dr. Albert Ruiz
Texas A&M University - Kingsville

Dr. Glenda Ballard
Texas A&M University, Texarkana

Dr. Mary Patton
Texas Christian University

Dr. Catherine Thuita
Texas College

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Dr. Eddie Henderson
West Texas A&M University

Dr. Robert Watkins
Wiley College

National Council on Teacher Quality

SAMPLE LETTER TO COLLEGE OR UNIVERSITY PRESIDENTS

December 9, 2009

<address block>

Dear <name>:

The National Council on Teacher Quality (NCTQ), a nonpartisan and nonprofit organization dedicated to the systemic improvement of the teaching profession, is currently engaged in a study of 67 undergraduate teacher preparation programs in Texas, including that of <institution>. You are likely aware that <dean's name> has decided not to cooperate with this study, by declining to respond to our preliminary analysis mailed to him on October 27, 2009. The preliminary analysis was made available to him in order to correct any errors of fact or interpretation that we may have made.

My purpose in writing to you is to enlist your support in ensuring that our final report, scheduled for a late winter release, presents <institution>'s teacher preparation program accurately.

<dean's name> has joined colleagues from other teacher preparation programs in Texas in signing a joint letter that discredits the study, though this study is still to be written. That letter (attached here), sponsored by the Texas Association of Colleges of Teacher Education (TACTE), spells out their fundamental objections to our study. We address those objections in turn here.

The deans have stated that they should be allowed to opt out of this study, a request we are not in a position to honor. We do not ask education schools to volunteer their participation in these studies because these programs are publicly accountable, be they public or private institutions, having been approved to license public school teachers for the state of Texas. Further, anyone familiar with basic research principles will understand that a study premised on self-selection will produce biased results.

A central complaint made by the deans is that their obligation to comply with Texas laws and regulations makes it impossible to meet NCTQ's set of standards. However, *not one of our 26 standards conflicts with what an institution is required currently by law, regulation or accreditation standards to do*. As evidence, our preliminary findings found programs across the state meeting or nearly meeting our standards, with the exception of two standards—clearly without violating any law. The two standards which no institution appears to have met (pending confirmation of our analysis) would require that an institution go beyond current state licensing requirements to *exceed* them, something any program has the prerogative to do.

In fact, though not pointed out by the deans, several of our standards speak directly to Texas regulations. One of our most troubling preliminary findings is the high number of programs in the state that appear to be out of compliance with Texas state regulations requiring programs to prepare teachers in scientifically based reading instruction.

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On another issue, the deans assert that we have not adhered to standard research protocol, including approval by an Institutional Review Board. However, this study does not require approval by an IRB, as none of our standards are assessed using data collected from human subjects or produce results that reflect on human subjects. All of our work is based on review of institutional artifacts -- catalogues, syllabi, textbooks, schedules, etc.--and rates only *institutional* features.

Numerous deans have asserted that they were unaware of the study until the preliminary analysis was sent on October 27th. Beginning well over a year ago, most deans have heard from us formally at least two, and more often three times, in addition to informal contact through email or phone conversations.

Assertions made by deans about our methods have been troubling, particularly a charge that we have no intention of allowing institutions to make corrections to their preliminary ratings. I am providing you with the letter sent on October 27th to your dean in which we clearly state that we are providing a set of preliminary findings to be reviewed, corrected, revised or enhanced by the institution.

NCTQ's reputation is based on the quality of our work; it is simply not in our interest to put out a report that is not as accurate as possible. For this study, we are adhering to the same highly regarded process we use in our examinations of state policy (the *State Teacher Policy Yearbook*), giving states the opportunity to make corrections and even publishing their dissenting opinions.

As the Texas legislature just passed a law which will soon require increased accountability of teacher preparation programs in the state (SB 174), it is our hope that this study will provide important guidance to programs about their practice and serve as a useful tool, preceding the actual reviews undertaken by state officials. There are a number of deans in the state who have elected to participate, citing that they feel this process to be helpful to them. By providing us with documents and details, our analysis will be stronger and a more accurate reflection of their institutions.

You may have additional questions about how we collect data or any other aspect of our evaluation, which I would be more than happy to address. Please feel free to contact me at kwalsh@nctq.org or at 202/393-0020 ext. 100 with any questions or concerns.

Sincerely,

Kate Walsh
President

Attachments:
Letter sponsored by TACTE
October 27th letter to <dean's name>.

National Council on Teacher Quality

SAMPLE LETTER CONCERNING FINAL DRAFT RATINGS

February 22, 2010

<address block>

Dear <name>:

As you are aware, the National Council on Teacher Quality (NCTQ), a nonpartisan research and advocacy group committed to restructuring the teaching profession, is surveying undergraduate teacher preparation programs in Texas. The report on our findings will be released in early spring 2010. The report will include evaluations of the 67 institutions that have been included from the study's inception, notwithstanding the indication by many institutions that they wish not to participate.

You may have already submitted a letter to us that is intended to be published as a comment in our report. We wanted to provide you with one more opportunity to submit a letter if you have not done so already, or to submit a new letter that substitutes for the one submitted in November. The deadline for submission is Wednesday, March 17, 2010. Comments can be mailed to Julie Greenberg, Study Director, sent to jgreenberg@nctq.org or faxed to 202/393-0095.

Based on comments regarding our standards and methodology, as well as some adjustment of our standards to reflect Texas' regulations, we have refined several of the ratings we provided to you in preliminary form in late October. New ratings for your institution and a revised guide to our methodology are available for review upon request. Please contact Julie Greenberg at jgreenberg@nctq.org by Wednesday March 2, 2010 if you wish to obtain these materials for your review.

Sincerely,

Kate Walsh
President

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LETTER FROM THE TEXAS ASSOCIATION OF COLLEGES FOR TEACHER EDUCATION

March 17, 2010

Julie Greenburg
National Council on Teacher Quality
1420 New York Ave, NW, Suite 800
Washington, DC 20005

Dear Ms. Greenburg:

This letter is from the Executive Committee of the Texas Association of Colleges for Teacher Education (TACTE) and is written on behalf of our organization. As you are aware, TACTE is comprised of deans of education at both public and private universities throughout the State of Texas. This letter is in response to the Kate Walsh letter dated February 22, 2010 sent to TACTE members regarding the revisions to the current NCTQ study of undergraduate teacher preparation programs in Texas.

Ms. Walsh states in her letter, "Based on comments regarding our standards and methodology, as well as some adjustment of our standards to reflect Texas' regulations, we have refined several of the ratings we provided you in preliminary form in late October." While we appreciate the fact that you have heard our collective voice regarding serious concerns about the methodology of the study, making changes while conducting the study only raises additional questions of credibility as this course of action does not follow accepted research standards. The study was, unfortunately, destined to fail from the onset because of design shortcomings and lack of straightforward collaboration with state agencies and respective universities. As a result, our membership, with rare exception, has indicated its intent not to participate in your study.

You will also note that all of the teacher preparation programs in the study are accredited by the Southern Association of Colleges and School (SACS) and the Texas Education Agency (TEA); many are accredited by the National Council for Accreditation of Teacher Education (NCATE) or the Teacher Education Accreditation Council (TEAC); and, all public universities are regulated by the Texas Higher Education Coordinating Board (THECB). Finally, many programs are accredited by specific professional organizations as well.

Sincerely,

M.J.Rosato

Dr. Michael J. Rosato
Howard Payne University
TACTE President

Dr. John Miazga Angelo State University TACTE President Elect	Dr. Marlene Zipperlen University of Mary Hardin-Baylor TACTE Treasurer	Dr. Joyce Hardin TACTE Executive Secretary
Dr. Perry Kay Haley-Brown McMurry University TACTE Secretary	Dr. Jon Engelhardt Baylor University ACSR Representative	

cc: Kate Walsh, TACTE Members

Appendix C: NCTQ'S response to comments from the deans of Texas education schools

Some Texas education school deans, through letters sent by the TACTE (Texas Association of Colleges of Teacher Education) on their behalf and through letters from the deans themselves (the latter now printed in or available through links in the rating sheets), had much to say about this study after being presented with preliminary ratings of their schools. A compilation of those comments is found below, followed by an NCTQ response:

Ed School Comment: Texas education schools are accredited by the Texas Education Agency (TEA) and other groups so the NCTQ study is unnecessary.

NCTQ response: Our results show otherwise and speak for themselves. Self-reports to TEA and evaluations performed for accreditation have not revealed, for example, that 45 percent of the 56 institutions for which we could evaluate reading preparation of elementary teacher candidates provide virtually no instruction on the science of reading despite explicit Texas regulations requiring such instruction.

In some cases, NCTQ produces new information about the design of teacher preparation because we look at aspects of design that other groups, including government regulators, and national and regional accreditors do not. For example, a number of Texas education schools are accredited by NCATE (National Council for Accreditation of Teacher Education), an organization whose standard on admissions requires that institutions must have multiple criteria that are clearly described and well-advertised. NCATE does not specify, however, what these criteria must be. In contrast, NCTQ gives its top rating in admissions only to institution that accept teacher candidates who are in the top half of the college-going population.

Ed School Comment: Texas education schools have evidence of the outstanding performance of their graduates so NCTQ's evaluations are meaningless.

NCTQ response: In fact, beyond anecdotal evidence, education schools can't know much about how well their graduates are performing because firewalls in Texas have kept student performance data and teacher identification information separate. Even so, it's hard to believe that whatever their performance level might be, it couldn't be improved. Certainly the 31 Texas school superintendents who signed a letter of support for our study believe that the information we provide on the design of teacher preparation programs will be valuable in the hiring process.

Ed School Comment: Texas laws and regulations make it impossible to meet NCTQ standards.

NCTQ response: While Texas laws and regulations make it difficult to get a perfect rating on two of the 25 standards (Standards 22 and 25, on exit from elementary and special education programs), the fact that one or more public education schools — which are the most heavily regulated — still manage to be rated as meeting or nearly meeting all but two of our standards indicates that this argument is specious. As for the two standards on which every education school in Texas received a failing grade, the issue isn't that Texas laws and regulations prohibit meeting our standard; the issue is simply that education schools believe that the minimal standards set by the state should not be exceeded by programs seeking to produce teacher candidates of a higher caliber.

Ed School Comment: NCTQ standards don't align with "best practices"

NCTQ response: While there have been many general charges about the quality of the standards, we have yet to hear a single complaint about a specific standard. No institution has communicated to us which of our 25 standards would not be considered "best practice." We would welcome such a debate.

The standards that we have applied in our evaluation were developed over five years of study and are the result of the best available research and contributions made by leading thinkers and practitioners from not just all over the nation, but also all over the world. The assertion that they are not in alignment with "accepted best practice for education preparation programs" is unsupported.

Ed School Comment: Collaboration on this study would have been futile. NCTQ had no intention of changing its preliminary ratings.

NCTQ response: In fact, in the case of each of the five education schools that provided feedback on ratings (four did so in November 2009, one did so in March 2010), we did change one or more ratings and were happy to do so.

Ed School Comment: NCTQ did not communicate as it should have with the TEA and the Texas Higher Education Coordinating Board. NCTQ did not communicate as it should have with education schools.

