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Are Texas' English language arts and reading standards college ready?

Eric Rolfhus

Gary Cook

Jessica Brite

Jenifer J. Hartman
jhartman1@mail.usf.edu

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Rolfhus, E., Cook, G., Brite, J., & Hartman, J. (2010). Are Texas' English language arts and reading standards college ready? Issues & Answers (REL 2010-091). Washington, DC: U.S. DOE, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratories Southwest. Retrieved from the ERIC website: https://eric.ed.gov/?id=ED511607

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ISSUES&ANSWERS REL 2010–No. 091

REL SOUTHWEST
Regional Educational Laboratory
At Edvance Research, Inc.

Are Texas' English language arts and reading standards college ready?

ies NATIONAL CENTER FOR EDUCATION EVALUATION AND REGIONAL ASSISTANCE
Institute of Education Sciences

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Prepared by

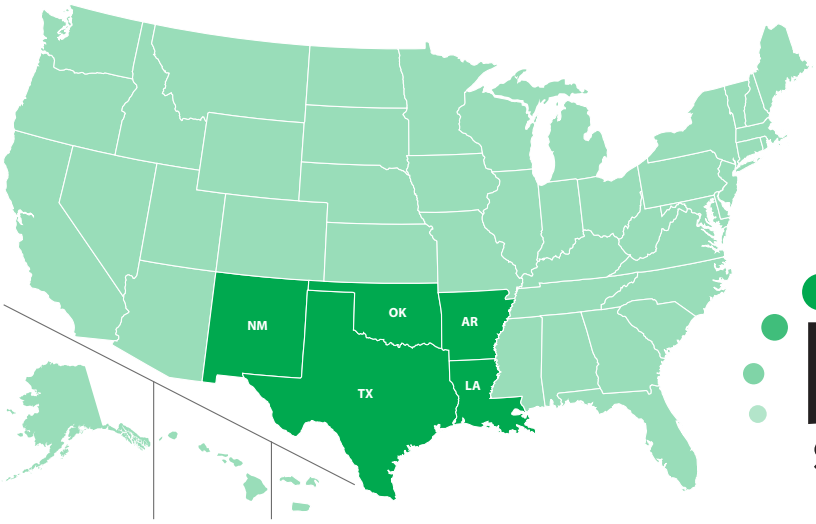
Eric Rolfhus, Ph.D.
Edvance Research

Gary Cook, Ph.D.
Wisconsin Center for Education Research

Jessica L. Brite, M.S.
Edvance Research

Jenifer Hartman, Ed.D.
Edvance Research

ies NATIONAL CENTER FOR EDUCATION EVALUATION AND REGIONAL ASSISTANCE
Institute of Education Sciences



REL SOUTHWEST
At Edvance Research, Inc.

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August 2010

This report was prepared for the Institute of Education Sciences (IES) under Contract ED-06-CO-0017 by Regional Educational Laboratory Southwest administered by Edvance Research. The content of the publication does not necessarily reflect the views or policies of IES or the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

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Rolfhus, E., Cook, H.G., Brite, J.L., and Hartman, J. (2010). *Are Texas' English language arts and reading standards college ready?* (Issues & Answers Report, REL 2010–No. 091). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved from http://ies.ed.gov/ncee/edlabs.

This report is available on the regional educational laboratory web site at http://ies.ed.gov/ncee/edlabs.

Summary

REL 2010–No. 091

Are Texas' English language arts and reading standards college ready?

This study compares alignment of the ACT and the American Diploma Project (ADP) national college readiness standards sets with the Texas Essential Knowledge and Skills for English language arts and reading (TEKS ELAR) standards for grades 9–12 and analyzes their cognitive complexity. It finds that a majority of the content in the ACT and ADP standards sets is addressed to some extent by the TEKS ELAR standards and that the TEKS ELAR standards demand higher levels of cognitive complexity than do the other two standards sets.