NCTQ response: NCTQ met with TEA officials repeatedly after we had completed the first stage of this project. However, this was not primarily an evaluation of Texas teacher preparation policy and regulation, but of Texas education schools.

As for communication with education schools, the timeline and nature of our extensive communication is outlined here in **Appendix A**. In terms of collaboration, we did not do the following: 1) we did not consult with education schools, our research subjects, about what standards we would be using to analyze their programs (although we regret not informing them in summer 2009 about the study's expansion to include its current standards); and 2) we did not give schools an option not to participate. Recognizing that there is a difference of viewpoints here, we did not believe discussion of either of these points would have benefitted the quality of the study. With regard to the second issue, any obligation to allow research subjects to decide not to participate is relevant only to individuals, not to institutions, especially not institutions offering publicly approved programs preparing public school teachers for the classroom.

Ed School Comment: NCTQ doesn't conduct research properly.

NCTQ response: The criticisms we've heard in Texas about the way we conduct research are coming straight from a shared script being used across the country by other education schools. The first charge is that we don't get our research approved by an "Institutional Review Board" or IRB, a group that ensures the protection of human subjects in experiments. However, research such as that conducted in Texas, which simply collects archival documents (like syllabi) doesn't need IRB approval.

Then there's the charge that we changed our methodology in the course of the study, violating professional research protocol. In fact, the changes we made refined our preliminary ratings in a way that benefitted the vast majority of

education schools. We planned on refining our ratings as we conducted the study because Texas is a field trial for a larger national study we intend to undertake. We are field testing for the first time 17 standards not previously applied in other field trials. Accordingly, we learned a lot and adjusted accordingly.

There is no professional research protocol that prohibits us from revising or withdrawing standards as we learn what does or does not work. That is the point of a field trial. Were we not as responsive to the changes that were needed, schools would be judged unfairly, an unacceptable option.

Lastly, education schools have claimed that several data collectors engaged in unethical data collection practices. We believe this criticism refers to our sending individuals to individual campuses to collect syllabi. We chose to do this in the Texas study and others to ensure that we obtained the same syllabi as teacher candidates received, but we have since discontinued this data collection strategy because we have developed a methodology that allows us to be comfortable with relying on syllabi obtained from education school administrators.

Ed School Comment: NCTQ is behind the times…we need to evaluate outputs from, not inputs to, teacher preparation.

NCTQ response: We certainly advocate for increased development and use of reliable and valid output data, especially outcome data on teacher preparation, that is, data on how the performance of graduate's students. (Note that success rates of teacher candidates on licensing tests are not comparable as measures of outcomes.) Two of our standards deal directly with the performance of an institution's graduates and we learned from them that it is a rare school of education in Texas that collects such data in any sort of systematic way.

Once output data on the effectiveness of a program's graduates becomes more available, however, it's not clear that we'll learn as much as is hoped. We'll certainly know more about the effectiveness of one education school relative to others. We'll know who is doing a better job in reading or mathematics relative to others. But we won't learn what value education schools should be adding relative to the highest possible performance standards.

Appendix D: Evaluating overall design for special rating designations

The process by which ratings on standards were used to determine whether an institution was designated as having "strong overall design" or was designated as one for which there is "attention needed" is described below:

1. Design grades were computed for each program: elementary, secondary, special education:

Elementary Program Design Grade

Standard	Weight of rating in standard
Extent to which the science of reading is covered	.30
Adherence to science of reading throughout coursework	.05
Prepares teacher candidates to teach mathematics	.20
Educates teacher candidates in the broad content areas relevant to elementary teaching	.10
Requires an area of concentration so that teacher candidates develop content expertise and have a second career option	.05
Offers all courses at least once a year	.05
Systematically seeks and uses feedback on graduates from school districts and utilizes available data systems to monitor performance of graduates	.05
Assigns faculty to teach in their area of expertise	.05
Offers grade-span specific coursework as appropriate	.05
Elementary exit standard	.10

Secondary Program Design Grade

Standard	Weight of rating in standard
Prepares high school teacher candidates to teach their subject area(s)	.30
Prepares middle school teacher candidates to teach their subject area(s)	.30
Offers all courses at least once a year	.05
Systematically seeks and uses feedback on graduates from school districts and utilizes available data systems to monitor performance of graduates	.05
Assigns faculty to teach in their area of expertise	.05
Offers grade-span specific coursework as appropriate	.05
Middle school exit standard	.10
Secondary exit standard	.10

Special Education Program Design Grade

Standard	Weight of rating in standard
Prepares teacher candidates to teach early reading	.50
Prepares teacher candidates to teach elementary mathematics	.30
Offers all courses at least once a year	.05
Systematically seeks and uses feedback on graduates from school districts and utilizes available data systems to monitor performance of graduates	.05
Special education exit standard	.10

2. A final Institutional Elementary, Institutional Secondary and Institutional Special Education grade was then computed by weighting the design grade for each program (.80) with the institution's rating on the admissions standard (.20).

3. An Overall Institutional Design grade was computed by weighting each of the final institutional program grades by the proportion of the institution's teachers that are produced in each program. For example, if an institution had an Institutional Elementary grade of 2 (on a scale of 0-4), an Institutional Secondary grade of 1.5, and an Institutional Special Education grade of 2.5, with each of its three programs producing 25 teachers, its Overall Institutional Design grade would be computed as follows:

   2 (25/75) + 1.5 (25/75) + 2.5 (25/75) = 2

   Where 75 is the total number of teachers produced in the institution.

4. Institutions received a designation of "strong overall design" if their Overall Institutional Design grade was 3 or above (a "B" grade or above on a 4-point grading scale).

5. Institutions received a designation of "attention needed" if their Overall Institutional Design grade was less than 2 (below a "C" grade), with a score of 1.5 or below (a "D+" grade or below) in any institutional program grade AND the relevant program produced 50 or more teachers in 2009.

Appendix E: Glossary of terms used to describe teacher preparation coursework and programs

The following terms are used in this report to describe coursework, making their definitions useful:

Academic subject area coursework: Coursework offered by the colleges of arts and sciences rather than the education school (or in the case of institutions with an education department, by subject area departments). Note that Texas uses this term to refer to coursework that might be considered "professional" or "pedagogical" by others (such as a course on reading or on children with special needs), as well as courses addressing the content of the K-12 curriculum (such as a biology course). The loose definition of this term in Texas creates a considerable problem for easily interpreting the purpose of a course.

Clinical coursework: Also known as "field work," it is coursework in which teacher candidates observe, tutor or teach in a K-12 classroom.

Composite certification area: Certification to teach any subject in a group of related disciplines. For example, composite certification in "science" encompasses biology, chemistry, physics and earth sciences.

Content coursework: Coursework in academic disciplines that comprise the K-12 curriculum, such as mathematics and social studies.

Dual subject certification area: Certification to teach either of two different subjects, such as mathematics and computer science.

General audience coursework: Coursework whose audience is both teacher candidates and non-teacher candidates.

General education coursework: Coursework satisfying college or university core curriculum requirements.

Methods coursework: Coursework on instructional strategies, techniques and materials.

Professional coursework: Any coursework required by a teacher preparation program except for teacher audience content courses, e.g., "Mathematics for Elementary Teachers." (Note: This is a broader definition of "professional coursework" than is used in Texas regulations because it includes, for example, courses on reading or on children with special needs.)

Single subject certification area: Certification to teach only one subject.

Teacher audience coursework: Coursework intended only to be taken by teacher candidates.

Appendix F: Evaluation of elementary content coursework

More on elementary content coursework requirements

Ideally, all prospective elementary teachers would graduate from high school with ample content knowledge and be prepared for non-survey coursework that explores a particular topic at the level of depth traditionally associated with higher-level education. This would enable them, for example, to demonstrate mastery of the biology covered in a freshman biology course and allow them to select a biology elective if they cared to do further study in the area. Unfortunately, this is not the case with many prospective elementary teachers and the coursework they take in their first two years of college represents the last opportunity to augment their content knowledge.

On the other hand, with the advent of Advanced Placement and International Baccalaureate programs in high schools, many students graduate with the content knowledge normally associated with high school as well as demonstrated mastery of the content in introductory college coursework.

How should education programs fairly handle the content preparation of prospective teachers at both ends of this spectrum? The most sensible approach for an education program is to ensure that the combination of general education and education program requirements ensure that prospective elementary teachers are enrolled in the appropriate coursework with provision made for placing out of such requirements with appropriately focused assessments, and selection among related courses (for example, ancient and modern world history) with an eye to remedying areas of the greatest deficiency.

Evaluating elementary content coursework

We looked for coursework in the following areas:

- World, British or American literature: A survey course that focuses on a substantial collection of recognized masterpieces of the world, British or American literary heritage.[1]
- Writing, grammar, and composition: A course addressing the composing process in expository, argumentative, descriptive and narrative modes in writing paragraphs and essays. The course should include review of the rules of traditional grammar.
- Children's literature: A course addressing the origins and development of literature for children, major works and illustrators, distinctive genres, social issues addressed in children's literature today, and uses of children's literature in the elementary curriculum.
- American history: Two courses, one course typically covering American history up to the Civil War and the second a post-bellum course, or alternatively, an American government course.
- World history – ancient or modern: A course providing general narratives of all major civilizations in either ancient or modern times.[2]

1 Not only is content knowledge in both these areas essential, but it is impossible for one course to fully cover either world or American literature. Course selection should be designed to fill the teacher candidate's greatest areas of content weakness in literature.

2 Course selection should be designed to fill the teacher candidate's greatest areas of content weakness in world history.

- World cultures, religions w/geography: A course that analyzes the world from a geographic perspective emphasizing the unique qualities of world regions, the spatial interaction of people, elements and regions, and major regional and global problems and prospects. The course should address languages, religions, customs, cultural diffusion, geography and related topics.
- Music history: A course that addresses specific terminology in describing musical parameters such as melody, rhythm, harmony and form, and musical characteristics of each historical style period in Western classical music, as well as several popular and world music styles.
- Art history: A course covering the basic terms, facts, and concepts in art history; comprehension of the progress of art as fluid development of a series of styles and trends that overlap and react to each other as well as to historical events; and recognition of the basic concepts inherent in each style and the outstanding exemplars of each.
- Science: Full credit is awarded for two courses in the fundamentals of physics, chemistry, biology and/or geology or for survey courses such as "Physical Science," "Life Science," or "Earth Science." Ideally the courses should be in different subjects and include labs.[3]

Examples of coursework that were considered in our evaluation to be adequate follow. **Deficiencies in a content area were noted if either 1) no coursework was required in that content area or 2) course descriptions for required coursework led us to conclude that the coursework appeared inadequate**. In some cases, we gave credit for a combination of coursework that covered several subjects.

For example, the following course descriptions were evaluated for their coverage of the topic of world, British or American literaature. The first appears to describe a course that adequately addresses the topic while the second does not because it is too specialized:

> **Major American Writers.** Employing the theme that a nation's literature is a reflection of a nation's history, we will read a selection of works in a variety of genres by major American authors. We will touch upon major literary periods in chronological order.
>
> **The Literature of the American South**. An examination of the major writers of this region and their sometimes gothic vision of a decaying society. Authors may include Warren, Welty, O'Connor, McCullers, Williams, Faulkner, and Dickey.

Sample course descriptions for appropriate courses:

> World or American literature
> *Sample course description:*
>
> > **World Literature I.**
> > A course designed to develop familiarity and appreciation of literary masterpieces from the ancient world to the Renaissance. Emphasis is on the literature of Hebrew, Greek and Roman cultures and the literary evolution within the Renaissance period. Emphasis is on the development of various genres.

3 Course selection should be designed to fill the teacher candidate's greatest areas of content weakness in the sciences.

Writing, grammar, and composition
Sample course description:

English Composition I and II.
A review of grammar, punctuation, and spelling with intensive practice in writing a short essay. Readings in literature and practice writing the long expository paper, including the library research paper.

Children's literature
Sample course description:

Children's Literature.
A survey course of the outstanding authors and illustrators in the field of children's literature, of folk tales, myths, fables, fantasy, poetry, and biography, with a multi cultural approach to ensure that the literature and accomplishments of all ethnic groups will be included.

American history
Sample course description:

American Civilization I.
Beginning with the advent of European man in the new world, the course surveys the Colonial period, the Revolution, the shaping of the federal union, westward expansion, the slavery controversy, and closes with the Civil War. Texts studied include Benjamin Franklin's Autobiography, Thomas Jefferson's Summary View of the Rights of British America, the Declaration of Independence, the Constitution, selections from The Federalist Papers, The Seneca Falls Declaration of Sentiments and Resolutions, and Frederick Douglass's Narrative.

World history – ancient or modern
Sample course description:

World Civilization II.
Treatment of political, intellectual, social, and economic developments from the Commercial Revolution to the present.

World cultures, religions w/geography
Sample course description:

World Regional Geography.
An introduction to the field of geography. The course examines the physical and cultural geography of the world's regions with an emphasis on the five fundamental themes of geography.

Music history
Sample course description:

Survey of Music.
Music in western civilization including music fundamentals and a brief history from antiquity to the present. Presented by recordings, visuals, and lectures.

Art history
Sample course description:

Art and Society.
Designated for non-art majors. Establishes a working vocabulary for evaluating works of art in various media. Objects are interpreted in terms for their specific historical contexts and the changing relationships between art and society.

Science
Sample course description:

Principles of Biology.
Introductory course dealing with the basic principles applicable to all living organisms. Includes the study of ecological concepts and the structure and function of the various kingdoms within the ecosystem. Specific groups examined will include bacteria, fungi, algae, plants, and animals, with an overview of the human body systems. Cell structure and function, and genetics will also be examined.

Appendix G: Ratings for required reading textbooks and information on reading textbook reviewers

Author	Title	Rating
Aaron, P.G.; Joshi, R. Malatesha; Quatroche, Diana	*Becoming a Professional Reading Teacher*	Acceptable core
Allan, Karen Kuelthau; Miller, Margery Staman	*Literacy and Learning in the Content Areas: Strategies for Middle and Secondary School Teachers (2nd ed)*	Not relevant
Allen, Janet	*Tools for Teaching Content Literacy*	Acceptable supplemental – comprehension
Allen, Janet	*Words, Words, Words: Teaching Vocabulary in Grades 4-12*	Acceptable supplemental – vocabulary
Allington, Richard L.	*What Really Matters for Struggling Readers: Designing Research-Based Programs (1st ed)*	Not acceptable supplemental
Allington, Richard L.; Walmsley, Sean A.	*No Quick Fix: Rethinking Literacy Programs in America's Elementary Schools (The RTI Edition)*	Not acceptable supplemental
Alvermann, Donna E.; Swafford, Jeanne; Montero, M. Kristiina	*Content Area Literacy Instruction for the Elementary Grades*	Acceptable supplemental – fluency, vocabulary, comprehension
American Psychological Association	*Publication Manual of the American Psychological Association (5th ed)*	Not relevant
Ames, Jimmy	*The Teaching of Reading: A Study Guide*	Not relevant
Anderson, Carl	*Assessing Writers*	Not relevant
Applegate, Mary DeKonty; Quinn, Kathleen Benson; Applegate, Anthony J.	*The Critical Reading Inventory: Assessing Students Reading and Thinking (2nd ed)*	Acceptable supplemental - assessment
Armbruster, Bonnie B.; Lehr, Fran; Osborn, Jean	*Put Reading First: The Research Building Blocks for Teaching Children to Read*	Acceptable supplemental – phonemic awareness, phonics, fluency, vocabulary, comprehension
Bader, Lois A.	*Bader Reading and Language Inventory with Reader's Passages and Graded Word Lists (5th ed)*	Not acceptable supplemental
Bader, Lois A.; Pearce, Daniel L.	*Bader Reading and Language Inventory (6th ed)*	Not acceptable supplemental
Barton, Linda	*Quick Flip Questions for Critical Thinking*	Not relevant
Bean, Thomas W.; Readence, John E.; Baldwin, R. Scott	*Content Area Literacy: An Integrated Approach (9th ed)*	Not acceptable supplemental
Bear, Donald R.; Invernizzi, Marcia; Templeton, Shane; Johnston, Francine	*Words Their Way: Word Study for Phonics, Vocabulary, and Spelling Instruction (3rd ed)*	Acceptable supplemental – phonics, vocabulary
Bear, Donald R.; Invernizzi, Marcia; Templeton, Shane; Johnston, Francine	*Words Their Way: Word Study for Phonics, Vocabulary, and Spelling Instruction (4th ed)*	Acceptable supplemental – phonics, vocabulary
Beaty, Janice J.	*50 Early Childhood Literacy Strategies (1st ed)*	Not acceptable supplemental
Beck, Isabel L.	*Making Sense of Phonics: The Hows and Whys*	Acceptable supplemental – phonics
Beers, Kylene	*When Kids Can't Read: What Teachers Can Do: A Guide for Teachers 6-12*	Not acceptable supplemental

Bennett-Armistead, V. Susan; Duke, Nell K.; Moses, Annie M.	*Literacy and the Youngest Learner: Best Practices for Educators of Children from Birth to 5*	Not relevant
Birsh, Judith R.	*Multisensory Teaching of Basic Language Skills (2nd ed)*	Acceptable core
Blevins, Wiley	*Phonics from A to Z: A Practical Guide (2nd ed)*	Acceptable supplemental – phonemic awareness, phonics
Block, Cathy Collins	*Literacy Difficulties: Diagnosis and Instruction for Reading Specialists and Classroom Teachers (2nd ed)*	Not acceptable supplemental
Block, Cathy Collins	*Teaching Language Arts: Expanding Thinking through Student-Centered Instruction (3rd ed)*	Not acceptable core
Boushey, Gail; Moser, Joan	*The Daily Five: Fostering Literacy Independence in the Elementary Grades*	Acceptable supplemental – fluency
Braunger, Jane; Lewis, Jan Patricia	*Building a Knowledge Base in Reading (2nd ed)*	Not acceptable supplemental
Bursuck, William D.; Damer, Mary	*Reading Instruction for Students Who Are at Risk or Have Disabilities*	Acceptable core
Caldwell, JoAnne Schudt; Leslie, Lauren	*Intervention Strategies to Follow Informal Reading Inventory Assessment: So What Do I Do Now? (1st ed)*	Acceptable supplemental – corrective reading
Caldwell, JoAnne Schudt	*Reading Assessment: A Primer for Teachers and Coaches (2nd ed)*	Acceptable supplemental – assessment
Carnine, Douglas W.; Silbert, Jerry; Kame'enui, Edward J.; Tarver, Stephanie G.; Jungjohann, Kathleen	*Teaching Struggling and At-Risk Readers: A Direct Instruction Approach*	Acceptable core
Carreker, Suzanne; Birsh, Judith R.	*Multisensory Teaching of Basic Language Skills Activity Book*	Acceptable supplemental – phonemic awareness, phonics
Cecil, Nancy Lee	*Striking a Balance: Best Practices for Early Literacy (2nd ed)*	Acceptable supplemental – phonemic awareness, phonics, vocabulary, comprehension
Cecil, Nancy Lee	*Striking a Balance: Best Practices for Early Literacy (3rd ed)*	Acceptable supplemental – phonemic awareness, phonics, fluency, vocabulary, comprehension
Chaille, Christine; Britain, Lory	*The Young Child as Scientist: A Constructivist Approach to Early Childhood Science Education (2nd ed)*	Not relevant
Christie, James F.; Enz, Billie Jean; Vukelich, Carol	*Teaching Language and Literacy: Preschool Through the Elementary Grades (3rd ed)*	Not acceptable core
Clay, Marie M.	*An Observation Survey of Early Literacy Achievement (2nd ed)*	Not acceptable supplemental
Clay, Marie M.	*An Observation Survey of Early Literacy Achievement (revised 2nd ed)*	Not acceptable supplemental
Clay, Marie M.	*Reading Recovery: A Guidebook for Teachers in Training*	Not acceptable supplemental
Clay, Marie M.	*Running Records for Classroom Teachers*	Not acceptable supplemental
Cohen, Vicki L.; Cowen, John Edwin	*Literacy for Children in an Information Age: Teaching Reading, Writing, and Thinking (1st ed)*	Not acceptable core
Cooper, J. David; Kiger, Nancy D.	*Literacy Assessment: Helping Teachers Plan Instruction (3rd ed)*	Acceptable core
Cooper, J. David; Kiger, Nancy D.	*Literacy: Helping Children Construct Meaning (5th ed)*	Not acceptable core
Cooper, J. David; Kiger, Nancy D.	*Literacy: Helping Children Construct Meaning (6th ed)*	Not acceptable core