College readiness has recently emerged as a national issue, driven in part by repeated findings that many first-year college students are required to take remedial courses (for example, Provasnik and Planty 2008; Terry 2007). In response, several sets of national college readiness standards (content statements that define what students should know in specific areas) have been developed, such as the ACT College Readiness Standards (ACT, Inc. 2007) and the American Diploma Project (ADP) College and Workplace Readiness Benchmarks (Achieve, Inc. 2004). An emphasis on college readiness standards is also evident in the distribution of American Reinvestment and Recovery Act education funds (U.S. Department of Education 2009) and in the 2009 Common Core State Standards Initiative, sponsored by the National Governors Association and the Council of Chief State School Officers, which is developing a national set of K–12 English language arts and mathematics standards that includes college readiness standards (Missouri Department of Elementary and Secondary Education 2009; South Carolina Department of Education 2009).

Although Texas has not participated in this national initiative, recent state legislation has focused on developing college readiness standards, vertically aligning the state's K–12 curriculum to those standards through a logical progression for teaching content in a subject area across grades, and raising state standards for student performance to move Texas into the top 10 states in college readiness by 2019/20 (Texas Legislature 2006, 2009). Thus, state leaders need to understand how the Texas Essential Knowledge and Skills (TEKS) standards for grades 9–12 relate to college readiness expectations. To support this work, an alignment study was requested comparing the 2008 TEKS English language arts and reading (TEKS ELAR) standards (Texas Education Agency 2008) and two national English language arts college readiness standards sets, ACT and ADP.

The study assessed alignment on two dimensions: content (the knowledge and skills

represented by a standards statement) and cognitive complexity (the level of reasoning or cognitive demand on students represented by a standards statement). Two questions were examined:

- What percentage of content statements in the ACT and American Diploma Project (ADP) college readiness standards sets (the benchmark sets) align fully or partially with content statements in the 2008 Texas Essential Knowledge and Skills for English language arts and reading (TEKS ELAR) grade 9–12 standards set (the comparison set)?

- For each of these standards sets, what is the distribution of content statements across the four levels of a cognitive complexity (cognitive demand) scale?

On content alignment, the study finds that a majority of content in the ACT and ADP college readiness standards sets is addressed to some extent by the TEKS ELAR standards. Specifically,

- Fourteen percent of ACT statements fully align and 75 percent partially align with TEKS ELAR statements.

- Forty-eight percent of ADP statements fully align and 45 percent partially align with TEKS ELAR statements.

- The proportion of ACT statements that fully align with TEKS ELAR statements varies across ACT content strands from 5 percent to 29 percent, and the proportion that partially aligns varies from 55 percent to 89 percent.

- The proportion of ADP statements that fully align with TEKS ELAR statements varies across ADP content strands from 0 percent to 67 percent, and the proportion that partially aligns varies from 22 percent to 75 percent.

These results are difficult to interpret in isolation, as there are no universally accepted criteria for determining good or poor levels of alignment. Reporting the findings in relation to another standards-to-standards alignment study (Rolfhus et al. 2010) can provide context for interpreting the findings. Of five pairwise comparisons (three in Rolfhus et al. and two in the current study), the ADP–TEKS comparison in the current study has the highest percentage of both fully aligned content and combined fully and partially aligned content. The ACT–TEKS comparison in the current study ranks fourth in fully aligned content and second in combined fully and partially aligned content. These two studies indicate that TEKS ELAR aligns more closely to ADP than any of the other three national English language arts college readiness standards examined.

The TEKS ELAR statements demand higher levels of cognitive complexity than both benchmark college readiness standards sets examined in this study and the two additional standards sets (College Board, Standards for Success) examined in Rolfhus et al. (2010). In the current study, the ADP and TEKS ELAR standards sets exhibit the most similarities. Other notable findings:

- Each of the four levels of cognitive complexity (recall, skill/concept, strategic thinking, and extended thinking) was represented in each of the standards sets.

- The majority of statements in each standards set were rated at level 3–strategic thinking (55 percent for ACT and ADP and 65 percent for TEKS ELAR).

- TEKS ELAR has more statements rated at level 3–strategic thinking and level 4–extended thinking than do ACT or ADP.