Cooter, Robert B.; Flynt, E. Sutton; Cooter, Kathleen Spencer	*Comprehensive Reading Inventory: Measuring Reading Development in Regular and Special Education Classrooms*	Acceptable supplemental – assessment
Cox, Carole	*Teaching Language Arts: A Student- and Response-Centered Classroom (6th ed)*	Not acceptable core
Coyne, Michael D.; Kame'enui, Edward J.; Carnine, Douglas W.	*Effective Teaching Strategies that Accommodate Diverse Learners (3rd ed)*	Acceptable supplemental – phonemic awareness, phonics, fluency, vocabulary, comprehension
Crawley, Sharon J.; Merritt, King	*Remediating Reading Difficulties (1st ed)*	Not acceptable supplemental
Crawley, Sharon J.; Merritt, King	*Remediating Reading Difficulties (3rd ed)*	Not acceptable supplemental
Crawley, Sharon J.; Merritt, King	*Remediating Reading Difficulties (4th ed)*	Not acceptable core
Crawley, Sharon J.; Merritt, King	*Remediating Reading Difficulties (5th ed)*	Not acceptable supplemental
Cunningham, Patricia M.	*Phonics They Use: Words for Reading and Writing (4th ed)*	Not acceptable supplemental
Cunningham, Patricia M.	*Phonics They Use: Words for Reading and Writing (5th ed)*	Acceptable supplemental – phonics
Cunningham, Patricia M.; Allington, Richard L.	*Classrooms That Work: They Can All Read and Write (2nd ed)*	Not acceptable supplemental
Cunningham, Patricia M., Hall, Dorothy P.; Sigmon, Cheryl M.	*The Teacher's Guide to the Four Blocks: A Multimethod, Multilevel Framework for Grades 1-3*	Not acceptable core
Cunningham, Patricia M.; Moore, Sharon Arthur; Cunningham, James W.; Moore, David W.	*Reading and Writing in Elementary Classrooms: Research-Based K-4 Instruction (5th ed)*	Not acceptable core
Curzan, Anne; Adams, Michael	*How English Works: A Linguistic Introduction (2nd ed)*	Not relevant
DeVries, Beverly A.	*Literacy Assessment and Intervention for the Elementary Classroom*	Not acceptable core
Diamond, Linda; Thorsnes, B.J. (Eds.)	*Assessing Reading: Multiple Measures (2nd ed)*	Acceptable supplemental – assessment
Diller, Debbie	*Spaces and Places: Designing Classrooms for Literacy*	Not relevant
Dorn, Linda J.; French, Cathy; Jones, Tammy	*Apprenticeship in Literacy: Transitions Across Reading and Writing*	Acceptable supplemental – phonemic awareness, phonics, fluency, comprehension
Dow, Roger S.; Baer, G. Thomas	*Self-Paced Phonics: A Text for Educators (4th ed)*	Not acceptable supplemental
Duchan, Judith Felson; Hewitt, Lynn E.; Sonnenmeier, Rae M.	*Pragmatics: From Theory to Practice*	Not acceptable supplemental
Duffy, Gerald G	*Explaining Reading: A Resource for Teaching Content, Skills, and Strategies*	Not acceptable core
Ellery, Valerie	*Creating Strategic Readers: Techniques for Developing Competency in Phonemic Awareness, Phonics, Fluency, Vocabulary, and Comprehension*	Acceptable supplemental – fluency, vocabulary, comprehension
Ericson, Lita; Juliebo, Moira Fraser	*The Phonological Awareness Handbook for Kindergarten and Primary Teachers*	Acceptable supplemental – phonemic awareness
Faltis, Christian J.	*Teaching English Language Learners in Elementary School Communities: A Joinfostering Approach (4th ed)*	Not relevant
Fiderer, Adele	*Practical Assessments for Literature-Based Reading Classrooms*	Not acceptable supplemental
Fisher, Douglas; Frey, Nancy	*Improving Adolescent Literacy: Content Area Strategies at Work (2nd ed)*	Not relevant
Fletcher, Ralph; Portalupi, Joann	*Writing Workshop: The Essential Guide*	Not acceptable supplemental

Flippo, Rona F.	*Assessing Readers: Qualitative Diagnosis and Instruction (2nd ed)*	Not acceptable supplemental
Flynt, E. Sutton; Cooter, Robert B	*English-Español Reading Inventory for Classroom*	Not relevant
Flynt, E. Sutton; Cooter, Robert B	*Flynt-Cooter Reading Inventory for the Classroom (3rd ed)*	Not acceptable supplemental
Flynt, E. Sutton; Cooter, Robert B.	*Flynt-Cooter Reading Inventory for the Classroom (5th ed)*	Not acceptable supplemental
Fountas, Irene C.; Pinnell, Gay Su	*Guided Reading: Good First Teaching For All Children*	Not acceptable supplemental
Fountas, Irene C.; Pinnell, Gay Su	*Guiding Readers and Writers, Grades 3 - 6: Teaching Comprehension, Genre, and Content Literacy*	Not acceptable core
Fountas, Irene C.; Pinnell, Gay Su	*Teaching for Comprehending and Fluency: Thinking, Talking, and Writing About Reading, K-8*	Not acceptable core
Fox, Barbara	*Phonics for the Teacher of Reading (9th ed)*	Acceptable supplemental – phonemic awareness, phonics
Fox, Barbara J.	*Word Identification Strategies: Building Phonics into a Classroom Reading Program (4th ed)*	Acceptable supplemental - phonics
Fox, Barbara J.; Hull, Marion A.	*Phonics for the Teacher of Reading (8th ed)*	Acceptable supplemental – phonics
Fox, Mem	*Radical Reflections: Passionate Opinions on Teaching, Learning, and Living*	Not acceptable supplemental
Fox, Mem	*Reading Magic: Why Reading Aloud to Our Children Will Change Their Lives Forever (1st ed)*	Not relevant
Frandsen, Barbara	*Making a Difference for Students with Differences*	Not relevant
Frandsen, Barbara	*Yes! I Can Teach Literacy*	Not acceptable supplemental
Frey, Nancy; Fisher, Douglas	*Language Arts Workshop: Purposeful Reading and Writing Instruction*	Acceptable core
Frey, Nancy; Fisher, Douglas	*Reading for Information in Elementary School: Content Strategies to Build Comprehension*	Not acceptable supplemental
Frey, Nancy; Fisher, Douglas; Berkin, Adam	*Good Habits, Great Readers: Building the Literacy Community*	Acceptable supplemental – comprehension
Fromkin, Victoria A.; Rodman, Robert; Hyams, Nina	*An Introduction to Language (8th ed)*	Acceptable supplemental – general
Fry, Edward Bernard; Kress, Jacqueline E.; Fountoukidis, Dona Lee	*The Reading Teacher's Book of Lists (4th ed)*	Acceptable supplemental – phonemic awareness, phonics, vocabulary
Galda, Lee; Cullinan, Bernice E.	*Literature and the Child (6th ed)*	Not relevant
Gillet, Jean Wallace; Temple, Charles; Crawford, Alan	*Understanding Reading Problems: Assessment and Instruction (7th ed)*	Acceptable core
Giorgis, Cyndi; Glazer, Joan I.	*Literature for Young Children: Supporting Emergent Literacy, Ages 0-8 (6th ed)*	Not relevant
Gipe, Joan P.	*Multiple Paths to Literacy: Assessment and Differentiated Instruction for Diverse Learners, K-12 (6th ed)*	Not acceptable supplemental
Goodman, Kenneth S.	*On Reading*	Not acceptable core
Graves, Donald H.	*Testing Is Not Teaching: What Should Count in Education*	Not acceptable supplemental
Graves, Michael F., Juel, Connie; Graves, Bonnie B.	*Teaching Reading in the 21st Century (4th ed)*	Acceptable core
Gunning, Thomas G.	*Assessing and Correcting Reading and Writing Difficulties (2nd ed)*	Acceptable core
Gunning, Thomas G.	*Assessing and Correcting Reading and Writing Difficulties (3rd ed)*	Acceptable core

Gunning, Thomas G.	*Building Literacy in the Content Areas*	Acceptable supplemental – vocabulary, comprehension
Gunning, Thomas G.	*Creating Literacy Instruction for All Students (6th ed)*	Acceptable core
Hancock, Marjorie R.	*A Celebration of Literature and Response: Children, Books, and Teachers in K-8 Classrooms (3rd ed)*	Not relevant
Hansen, Jill	*Tell Me a Story: Developmentally Appropriate Retelling Strategies*	Acceptable supplemental – comprehension
Harp, Bill	*The Handbook of Literacy Assessment and Evaluation (3rd ed)*	Not acceptable supplemental
Harvey, Stephanie; Goudvis, Anne	*Strategies That Work: Teaching Comprehension to Enhance Understanding (1st ed)*	Acceptable supplemental – comprehension
Harvey, Stephanie; Goudvis, Anne	*Strategies That Work: Teaching Comprehension for Understanding and Engagement (2nd ed)*	Acceptable supplemental - comprehension
Heilman, Arthur W.	*Phonics in Proper Perspective (10th ed)*	Acceptable supplemental - phonics
Heilman, Arthur W.; Blair, Timothy R.; Rupley, William H.	*Principles and Practices of Teaching Reading (10th ed)*	Not acceptable supplemental
Herrell, Adrienne L.; Jordan, Michael	*Fifty Strategies for Teaching English Language Learners (3rd ed)*	Not relevant
Hill, Jane D.; Flynn, Kathleen M	*Fifty Strategies for Teaching English Language Learners (3rd ed)*	Not relevant
Honig, Bill; Diamond, Linda; Gutlohn, Linda	Teaching Reading Sourcebook (2nd ed)	Acceptable core
Honig, Bill; Diamond, Linda; Gutlohn, Linda; Mahler, Jacalyn	Teaching Reading Sourcebook: Sourcebook for Kindergarten Through Eighth Grade (1st ed)	Acceptable core
Hoyt, Linda	Revisit, Reflect, Retell: Strategies for Improving Reading Comprehension (1st ed)	Acceptable supplemental - comprehension
Hoyt, Linda	Spotlight on Comprehension: Building a Literacy of Thoughtfulness	Not acceptable supplemental
Hurley, Sandra Rollins; Tinajero, Josefina Villamil	*Literacy Assessment of Second-Language Learners*	Not acceptable supplemental
Idol, Lorna	*Reading Success: A Specialized Literacy Program for Learners with Challenging Reading Needs*	Not acceptable supplemental
Jennings, Joyce Holt; Caldwell, JoAnne; Lerner, Janet W	*Reading Problems: Assessment and Teaching Strategies (5th ed)*	Not acceptable core
Johns, Jerry L.	*Basic Reading Inventory: Pre-Primer Through Grade Twelve and Early Literacy Assessments (9th ed)*	Not acceptable supplemental
Johns, Jerry L.	*Basic Reading Inventory: Pre-Primer Through Grade Twelve and Early Literacy Assessments with Student Word Lists, Passages, and Early Literacy Assessments (10th ed)*	Not acceptable supplemental
Johns, Jerry L.; Lenski, Susan Davis	*Improving Reading: Strategies and Resources (4th ed)*	Acceptable supplemental – phonemic awareness, phonics, fluency, vocabulary, comprehension
Kasten, Wendy C.; Kristo, Janice V.; McClure, Amy A.	*Living Literature: Using Children's Literature to Support Reading and Language Arts*	Not relevant
Kenyon, John Samuel; Knott, Thomas Albert	*A Pronouncing Dictionary of American English*	Not relevant
Kristo, Janice V; Bamford, Rosemary A.	*Nonfiction in Focus: A Comprehensive Framework for Helping Students Become Independent Readers and Writers of Nonfiction, K-6*	Acceptable supplemental – general