The study has two key limitations. First, the definition of partial alignment was very broad, covering cases of just one element of an ACT or ADP statement that was addressed by a TEKS ELAR statement or statements as well as cases when all but one of multiple elements of an ACT or ADP statement were addressed. Second, the determination of content alignment and the evaluation of standards included just two dimensions for evaluating alignment (content and cognitive complexity). Other dimensions, such as breadth and specificity, might provide additional content detail that state standards writing teams or assessment writing teams could find useful.

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WHY THIS STUDY?

The 1983 publication of *A Nation at Risk* called for "schools, colleges, and universities [to] adopt more rigorous and measurable standards, and higher expectations for academic performance" (National Commission on Excellence in Education 1983, as cited in U.S. Department of Education 2008, p. 5). This publication was part of a national movement to develop challenging content standards for instruction for all students, also known as standards-based reform.[1]

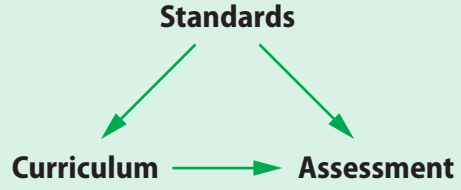
A 2008 RAND Corporation review notes that carefully defining the knowledge and skills that students should have at various grade levels is the first critical aspect of standards-based reform (Hamilton, Stecher, and Yuan 2008).[2] These defined content standards then become the basis for aligning other key elements of the education system (figure 1).

College readiness standards

While the adoption of K–12 standards and alignment of the key elements of the education system was initially voluntary, federal legislation eventually made them mandatory, under the Improving America's Schools Act of 1994 (1995) and the No Child Left Behind Act of 2001 (2002). All 50 states have now adopted K–12 content standards.

Researchers and policymakers have begun to focus on the lack of vertical alignment (a logical progression for teaching content in a subject

FIGURE 1
Role of content standards in the education system



Source: Webb 2005.

Because both recent Texas state legislation and the federal American Reinvestment and Recovery Act initiative focus on the need for rigorous college readiness standards, it is important for Texas policymakers to understand how the newly adopted state standards compare with national college readiness standards sets

area across grades) between K–12 and postsecondary curricula and standards.[3] A high percentage of first-year college students have failed to acquire the knowledge and skills required for success in entry-level college courses. Terry (2007) estimates that 38 percent of Texas students enrolled at two-year public institutions and 24 percent enrolled at four-year public institutions in fall 2006 were required to take remedial courses. Nationally, depending on the type of institution, 15–29 percent of students entering postsecondary education in fall 2003 self-reported taking remedial courses (Provasnik and Planty 2008, p. 11).[4]

Several recent initiatives have sought to define college and career readiness in the same manner as K–12 education. The result has been the development of several sets of national college readiness standards that summarize the knowledge and skills required by students to succeed in entry-level college courses. One of the priorities of the current federal initiative, the American Reinvestment and Recovery Act (2009), is developing rigorous college and career readiness standards.[5] In addition to this initiative, the National Governors Association and the Council of Chief State School Officers have introduced the Common Core State Standards Initiative to assist states in establishing such standards. The initiative focuses on the development of a single national set of K–12 curriculum standards vertically aligned to college readiness standards (National Governors Association 2009). This initiative is being assisted by national leaders in college readiness standards: Achieve, Inc; ACT, Inc.; and the College Board. Because Texas adopted state college readiness standards (Texas College and Career Readiness Standards, or TCRS) in 2008 and has aligned its K–12 standards in English language arts and mathematics to the TCRS, it is not participating in the Common Core State Standards Initiative consortium of states at this time.

Alignment research

While alignment research has focused on comparing test items with content standards, comparing a state's standards with other standards sets has been an important component of standards revisions. The methodologies developed to evaluate the alignment of the key elements of standards sets use different dimensions and criteria, but there are similarities in approach (Näsström and Henriksson 2008; Porter 2002; Porter et al. 2007; Rothman et al. 2002; Webb 1999, 2002, 2005). While researchers have defined various dimensions by which standards can be described and aligned, such as breadth, depth, and specificity (Näsström and Henriksson 2008; LaMarca 2001; Rothman 2004), La Marca (2001, para. 4) has concluded that the dimensions of content knowledge and cognitive complexity are the "two overarching dimensions" of alignment. A recent standards-to-standards alignment study examining four sets of college readiness standards along these two dimensions found levels of alignment of 8–31 percent and 34–77 percent, depending on whether full or partial alignment (or both together; see box 1 and appendix A) was considered (Rolfhus et al. 2010).[6]

Regional importance

Because both recent Texas state legislation and the federal American Reinvestment and Recovery Act initiative focus on the need for rigorous college readiness standards, it is important for Texas policymakers to understand how the newly adopted state standards compare with national college readiness standards sets. In 2006 the Texas Legislature mandated development of college readiness standards and alignment of the state's K–12 curriculum to those standards (House Bill 1; Texas Legislature 2006). In response, the Texas Higher Education Coordinating Board (2008) developed and adopted the TCRS. In addition, the Texas State Board of Education adopted a revised set of Texas Essential Knowledge and Skills for English language arts and reading standards (TEKS ELAR) that was to be vertically aligned

BOX 1

Key definitions

Content. The knowledge and skills explicitly stated or strongly implied in a standards statement (for example, "demonstrate knowledge of 18th and 19th century foundational works of American literature"). Each standards set categorizes and labels content differently; this study uses the terms *strand, substrand,* and *standards statements.*

Content alignment. The identification of content in a statement (or statements) from one set of standards (a comparison set of standards) as the same as content in a statement in another set or sets of standards (the benchmark sets).

Cognitive complexity or *depth.* The cognitive demand or type of thinking required to demonstrate the knowledge and skills represented by a standards statement (for example, the level of abstraction, number of steps, or type of reasoning; Rothman 2004; Webb 1997, 1999, 2002). Knowing the level of cognitive complexity facilitates the development, at the appropriate level of difficulty or rigor, of state assessment items that measure student performance based on the expectations represented by the standards (Nässtrom and Henriksson 2008). Understanding how the cognitive complexity of the Texas Essential Knowledge and Skills for English language arts and reading standards compares with the expectations of ACT and American Diploma Project (ADP) standards is as important as understanding content alignment (Nässtrom and Henriksson 2008).

Strands. Clusters of content-related statements in the English language arts domain of each set of standards. For example, the ADP communication strand contains the individual statements, "Give and follow spoken instructions to perform specific tasks, to answer questions or to solve problems" (B1) and "Summarize information presented orally by others" (B2; Achieve, Inc. 2004). Strand names vary across the standards, and the organization of statements into strands and substrands can help to identify areas of content emphasis.

with the TCRS (Texas Education Agency 2008). House Bill 3 directs the state to develop college readiness performance standards and directs the state education commissioner to periodically raise the state standards for student achievement so that no later than the 2019/20 school year Texas will rank among the top 10 states nationally in student performance (Texas Legislature 2009).

The current study

This study examines the alignment of the 2008 TEKS ELAR standards to two sets of nationally used English language arts college readiness standards: ACT College Readiness Standards (ACT, Inc. 2007) and the American Diploma Project (ADP) College and Workplace Readiness Benchmarks (Achieve, Inc. 2004).[7] ACT was selected because it is the only college readiness standards set with an explicit empirical basis; ACT score ranges are mapped to specific standards statements, and ACT scores are linked to grades in the first year of college (ACT, Inc. 2007). ADP standards were selected because Achieve has worked with 35 states, including Texas, on their standards. Neither of the other two nationally used standards sets, the College Board (The College Board 2006) or Standards for Success (Conley 2003), has publicly documented an explicit empirical link with student performance or direct involvement with state standards development on this scale. This report is intended to inform decisionmakers about the alignment of the 2008 TEKS ELAR standards to national college readiness standards sets and inform state efforts to revise the standards, as expressed in House Bills 1 and 3. Placing the findings in the context of other standards-to-standards alignment studies, such as Rolfhus et al. (2010), will assist policymakers in using the findings.