Kuder, S. Jay	*Teaching Students with Language and Communication Disabilities (3rd ed)*	Acceptable supplemental – phonemic awareness
Lenski, Susan Davis; Nierstheimer, Susan L.	*Qualitative Reading Inventory - 4 (4th ed)*	Acceptable supplemental – comprehension, assessment
Leslie, Lauren; Caldwell, JoAnne	*Qualitative Reading Inventory - 4 (4th ed)*	Acceptable supplemental – comprehension, assessment
Leu, Donald J.; Kinzer, Charles K.	*Effective Literacy Instruction K-8: Implementing Best Practice (5th ed)*	Not acceptable core
Leu, Donald J., Kinzer, Charles K., Wilson, Robert M.; Hall, Mary Anne	*Phonics, Phonemic Awareness, and Word Analysis for Teachers: An Interactive Tutorial (8th ed)*	Not acceptable supplemental
Lukens, Rebecca J.	*A Critical Handbook of Children's Literature (8th ed)*	Not relevant
Lyon, Anna; Moore, Paula	*Sound Systems: Explicit, Systematic Phonics in Early Literacy Contexts*	Acceptable supplemental – phonics
Machado, Jeanne M.	*Early Childhood Experiences in Language Arts (7th ed)*	Not acceptable supplemental
Machado, Jeanne M.	*Early Childhood Experiences in Language Arts: Early Literacy (8th ed)*	Not acceptable supplemental
Machado, Jeanne M.	*Early Childhood Experiences in Language Arts: Early Literacy (9th ed)*	Not acceptable core
Manzo, Anthony V.; Manzo, Ula C.; Thomas, Matthew M	*Content Area Literacy: Strategic Teaching for Strategic Learning (5th ed)*	Acceptable supplemental – comprehension
Mariotti, Arleen Shearer; Homan, Susan P.	*Linking Reading Assessment to Instruction: An Application Worktext for Elementary Classroom Teachers (4th ed)*	Acceptable supplemental
Martin, Rodney	*Young Writer's Guide (1st ed)*	Not relevant
May, Frank E.	*Teach Reading Creatively: Reading and Writing as Communication (7th ed)*	Not acceptable core
McCarrier, Andrea; Pinnell, Gay Su; Fountas, Irene C.	*Interactive Writing: How Language & Literacy Come Together, K-2*	Not acceptable supplemental
McCormick, Sandra	*Instructing Students Who Have Literacy Problems (4th ed)*	Not acceptable core
McCormick, Sandra	*Instructing Students Who Have Literacy Problems (5th ed)*	Not acceptable core
McGee, Lea M.; Richgels, Donald J.	*Literacy's Beginnings: Supporting Young Readers and Writers (5th ed)*	Not acceptable core
McKenna, Michael C.; Stahl, Steven A.	*Assessment for Reading Instruction*	Not acceptable core
McNeil, John D.	*Reading Comprehension: New Directions for Classroom Practice (3rd ed)*	Acceptable supplemental – vocabulary, comprehension
Mercer, Cecil D.; Mercer, Ann R.	*Teaching Students with Learning Problems (7th ed)*	Acceptable core
Miller, Debbie	*Reading with Meaning: Teaching Comprehension in the Primary Grades*	Not acceptable supplemental
Miller, Wilma	*Strategies for Developing Emergent Literacy*	Not acceptable core
Moore, David W.; Moore, Sharon Arthur; Cunningham, Patricia M.; Cunningham, James W.	*Developing Readers and Writers in the Content Areas (5th ed)*	Not acceptable supplemental
Morris, Alana	*Vocabulary Unplugged: 30 Lessons That Will Revolutionize How You Teach Vocabulary K-12*	Acceptable supplemental - vocabulary
Morris, Darrell	*Diagnosis and Correction of Reading Problems*	Acceptable supplemental – assessment, corrective reading
Morrow, Lesley Mandell	*Literacy Development in the Early Years (5th ed)*	Not acceptable core

Morrow, Lesley Mandell	*Literacy Development in the Early Years: Helping Children Read and Write (6th ed)*	Not acceptable core
Nath, Janice L.; Ramsey, John	*Preparing for the Texas PreK-4 Teacher Certification: A Guide to the Comprehensive TExES Content Areas Exam*	Not relevant
Nath, Janice L.; Ramsey, John	*Preparing to Teach Texas Content Areas: The TExES EC-4 Generalist and the ESL Supplement*	Not relevant
National Reading Panel	*Report of the National Reading Panel: Teaching Children to Read*	Acceptable core
National Research Council	*Preventing Reading Difficulties in Young Children*	Acceptable core
Nelson, Katherine	*Language in Cognitive Development: The Emergence of the Mediated Mind*	Not relevant
Nettles, Diane Hood	*Comprehensive Literacy Instruction in Today's Classrooms: The Whole, the Parts, and the Heart*	Not acceptable core
Northwest Regional Educational Laboratory	*6+1 Trait Writing Scoring Continuum*	Not relevant
Norton, Donna E.	*The Effective Teaching of Language Arts (6th ed)*	Not acceptable core
Norton, Donna E.; Norton, Saundra E.	*Language Arts Activities for Children (5th ed)*	Not acceptable supplemental
Opitz, Michael F.	*Rhymes and Reasons: Literature & Language Play for Phonological Awareness*	Not acceptable supplemental
Opitz, Michael F.; Ford, Michael P.	*Do-able Differentiation: Varying Groups, Texts, and Supports to Reach Readers*	Not acceptable supplemental
Opitz, Michael F.; Ford, Michael P.	*Reaching Readers: Flexible and Innovative Strategies for Guided Reading*	Not acceptable supplemental
Osborn, Jean; Lehr, Fran; Hiebert, Elfrieda H.	*A Focus on Fluency*	Acceptable supplemental - fluency
Otto, Beverly	*Language Development in Early Childhood (2nd ed)*	Not acceptable supplemental
Owocki, Gretchen	*Literacy Through Play*	Not acceptable supplemental
Owocki, Gretchen	*Make Way for Literacy! Teaching the Way Young Children Learn*	Not acceptable supplemental
Peregoy, Suzanne F.; Boyle, Owen F.	*Reading, Writing and Learning in ESL: A Resource Book for Teaching K-12 English Learners (5th ed)*	Acceptable supplemental - general
Pinnell, Gay Su; Fountas, Irene C.	*When Readers Struggle: Teaching That Works*	Not acceptable core
Rasinski, Timothy; Padak, Nancy	*Effective Reading Strategies: Teaching Children Who Find Reading Difficult (3rd ed)*	Acceptable supplemental – fluency, comprehension
Readence, John E.; Bean, Thomas W.; Baldwin, R. Scott	*Content Area Literacy: An Integrated Approach (7th ed)*	Acceptable supplemental – vocabulary, comprehension
Reutzel, D. Roy; Cooter, Robert B., Jr	*Strategies for Reading Assessment and Instruction: Helping Every Child Succeed (2nd ed)*	Not acceptable supplemental
Reutzel, D. Roy; Cooter, Robert B., Jr	*Strategies for Reading Assessment and Instruction: Helping Every Child Succeed (2nd ed)*	Not acceptable supplemental
Reutzel, D. Roy; Cooter, Robert B.	*Strategies for Reading Assessment and Instruction: Helping Every Child Succeed (3rd ed)*	Acceptable supplemental – assessment
Reutzel, D. Ray; Cooter, Robert B.	*Teaching Children to Read: The Teacher Makes the Difference (5th ed)*	Not acceptable supplemental
Richardson, Judy S.; Morgan, Raymond F.; Fleener, Charlene	*Reading to Learn in the Content Areas (7th ed)*	Acceptable supplemental – vocabulary, comprehension
Robb, Laura	*Teaching Reading in Middle School*	Not relevant
Roe, Betty; Burns, Paul C.	*Informal Reading Inventory: Preprimer to Twelfth Grade (7th ed)*	Not acceptable supplemental

Roe, Betty D.; Ross, Elinor P.	*Integrating Language Arts Through Literature and Thematic Units*	Not relevant
Roe, Betty D.; Smith, Sandy H.; Burns, Paul C.	*Teaching Reading in Today's Elementary Schools (9th ed)*	Not acceptable supplemental
Roe, Betty D.; Stoodt-Hill, Barbara D.; Burns, Paul C.	*Teaching Reading in Today's Elementary Schools (9th ed)*	Not acceptable supplemental
Roe, Betty D.; Stoodt-Hill, Barbara D.; Burns, Paul C.	*Secondary School Literacy Instruction: The Content Areas (8th ed)*	Not relevant
Roe, Betty D.; Stoodt-Hill, Barbara D.; Burns, Paul C.	*Secondary School Literacy Instruction: The Content Areas (9th ed)*	Not relevant
Rosado, Luis A.	*The Best Test Preparation for the TExES: 101 Generalist EC-4*	Not relevant
Routman, Regie	*Conversations: Strategies for Teaching, Learning, and Evaluating*	Not acceptable core
Rubin, Dorothy	*Teaching Elementary Language Arts: A Balanced Approach (6th ed)*	Not acceptable core
Rubin, Dorothy; Opitz, Michael F.	*Diagnosis and Improvement in Reading Instruction (5th ed)*	Not acceptable supplemental
Ruddell, Robert B.	*How to Teach Reading to Elementary and Middle School Students: Practical Ideas from Highly Effective Teachers (1st ed)*	Not acceptable core
Savage, John F.	*Sound It Out! Phonics in a Comprehensive Reading System (3rd ed)*	Not acceptable supplemental
Serafini, Frank	*The Reading Workshop: Creating Space for Readers*	Not acceptable core
Serravallo, Jennifer; Goldberg, Gravity	*Conferring with Readers: Supporting Each Student's Growth and Independence*	Not acceptable core
Shanker, James L.; Cockrum, Ward A.	*Locating and Correcting Reading Difficulties (9th ed)*	Acceptable core
Shanker, James L.; Ekwall, Eldon E.	*Ekwall/Shanker Reading Inventory (4th ed)*	Acceptable supplemental – assessment
Shanker, James L.; Ekwall, Eldon E.	*Locating and Correcting Reading Difficulties (7th ed)*	Not acceptable supplemental
Sigmon, Cheryl Mahaffey	*Modifying the Four Blocks for Upper Grades: Matching Strategies to Students' Needs*	Not acceptable supplemental
Silvaroli, Nicholas J.; Wheelock, Warren H.	*Classroom Reading Inventory (10th ed)*	Not acceptable core
Sloan, Megan S.	*Trait-Based Mini-Lessons for Teaching Writing in Grades 2-4*	Not relevant
Small, Larry H.	*Fundamentals of Phonetics: A Practical Guide for Students (2nd ed)*	Acceptable supplemental – phonemic awareness
Smith, Frank	*Reading Without Nonsense (4th ed)*	Not acceptable core
Smith, John A.; Read, Sylvia	*Early Literacy Instruction: A Comprehensive Framework for Teaching Reading and Writing, K-3 (1st ed)*	Not acceptable supplemental
Soderman, Anne K.; Gregory, Kara M.; McCarty, Louise T.	*Scaffolding Emergent Literacy: A Child-Centered Approach for Preschool Through Grade 5 (2nd ed)*	Not acceptable core
Spandel, Vicki	*Creating Young Writers: Using the Six Traits to Enrich Writing Process in Primary Classrooms (2nd ed)*	Not relevant
Stieglitz, Ezra L.	*The Stieglitz Informal Reading Inventory: Assessing Reading Behaviors from Emergent to Advanced Levels (3rd ed)*	Not acceptable supplemental
Strickland, Dorothy S.; Schickedanz, Judith A.	*Learning About Print in Preschool: Working with Letters, Words, and Beginning Links with Phonemic Awareness*	Not relevant
Sweeney, Alyse	*Teaching The Essentials Of Reading With Picture Books: 15 Lessons That Use Favorite Picture Books to Teach Phonemic Awareness, Phonics, Fluency, Comprehension, and Vocabulary*	Acceptable supplemental – phonemic awareness, phonics, fluency, vocabulary, comprehension