Two dimensions of alignment were selected for evaluation: general content alignment and cognitive complexity (see box 1 for definitions). Other alignment criteria were excluded because stakeholders did not request information on them.

Two primary research questions were addressed in this report:

- What percentage of content statements in the ACT and American Diploma Project (ADP) college readiness standards sets (the benchmark sets) align fully or partially with content statements in the 2008 Texas Essential Knowl edge and Skills for English language arts and reading (TEKS ELAR) grade 9–12 standards set (the comparison set)?
- For each of these standards sets, what is the distribution of content statements across the four levels of a cognitive complexity (cognitive demand) scale?

DESCRIPTION OF BENCHMARK AND COMPARISON SETS OF COLLEGE READINESS STANDARDS

This section details the two benchmark sets of English language arts college readiness standards (ACT and ADP) and the TEKS ELAR standards set examined in this study and describes the goals of the developing organizations, intended uses, development process, and strand structure. Table 1 provides a brief overview.

Description of standards sets

ACT college readiness standards. The ACT college readiness standards are intended to represent

TABLE 1
Overview of the two benchmark college readiness standards sets and the Texas Essential Knowledge and Skills for English language arts and reading standards set for grades 9–12, 2009

Category	Year published	Publisher	Organization type	Method/process to derive standards statements	English language arts strands	Number of English language arts standards statements[a]
ACT	2007	ACT, Inc.	Test publisher	National Curriculum Survey to inform test development—standards derived from test content	English Reading Writing	191
American Diploma Project (ADP)	2004	Achieve, Inc.	Education reform organization to promote postsecondary readiness	Committees of postsecondary academic leaders and business leaders	Communication Informational text Language Literature Logic Media Research Writing	62
Texas Essential Knowledge and Skills for English language arts and reading standards	2008	Texas Education Agency	State organization oversees activities related to public schools in Texas	State Board of Education develops curriculum standards with input from teacher work groups and content experts	Listening and speaking Oral and written conventions Reading Research Writing	278

a. The main reason for the different number of standards statements is that the standards are written at different levels of specificity, reflecting their goals and intended uses. While specificity was not evaluated in this study, different levels of specificity would not have a major impact on content match. The content experts who conducted the alignment are familiar with the intent of the statements, which enabled them to align standards statements written at different levels of specificity. In addition, there are many more TEKS ELAR statements than ADP or ACT statements because TEKS ELAR standards cover grades 9–12, not just one level, as the two other standards sets do.

Source: ACT, Inc. 2007; Achieve, Inc. 2004; Texas Education Agency 2008.

the knowledge and skills and type of thinking required for students to succeed in entry-level college courses (ACT, Inc. 2007). Information on student performance relative to the standards can assist students, parents, and teachers in identify ing skill deficits for remediation.

The ACT college readiness standards were devel oped empirically through a multistage process by ACT, Inc. staff and reviewed by experts (whom ACT identifies as "nationally recognized") from high school and postsecondary English and read ing education departments (ACT, Inc. 2007). First, ACT developed a pool of assessment items taken from the results of the ACT National Curricu lum Surveys (K–12). Then, based on 40 years of research on ACT student assessment data, ACT staff identified score ranges from the distribution of student scores on ACT's Educational and Plan ning Assessment System that best differentiated students' levels of achievement in four content domains: English, mathematics, science, and reading. The college readiness standards state ments drew on ACT staff expert analysis of the knowledge, skills, and type of thinking needed to respond correctly to assessment items. Finally, the independent reviewers validated that the stan dards accurately predicted student performance in the first year of college. Because of this method of construction, ACT standards are empirically linked to assessment scores and are the only set of college readiness standards linked to student achievement. The ACT English language arts college readiness standards are divided into three strands (English, reading, and writing) and 16 substrands (for example, topic development, main idea, organizing ideas). The standards statements are organized within these substrands.

American Diploma Project college readiness standards. The ADP is a network of state policymakers and other leaders working to align and raise state standards and assessments to a level that will prepare students for success in postsecondary education and the workplace (Achieve, Inc. 2004). As of this writing, 35 states had joined the ADP Network (Achieve, Inc. 2009a).

The ADP college readiness standards were developed by Achieve, Inc. (2004), through a two-year process that sought input from business leaders and postsecondary educators from five states (Indiana, Kentucky, Massachusetts, Nevada, and Texas). Curriculum experts used data on education patterns associated with education and career advancement along with other assessments (such as high school exit exams and postsecondary placement tests) to identify the essential knowledge and skills students need for success in postsecondary education. Panels of content area experts, post secondary school faculty, and National Alliance of Business industry representatives reviewed the working documents. College readiness standards for English and mathematics emerged from this research and are intended to serve as a basis for state assessments. The ADP English language arts college readiness standards are divided into eight strands: communication, informational text, language, literature, logic, media, research, and writing.

Because of the method of construction, ACT standards are empirically linked to assessment scores and are the only set of college readiness standards linked to student achievement. For the ADP standards, curriculum experts used data on education patterns associated with education and career advancement to identify the knowledge and skills students need for success in postsecondary education

Texas Essential Knowledge and Skills for English language arts and reading standards. The TEKS ELAR standards are a set of K–12 standards that define the knowledge, skills, and level of cognitive complexity required as students progress from grade to grade in Texas public schools. This set of vertically aligned standards forms the basis of curricula and assessment in the state. The TEKS periodically undergo revision; new standards for the ELAR content domain were approved and ad opted in 2008, replacing the 1997 standards (Texas Education Agency 1997, 2008). The TEKS ELAR standards were developed over three years with input from the State Board of Education, teacher

The majority of statements in all three ACT strands are partially aligned with TEKS ELAR. The English strand has the largest proportion of partially aligned statements, at 89 percent, while the writing strand has the smallest share, at 55 percent

workgroups, and content experts. End-of-course exams aligned to the content standards for grades 9, 10, and 11 will be administered beginning in the spring of 2011 (Texas Education Agency 2009). The current study used the grade 9–12 English language arts standards for the four English courses required for graduation (English I–IV) for comparison.[8] The TEKS ELAR standards are divided into five strands: listening and speaking, oral and written conventions, reading, research, and writing.

Description of cognitive complexity framework

Standards statements communicate relevant content information and reflect the level of cognitive complexity (type of thinking) demanded of students through the use of specific language and key terms (Rothman 2004; Webb 1997, 1999, 2002). The cognitive complexity represented in a statement can influence the development of instructional materials and assessments (Webb 1997, pp. 15–16). For example, statements that require students only to "identify" or "recognize" certain content represent lower levels of cognitive complexity than standards that require students to "reason with," "synthesize," or "produce" complex materials. Thus, in creating or modifying assessment items for college readiness purposes, it is important to attend not only to content, but also to the level of cognitive complexity that students are expected to express through their knowledge and skills (Webb 1997, pp. 15–16).

The literature describes a variety of methods for examining the cognitive complexity of standards (for example, Achieve, Inc. n.d.; Blank 2002; Cook 2005; Webb 2002; see also the review by Näsström and Henriksson 2008). The methodology adopted in this study was derived from Webb (1999) and Wixson et al. (2002). Webb (1999) was the first to examine standards statements (in four states) using the four-level depth of knowledge (DoK) scale: recall, skill/concept, strategic thinking, and extended thinking. The study detailed several criteria for evaluating alignment of state standards and assessments in mathematics and science. Webb emphasized the importance of evaluating depth of knowledge to ensure that assessments measure student performance at the same depth as expected in the classroom. Webb found that a substantial percentage of items on state assessments were rated at lower DoK levels than corresponding objectives in the state standards. In a subsequent study rating the objectives for grade K–5 reading standards of four states using the DoK scale, Wixon et al. (2002) showed that state standards sets can be differentiated by cognitive complexity using the DoK scale. For example, in one state 80 percent of statements were rated level 1[9] (recall) whereas in another state, just 19 percent were. Other details of the study methodology are in box 2 and appendix A.

FINDINGS

This section describes the content alignment and cognitive complexity findings. The complete content alignment and cognitive complexity tables are available from Regional Educational Laboratory Southwest. The degree to which the two independent reviewers agreed before they met to determine the final consensus rating is reported in appendix B.