Tama, M. Carrol; Haley, Anna McClain	*Guiding Reading and Writing in the Content Areas: Practical Strategies (3rd ed)*	Not acceptable supplemental
Taylor, Barbara; Harris, Larry A.; Pearson, P. David	*Reading Difficulties: Instruction and Assessment (2nd ed)*	Not acceptable supplemental
Temple, Charles A.; Ogle, Donna; Crawford, Allen N.; Freppon, Penny	*All Children Read: Teaching for Literacy in Today's Diverse Classrooms (2nd ed)*	Not acceptable core
Texas Education Agency	*Beginning Reading Instruction: Components and Features of a Research-Based Reading Program (2002 revised edition)*	Acceptable supplemental – phonemic awareness, phonics, fluency
Texas Education Agency	*Comprehension Instruction*	Acceptable supplemental – comprehension
Texas Education Agency	*The Dyslexia Handbook: Procedures Concerning Dyslexia and Related Disorders*	Acceptable supplemental – corrective reading
Texas Education Agency	*Essential Reading Strategies for the Struggling Reader: Activities for an Accelerated Reading Program (expanded edition)*	Acceptable supplemental – phonemic awareness, phonics, fluency, comprehension, corrective reading
Texas Education Agency	*Guidelines for Examining Phonics and Word Recognition Programs (2002 online revised edition)*	Acceptable supplemental – phonemic awareness, phonics
Texas Education Agency	*Promoting Vocabulary Development: Components of Effective Vocabulary Instruction*	Acceptable supplemental – vocabulary
Texas Education Agency	*Research-Based Content Area Reading Instruction*	Acceptable supplemental – fluency, vocabulary, comprehension
Texas Education Agency	*Texas Examination of Educator Standards Preparation Manual: 101 Generalist EC-4*	Not relevant
Texas Education Agency	*Texas Examination of Educator Standards Preparation Manual: 117 English, Language Arts, and Reading 4-8*	Not relevant
Texas Education Agency	*Texas Examination of Educator Standards Preparation Manual: 161 Special Education EC-12*	Not relevant
Tiedt, Pamela L.; Tiedt, Iris M.; Tiedt, Sidney W.	*Language Arts Activities for the Classroom (3rd ed)*	Not acceptable supplemental
Tierney, Robert J.; Readence, John E.	*Reading Strategies and Practices: A Compendium (6th ed)*	Not acceptable supplemental
Tompkins, Gail E.	*50 Literacy Strategies: Step by Step (1st ed)*	Acceptable supplemental – phonics, fluency, comprehension
Tompkins, Gail E.	*50 Literacy Strategies: Step By Step (2nd ed)*	Acceptable supplemental – phonics, fluency, comprehension
Tompkins, Gail E.	*50 Literacy Strategies: Step by Step (3rd ed)*	Acceptable supplemental – general
Tompkins, Gail E.	*Language Arts Essentials*	Not relevant
Tompkins, Gail E.	*Language Arts: Patterns of Practice (6th ed)*	Not acceptable core
Tompkins, Gail E.	*Language Arts: Patterns of Practice (7th ed)*	Not acceptable core
Tompkins, Gail E.	*Literacy for the 21st Century: A Balanced Approach (3rd ed)*	Not acceptable core
Tompkins, Gail E.	*Literacy for the 21st Century: A Balanced Approach (4th ed)*	Not acceptable core
Tompkins, Gail E.	*Literacy for the 21st Century: Teaching Reading and Writing in Pre-Kindergarten Through Grade 4 (2nd ed)*	Not acceptable core

Tompkins, Gail E.	*Teaching Writing: Balancing Process and Product (4th ed)*	Not relevant
Tompkins, Gail E.	*Teaching Writing: Balancing Process and Product (5th ed)*	Not relevant
Tompkins, Gail E.; Collom, Stephanie	*Sharing the Pen: Interactive Writing with Young Children*	Not relevant
Topping, Donna Hooker; Hoffman, Sandra Josephs	*Getting Grammar: 150 New Ways to Teach an Old Subject*	Not relevant
Topping, Donna Hooker; McManus, Roberta	*Real Reading, Real Writing: Content-Area Strategies*	Acceptable supplemental – comprehension
Tovani, Cris	*Do I Really Have to Teach Reading? Content Comprehension Grades 6-12*	Not relevant
Tunnell, Michael O.; Jacobs, James S.	*Children's Literature, Briefly (4th ed)*	Not relevant
Unrau, Norman	*Content Area Reading and Writing: Fostering Literacies in Middle and High School Cultures (2nd ed)*	Not relevant
University of Texas Center for Reading and Language Arts	*Introduction to the 3 Tier Reading Model: Reducing Reading Difficulties for Kindergarten Through Third Grade Students (4th ed)*	Acceptable supplemental – phonemic awareness, phonics, fluency, vocabulary, comprehension
University of Texas Center for Reading and Language Arts	*Special Education Reading Project, Elementary Institute, Parts I and II: Effective Instruction for Elementary Struggling Readers: Research-Based Practices*	Acceptable supplemental – corrective reading
Vacca, Jo Anne L.; Vacca, Richard T.; Gove, Mary K.; Burkey, Linda C.; Lenhart, Lisa A.; McKeon, Christine A	*Reading and Learning to Read (6th ed)*	Not acceptable core
Vacca, Jo Anne L.; Vacca, Richard T.; Gove, Mary K.; Burkey, Linda C.; Lenhart, Lisa A.; McKeon, Christine A.	*Reading and Learning to Read (7th ed)*	Not acceptable core
Vacca, Richard T.; Vacca, Jo Anne L.	*Content Area Reading: Literacy and Learning Across the Curriculum (9th ed)*	Not acceptable core
Vaughn, Sharon; Linan-Thompson, Sylvia	*Research-Based Methods of Reading Instruction: Grades K–3*	Acceptable supplemental – phonemic awareness, phonics, fluency, vocabulary, comprehension
Vukelich, Carol; Christie, James; Enz, Billie	*Helping Young Children Learn Language and Literacy: Birth Through Kindergarten (2nd ed)*	Acceptable supplemental – phonemic awareness, phonics
Walker, Barbara J.	*Diagnostic Teaching of Reading: Techniques for Instruction and Assessment (5th ed)*	Not acceptable supplemental
Weaver, Constance	*Reading Process and Practice (3rd ed)*	Not acceptable core
Wilde, Sandra	*Miscue Analysis Made Easy: Building on Student Strengths*	Not acceptable supplemental
Wilde, Sandra	*What's a Schwa Sound Anyway?: A Holistic Guide to Phonetics, Phonics, and Spelling*	Not acceptable supplemental
Wolfe, Patricia; Nevills, Pamela	*Building the Reading Brain, PreK-3*	Acceptable supplemental – corrective reading
Woods, Mary Lynn; Moe, Alden J.	*Analytical Reading Inventory (7th ed)*	Acceptable supplemental – fluency, vocabulary comprehension, assessment

Woods, Mary Lynn; Moe, Alden J.	*Analytical Reading Inventory: Comprehensive Standards-Based Assessment for All Students Including Gifted and Remedial (8th ed)*	Acceptable supplemental – phonics, fluency, vocabulary, comprehension
Wortham, Sue C.	*Assessment in Early Childhood Education (4th ed)*	Not relevant
Wren, Sebastian	*The Cognitive Foundations of Learning to Read: A Framework*	Acceptable supplemental – phonemic awareness, phonics
The Wright Group	*Guided Reading: A Practical Approach for Teachers*	Not acceptable core
Yule, George	*The Study of Language (3rd ed)*	Not relevant
Yopp, Hallie Kay; Yopp, Ruth Helen	*Literature-Based Reading Activities (4th ed)*	Acceptable supplemental – comprehension
Zarrillo, James	*Are You Prepared to Teach Reading?: A Practical Tool for Self-Assessment*	Not acceptable supplemental

Reading Textbooks Reviewers:

Marcia Davidson, Ph.D., is an Assistant Professor of Special Education at the University of Utah. Dr. Davidson directed an RCT study conducted in 2002-2003 addressing early literacy issues. She has published articles in The Journal of Research on Educational Effectiveness, The Journal of Educational Research, and co-authored a professional development text on reading fluency entitled Getting Up to Speed: Developing Fluency. She co-authored and was co-Principal Investigator for an IES contract evaluating an early literacy curriculum from 2003 – 2006. She has been a national LETRS (Language Essentials for Teachers of Reading and Spelling) trainer, providing professional development to teachers in many districts and states. She recently returned from a semester as a Fulbright Scholar during which she collaborated with colleagues in Slovakia to develop a proposal to provide early reading instruction to Romany children in kindergarten in Slovakia. She is an international consultant in reading and has worked on World Bank and US-AID early grade reading projects in Kenya and Liberia. Currently, she is the reading expert consultant for a large scale RCT study funded by US-AID in early reading and assessment in Liberia.

Deborah R. Glaser, Ed.D., received her doctorate in Curriculum and Instruction with specific focus on reading and school reform from Boise State University. She is an educational consultant and professional development provider with expertise in reading assessment and a vast knowledge of instructional methods derived from trusted research. During Dr. Glaser's many varied years in education she has experienced both elemenraty and middle school classroom and learning disability instruction and served as Director of Education of the Lee Pesky Learning Center, in Boise, Idaho, where she oversaw the development of remedial programs for individuals with dyslexia. She has assisted universities with the development of research based reading curricula and established training and consultation programs to support the success of state and National reading initiatives. Deborah was advisor to Idaho's Legislative Reading Committee and a principal author of Idaho's Reading Initiative.

Dr. Glaser is a National Trainer of the distinguished teacher curriculum Language Essentials for Teachers of Reading and Spelling. She consults with national policy institutes regarding quality reading instruction and teacher preparation, and assists schools and districts with the implementation of scientifically based reading programs and strengthening practitioners' collaborative efforts toward improved instruction and student reading abilities. Dr. Glaser is author of ParaReading: A Training Guide for Tutors and LETRS Foundations: An Introduction to Language and Literacy co-authored with Louisa Moats, Ed.D. Her most recent publication is Next STEPS in Literacy Instruction published by Paul Brookes Publishing Company.

Appendix H: Ratings for required mathematics textbooks and information on mathematics textbook reviewers

Textbook Scores

The following table summarizes the scores of textbooks used in Texas' undergraduate teacher preparation programs. The last lines (highlighted) of the table show the ratings of two highly recommended textbooks that are not used in the state.

Author	Textbook	Number and Operations (54 points possible)	Algebra (39 points possible)	Geometry (54 points possible)	Data Analysis and Probability (19 points possible)	**Total Score** (166 points possible)
Bassarear, Tom	*Mathematics for Elementary School Teachers(4th edition)*	21*	3*	33	19	**76**
Bennett, Albert; Nelson, Ted	*Mathematics for Elementary Teachers: A Conceptual Approach (6th edition)*	33	15	41	19	**108**
Billstein, Rick; Libeskind, Shlomo; Lott, Johnny	*A Problem Solving Approach to Mathematics for Elementary School Teachers (9th edition)*	35	33*[1]	50	19	**137**
Long, Calvin; DeTemple, Duane	*Mathematical Reasoning for Elementary Teachers (5th edition)*	29	5	47	19	**100**
Miller, Charles; Heeren, Vern; Hornsby, John	*Mathematical Ideas (11th edition)*	23	19	7*	19	**68***
Musser, Gary; Burger, William; Peterson, Blake	*Mathematics for Elementary Teachers: A Contemporary Approach (8th edition)*	45	16	45	19	**125**
O'Daffer, Phares; Charles, Randall; Cooney, Thomas; Schielack, Jane	*Mathematics for Elementary School Teachers (4th edition)*	36	5	44	19	**104**
Rubenstein, Rheta; Beckmann, Charlene; Thompson, Denisse	*Teaching and Learning Middle Grade Mathematics*	NA	16	NA	NA	**NA**
Sonnabend, Thomas	*Mathematics for Teachers: An Interactive Approach for Grades K-8 (3rd edition)*	33	0	44	19	**96**
Sowder, Judith; Larry, Sowder; Nickerson, Susan	*Reconceptualizing Mathematics*	23	9	30	19	**81**
Van de Walle, John[2]	*Elementary and Middle School Mathematics: Teaching Developmentally (5th edition)*	16	2	5	11	**34**
Wheeler, R.E; Wheeler, E.R.	*Modern Mathematics for Elementary Educators(11th edition)*	53	12	20	19	**104**

1 This score was misprinted in reports of earlier NCTQ studies as "38," but a score of 33 has been used in all studies for the purpose of rating coursework.

2 This is a methods textbook evaluated for content.

Beckmann, Sybilla	*Mathematics for Elementary Teachers (2nd edition)*	54*	29	48	19	**150**
Parker, Tom; Baldridge, Scott	*Elementary Mathematics for Teachers and Elementary Geometry for Teachers*	54*	24	54*	19	**151**

* Appendix D of our national report on mathematics preparation comments extensively on the section of this textbook that is indicated.

Mathematics Textbook Reviewers

Richard Askey, PhD, is an emeritus professor at the University of Wisconsin, where he has taught since 1963. He is a Fellow of the American Academy of Arts and Sciences and an Honorary Fellow of the Indian Academy of Sciences. He was elected to the National Academy of Sciences in 1999.

Professor Askey's research has primarily been in special functions, which are extensions of the functions studied in high school. In addition to many research papers, he coauthored what is now one of the standard books on special functions. More recently he has become involved in issues regarding mathematics education, and was on a plenary panel at the 10th International Congress on Mathematics Education.

He has reviewed many mathematics education reports both nationally and for various states. He was an Edyth May Sliffe Award winner for his work with high school students.

Dr. Askey received his undergraduate degree from Washington University, his master's degree from Harvard University, and his PhD from Princeton University.

Andrew Chen, PhD, is the President of EduTron Corporation. Before founding EduTron he was a physics professor and a principal research scientist at the Massachusetts Institute of Technology. He currently serves on the Mathematics and Science Advisory Council for the Massachusetts Board of Education.

Dr. Chen provides high quality professional development in mathematics and science to teachers at all levels in Intensive Immersion Institutes. He works with school districts and school administrators to increase their capacity to support excellent mathematics and science instruction. He also works with higher education institutions to develop rigorous and effective pre-service and in-service preparation in mathematics and science. He leads a group working closely with teachers and college professors to develop CLEAR Math, intelligent courseware now in use with very positive outcomes in more than 35 school districts in Massachusetts.

Dr. Chen continues to teach and do research in physics, He received a BA in physics from National Taiwan University, and a PhD in physics from Columbia University.

Mikhail Goldenberg, PhD, graduated from Odessa State University in 1961 with a master's degree in mathematics and mathematics education. He was a middle school and high school mathematics teacher for three years in Ukraine. He then moved to Russia where he received his PhD in Mathematics (Group Theory) in 1970 from Ural State University (Ekaterinburg). For many years (1964-1997) he was a professor of mathematics in South Ural State University (Chelyabinsk, Russia). His worked with advanced high school students (Chelyabinsk Litseum) and mathematics teachers (Institute for Teachers Advance).

Dr. Goldenberg came to the United States in 1997 and became a mathematics teacher for the Ingenuity Project sponsored by the Abell Foundation. He is now the mathematics department head and teaches all the high school mathematics courses. He has led the Ingenuity Math Club for 10 years, and is a part-time lecturer at Morgan State University.

Roger Howe, PhD, has been teaching and conducting research in the Mathematics Department at Yale University for over 30 years. He is currently the William Kenan Jr. Professor of Mathematics. His mathematical research concerns symmetry and its applications. He has held visiting positions at many universities and research institutes in the U.S., Europe and Asia. He is a member of the American Academy of Arts and Sciences and the National Academy of Sciences.

Dr. Howe devotes substantial attention to issues of mathematics education. He has served on a multitude of committees, including those for several of the major reports on mathematics education of the past decade. He has reviewed mathematics texts and other instructional materials at all levels, from first grade through college. He has served as a member and as chair of the Committee on Education of the American Mathematical Society. He served on the Steering Committee of the /Institute of Advanced Study/Park City Mathematics Institute, and has helped to organize a series of meetings at Park City devoted to increasing the contribution of mathematicians in mathematics education, especially refining understanding of the mathematical issues in K-12 mathematics curricula. He is currently a member of the U.S. National Committee on Mathematics Instruction. In 2006, he received the Award for Distinguished Public Service from the American Mathematical Society.

James Milgram, PhD, is an emeritus professor of mathematics at Stanford University where he has taught since 1970. He is a member of the National Board of Education Sciences – the presidential board that oversees the Institute for Education Research at the U.S. Department of Education. He is also a member of the NASA Advisory Council, and is a member of the Achieve Mathematics Advisory Panel as well as a number of other advisory boards. He was one of the members of the Common Ground Project that included Deborah Loewenberg Ball, Joan Ferrini-Mundy, Jeremy Kilpatrick, Richard Schaar, and Wilfried Schmid.

From 2002 to 2005, Dr. Milgram headed a project funded by the U.S. Department of Education that identified and described the key mathematics that K-8 teachers need to know. He also helped to direct a project partially funded by the Thomas B. Fordham Foundation that evaluated state mathematics assessments. He is one of the four main authors of the California mathematics standards, as well as one of the two main authors of the California Mathematics Framework. He is one of the main authors of the new Michigan and Georgia K-8 mathematics standards.

Among other honors, Dr. Milgram has held the Gauss Professorship at the University of Goettingen and the Regents Professorship at the University of New Mexico. He has published over 100 research papers and four books, as well as serving as an editor of many others. His main area of research is algebraic and geometric topology, and he currently works on questions in robotics and protein folding. He received his undergraduate and master's degrees in mathematics from the University of Chicago, and his PhD in mathematics from the University of Minnesota.

Yoram Sagher, PhD, is professor of mathematics at Florida Atlantic University and emeritus professor of mathematics at the University of Illinois, Chicago. He has written more than 55 research papers in Harmonic Analysis, Real Analysis, and Interpolation Theory. He has also written three research papers in mathematics education. Dr. Sagher directed ten doctoral dissertations in mathematics and one in mathematics education.

Dr. Sagher co-organized two international conferences in mathematics education: Numeracy and Beyond I, Pacific Institute for the Mathematical Sciences at the University of British Columbia, Vancouver, Canada, July 2003, and a follow-up conference, Numeracy and Beyond II, Banff, Canada, December 2004.

Dr. Sagher taught numerous continuing education courses for in-service elementary school and high school teachers in Chicago. He also created the course "Methods of Teaching High School Mathematics" at the University of Illinois, Chicago. The course serves as the capstone course for students preparing to become high school mathematics teachers.

Dr. Sagher developed highly effective teaching methods that, in combination with the Singapore mathematics textbooks, have produced outstanding results in elementary and middle schools from Boston to Los Angeles, including the Ingenuity Project in Baltimore and Ramona Elementary in Los Angeles.

Dr. Sagher is also interested in remedial mathematics education at the college level. He directed the doctoral dissertation of M.V. Siadat: "Building Study and Work Skills in a College Mathematics Classroom." For his work implementing the methods developed in that paper, Dr. Siadat was named "Illinois Professor of the Year" in 2005 by the Carnegie Foundation.

Dr. Sagher received his BS degree from the Technion, Israel Institute of Technology, and his PhD from the University of Chicago.

Appendix I: Texas A&M University – Commerce: Elementary Teacher Candidate Professional Preparation Coursework

Each of the following classes are 3 credit hours and none earns credit for a major other than education or psychology. They represent 75 of 121 hours required for EC-6 certification.

Texas A&M University – Commerce, 2009-2010 Undergraduate Catalog

Interdisciplinary Studies B.A.I.S./B.S.I.S.

Teacher Certification, EC-6 Generalist

Interdisciplinary courses (Note: All of these classes are only for teachers)

- HHPK 324 – Health and Kinesiology for Children
- IS 351 – Inquiry: Knowledge and Skills of Science
- IS 352 – Science Inquiry II
- ART 305 – Integrated Arts for Elementary Teachers **or** MUS 305 – Integrated Arts for Elementary Teachers **or** THE 305 – Integrated Arts for Elementary Teachers
- MATH 350 – Topics in Mathematics for Elementary Teachers I
- MATH 351 – Topics in Mathematics for Elementary Teachers II
- SPED 346 – Introduction to Exceptional Children

Specialization courses

- ECE 313 – Child Development: Early Years
- ECE 364 – Survey of Theories Influencing Childhood Development
- ECE 366 – Learning Environments
- ECE 460 – Early Childhood Curriculum

Professional Development courses

- ELED 200 – Schools and Society
- ELED 300 – Introduction to Teaching
- PSY 300 – Learning Processes and Development
- PSY 310 – Psychology and Sociology of Diverse Populations
- RDG 350 – Reading and Literacy I
- RDG 360 – Word Analysis Skills
- RDG 370 – Reading and Literacy II

Internship courses

- ELED 436 – Integrated Learning: Math in Field-Based Settings
- ELED 437 – Integrated Learning: Science in Field-Based Settings
- ELED 438 – Integrated Learning: Social Studies in Field-Based Settings
- RDG 448 – Planning and Organization in Literacy Instruction Throughout the Curriculum in Field Based Settings

Residency courses

- ELED 443 - Classroom Management for Teacher Candidates in Culturally Diverse Field-Based Settings
- ELED 452 - Student Teaching in Field-Based Teacher Education Programs (6 hrs)
- SPED 480 - Issues for Inclusion

Appendix J: Evaluation of professional preparation coursework

How we evaluated programs:

Based on catalog descriptions, we looked for evidence of coursework of the following types or addressing the following topics. If we cited a program as appearing to inadequately address one of these topics, it means that we either 1) found no course description mentioning the topic, or 2) the topic was mentioned in a course description, but the description assigned the topic a low priority.

As an example of the second situation just described, compare the descriptions shown below of courses evaluated for their coverage of the topic of classroom management. The first appears to describe a course that adequately addresses the topic while the second does not:

> **Discipline and Classroom Management.** This course describes what the prospective teacher can do to create a well-managed classroom, including planning in several key areas before the school year begins, implementing the plan and establishing good management at the beginning of the year, and maintaining the management procedures throughout the year.
>
> **Foundations of Early Childhood Education.** Historical, philosophical, sociological, psychological and research bases for programs for young children. Legislation for licensing, certification, handicapped children. Classroom management with emphasis on state public school curriculum for prekindergarten and kindergarten.

Elementary Teacher Preparation

Professional Coursework Topics

Mathematics methods, a full course devoted solely to elementary mathematics pedagogy. Courses should not cover mathematics and another subject, or mathematics at both the elementary and middle school level.

Sample course description:

> **Teaching Mathematics.**
> Application of content, materials, and instructional strategies in teaching elementary school mathematics. Field-based course.

Methods coursework (two to three courses) covering science, social studies and writing in some combination. Any one methods course might combine several subjects such as social studies, science, writing, art, music, or English for Language Learners (ELL), but science, social studies and writing methods should be prominently and specifically featured as topics of instruction. While we did not look for technology to be addressed in methods coursework, ideally the use of technology in instruction should also be addressed in conjunction with subject-specific pedagogy coursework.

Sample course descriptions

> **Combination of the following:**
> **Science in the Elementary School.**
> This course is concerned with the scope and sequence of the science curriculum for elementary school children. Students are given experience in lesson planning, in organizing units of instruction, in the use of instructional materials, and in laboratory methods appropriate to elementary school classrooms. Students observe and teach science lessons in an elementary classroom for a minimum of six hours.

Social Studies in the Elementary School.
In this course experience is provided in the selection and evaluation of teaching methods, unit and lesson planning, use of curriculum and audio-visual materials, and the preparation of instructional materials appropriate for social science content and skills at different elementary grade levels. Emphasis is placed on the unit approach to teaching social studies. Students observe and teach social studies lessons in an elementary classroom for a minimum of six hours.

Classroom Literature and the Writing Process.
This course includes an in-depth study of major areas of children's and adolescent literature and techniques for making use of that knowledge in extending students' skills in developmental reading. Extensive reading and examination of children's books (EC-8) and related materials are required. Students become familiar with the writing process as well as with English writing conventions. Students are given opportunities to write in a variety of forms and modes and for various purposes and audiences. This foundation in written communication better enables them to provide classroom instruction in the development of children's and adolescents' writing skills.

Child development, coursework covering child development and, in particular, information about the cognitive development and processes of children and how they impact instruction.

Sample course description:

Human Learning: Educational Application and Assessments.
Principles of psychological problems involved in education with emphasis on learning theories and the practical application of psychological principles to learning. Use of tests and assessments to improve instructional decisions.

Classroom Management: Coursework imparting effective behavioral strategies and the organization of the classroom and classroom activities necessary to make it possible for the class to be productive.[1]

Sample course description:

Discipline and Classroom Management.
This course describes what the prospective teacher can do to create a well-managed classroom, including planning in several key areas before the school year begins, implementing the plan and establishing good management at the beginning of the year, and maintaining the management procedures throughout the year.

Assessment: Coursework addressing the full range of teacher-directed and standardized assessment, fully exploring the functions and methodology of each and the means by which the teacher interprets both classroom test data and standardized test data to target instruction and remediation.

Sample course description:

Measurement and Evaluation.
This course is a study of the measurement and evaluation tools for the improvement of the teaching-learning process. The course includes a study of standardized tests, methods of measurement and evaluation and innovative means for assessing students' learning.

1 Another standard addresses whether the institution appropriately distinguishes the content specific to elementary and secondary teacher preparation programs.

Special Education: Coursework focusing on the nature of learning disabilities and other high incidence disabilities as well as instructional strategies for children with disabilities.[2]

Sample course description:

Introduction to Special Education.
This survey course presents case studies of students with special needs, historical perspectives of special education, recommended educational approaches, and current models and issues in special education. Field experiences in PK-12 public schools and various appropriate field placements required.

Education Policy Challenges: Coursework including discussion of contemporary reform themes in education policy (particularly the achievement gap, but also academic standards and other efforts to improve student achievement in the U.S.).

Sample course description:

The School in U.S. Society.
This course examines the dynamic nature of education in the United States. It is designed to introduce students to the historical influence of schools in the United States as well as help them understand current issues that are impacting the education of students in an increasingly diverse country. Multi-cultural understanding and the appreciation of cultural differences is a focus in this course. Practical application of theories to promote success for all students (bilingual, special education, regular education, and gifted) is emphasized in both classroom instruction and in the required fieldwork.

Secondary Teacher Preparation

Professional Coursework Topics

Reading: Generally coursework addressing strategies to boost reading comprehension while teaching content, but also other approaches to reading pedagogy as well.

Sample course description:

Reading In The Content Areas.
Students learn methods of helping learners to improve reading and study strategies in the content areas. Course topics include pre-reading strategies, vocabulary development, study skills, and reading and writing across the curriculum. This course is taken as a part of the student teaching block.

Subject-specific methods (one course for each area of subject specialization). The use of technology in instruction should also be addressed in conjunction with this subject-specific pedagogy coursework.

Sample course description:

Teaching the Social Studies in the Secondary School.
Methods, techniques, and evaluation procedures appropriate to teach various subjects in the area of social studies. Includes supervised practice in the selection of materials, visuals, and microteaching. Field-based course.

2 Another standard addresses whether the institution appropriately distinguishes the content specific to elementary and secondary teacher preparation programs.

Adolescent Development: Coursework that covers child development and in particular distills information about the cognitive development and processes of adolescents and how they impact instruction.

Sample course description:

Adolescent Development and Cognition.
This course focuses on theory of adolescent growth and development and its application in the classroom. The study of how adolescents learn and the conditions under which they learn best guide this course.

Classroom Management: Coursework in which topics such as the organization of the classroom to foster productivity and behavioral strategies are addressed.[3]

Sample course description:

Classroom Management Grades 8 – 12.
A systematic approach to managing the total classroom environment. Emphasis will be given to practical applications of the research in instructional design, instructional management, and strategies in behavioral management. The domains and competencies for the Pedagogy and Professional Development TExES are examined.

Assessment: Coursework that addresses the full range of teacher-directed and standardized assessment, fully exploring the functions and methodology of each and the means by which the teacher interprets both classroom test data and standardized test data to target instruction and remediation.

Sample course description:

Educational Evaluation.
An examination of assessment through reflec¬tive practice offers insight into the selection, construction, and implementation of assessments. Offers preservice and inservice teachers a responsive/interactive environment in which to explore what it means to assess in the context of teaching.

Special Education: Coursework focusing on the nature of learning disabilities and other high incidence disabilities as well as appropriate instructional strategies.[3]

Sample course description:

Instructional Methods for English Language Learners and Learners with Exceptionalities in High School.
Designed for prospective high school teachers, this field based course explores contemporary first and second language acquisition theories and theories of instruction as they relate to the special needs of English language learners (ELLs) and learners with exceptionalities in content area classrooms in high schools. Students will have the opportunity to learn to assess the special needs of students whose first language is not English and students who have exceptionalities (i.e., mild learning disabilities). They will also have the opportunity to learn to integrate research-based best practices for promoting literacy and language development in their teaching.

3 Another standard addresses whether the institution appropriately distinguishes the content specific to elementary and secondary teacher preparation programs.

Education Policy Challenges: Coursework focusing on contemporary reform themes in education policy (particularly the achievement gap, but also academic standards and other efforts to improve student achievement in the U.S.).

Sample course description:

Introduction to the Teaching.
This course introduces students to education in society by analyzing historical, social, political, economic, cultural, global and legal issues in education.

Appendix K: Sam Houston State University: Elementary Teacher Candidate Professional Preparation Coursework

Total: 67 hours Professional Preparation, not including 6 hours of student teaching

Sam Houston State University

Bachelor of Science in Interdisciplinary Studies
EC-6 Generalist

I. Academic Foundations (59 Hours) 9 hours Professional Preparation

3	ENG 164	(ENGL 1301)
3	ENG 165	(ENGL 1302)
3	ENG 200 Any	(ENGL 2000) Literature Based Only
3	MTH 184	(MATH 1350)
3	MTH 185	(MATH 1351)
4	PHY 135/115	(PHYS 1410)
4	GEL 134/114 or GEO131/111	(GEOL 1404)
4	BIO 146, or GEO 146, or GEL 146 or Integrated Science (Honors)	(No TCCN)
4	BIO or CHM or Integrated Science (Honors)	(BIOL 1409, or CHEM 1411)
3	EED 233*	(EDUC 1301)
3	BSL 236 – Multicultural Influences on Learning	(No TCCN)
3	HIS 163	(HIST 1301)
3	HIS 164	(HIST 1302)
3	POL 261	(GOVT 2301)
3	POL 285	(GOVT 2302)
3	PSY 131	(PSYC 2301)
3	MUS 161 or ART 160	(MUSI or ARTS 1301)
1	KIN 215	(KINE 1111)
3	SPD 231 – A Study of Emotional and Behavioral Disorders	(EDUC 2301)

II. Degree Specific Requirements (46 Hours) 43 hours Professional Preparation

3	MTH 381 (not included in professional preparation hours count)	
3	CNE 231 – Introduction to a Helping Relationship	
3	EED 374* – Human Growth and Learning	
3	EED 385* – Creating a Positive Learning Environment	
2	EED 323 – Curriculum Middle Grades	
2	ECE 323* – Curriculum for Early Childhood	
2	RDG 420 – Content Area Reading Grades EC-6	
3	ECE 273 – Early Childhood Cognition	(Prerequisite for All ECE courses)
3	ECE 275 – Infants, Toddlers and Young Children	
3	MLE 375 – The Middle Level Child	
3	SPD 390* – Learning and Instruction for Children with Disabilities	
3	BSL 333 – Language Acquisition Theory for Second Language Learners	
3	RDG 393 – Emergent and Beginning Literacy	

Literacy Methods Block Fall or Spring semester ONLY†

3 RDG 370* – The Teaching of Reading

3 RDG 390* – The Teaching of Language Arts

3 RDG 380 – Literacy Assessment and Instruction

1 ESL 314* – Integration of English Language Learning I

III. Professional Education Courses (21 Hours) 15 hours Professional Preparation

Content Methods Block†
Fall or Spring semester ONLY

3 EED 434* – Mathematics in the Elementary School

3 EED 435* – Science in the Elementary School

3 EED 436* – Social Studies in the Elementary School

2 EED 427* – Integrating Technology I

1 ESL 414* – Integration of English Language Learning II

Student Teaching†
Fall or Spring semester ONLY

3 EED 491* – Student Teaching (not included in professional preparation hours count)

3 EED 492* – Student Teaching (not included in professional preparation hours count)

1 EED 416 – Integrating Technology II

1 EED 417 – Assessment

1 ESL 415* – Integration of English Language Learning III

TOTAL HOURS: 126

* Requires field experience. See catalog description of the course for details.

† Application for Literacy Methods, Content Methods and Student Teaching is required one semester in advance .

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