Content alignment

Summary figures on the percentage of statements at each level of content alignment are presented below. The number of statements at each level of content alignment are reported in appendix D. ACT, ADP, and TEKS ELAR content statements that did not align are reported in appendix E.

ACT and Texas Essential Knowledge and Skills for English language arts and reading content alignment. The degree of alignment between content in the ACT statements and in the TEKS ELAR statements are shown in figure 2. In many cases, a single ACT statement aligned with more than one TEKS ELAR statement.

BOX 2

Study methodology and rating scale for examining content alignment and cognitive complexity

This standards alignment study was conducted during June–August 2009.

Methodology for aligning content. The content alignment methodology used in a previous series of Regional Educational Laboratory Southwest studies was adapted for this study (Shapley and Brite 2008a–e; Timms et al. 2007a–e; Rolfhus et al. 2010). The same three-level content alignment rating scale and process for reconciling independent reviewer ratings were used to compute the percentage of benchmark standards statements (ACT and the American Diploma Project, or ADP) that are fully, partially, or not aligned with the comparison statements in the Texas Essential Knowledge and Skills for English language arts and reading standards (TEKS ELAR; Texas Education Agency 2008). The 191 ACT statements and the 62 ADP statements were designated in turn as the benchmark set and aligned with the 278 TEKS ELAR comparison set statements.[1] In many cases, the content in a single benchmark statement aligned with the content in multiple TEKS ELAR statements or the content in a single TEKS ELAR statement aligned to the content in multiple benchmark statements. Separate content alignment tables were created to conduct these pairwise comparisons, with the first column populated by either the ACT or the ADP statements.

Two independent reviewers used the following scale to rate the level of content alignment between the ACT or the ADP set and the TEKS ELAR:

- *Fully aligned.* All the content in a benchmark (ACT or ADP) statement aligns with content in one or more statements in the comparison (TEKS ELAR) standards set.
- *Partially aligned.* Some of the content (from 1–99 percent) in the benchmark (ACT or ADP) statement aligns with some of the content in the comparison (TEKS ELAR) standards set.
- *Not aligned.* None of the content in the benchmark (ACT or ADP) statement aligns with any of the content in the comparison (TEKS ELAR) standards set.

If similar content was found, each reviewer independently rated the level of alignment as full or partial. The process could result in a one-to-one alignment (one benchmark statement aligns with one TEKS ELAR statement) or a one-to-many alignment (one benchmark statement aligns with multiple TEKS ELAR statements). Content alignment was evaluated independently of the cognitive complexity ratings. Final alignments and ratings were determined during consensus meetings with the senior reviewer. An example of how each content alignment table was structured and populated is provided in figure A1 in appendix A.

Methodology for rating cognitive complexity. Cognitive complexity was assessed by comparing the distribution of standards statements from each set of standards across four levels of cognitive complexity. The cognitive complexity ratings were completed before the content alignment. There was no benchmark for the cognitive complexity rating.

Cognitive complexity was assessed by two reviewers who worked independently using Webb's (2002) depth of knowledge (DoK) scale to rate the cognitive complexity of each statement (see appendix G for details):

- *Level 1–recall.* Requires students to use simple skills or abilities to retrieve or recite facts.
- *Level 2–skill/concept.* Requires a level of comprehension and subsequent processing across portions of text to make inferences beyond simple recall or recitation of stated facts.
- *Level 3–strategic thinking.* Focuses on reasoning, planning skills, making more complex inferences, and applying ideas from the text; students may be encouraged to explain, generalize, or connect ideas.
- *Level 4–extended thinking.* Requires investigation and higher order thinking skills to process multiple solutions to a given problem.

A three-column cognitive complexity rating table was created for each standards set, with each standards statement in the first column, the

(CONTINUED)

BOX 2 (CONTINUED)

Study methodology and rating scale for examining content alignment and cognitive complexity

cognitive complexity level in the second column, and reviewer comments in the third column (for an example, see figure A2 in appendix A). The two reviewers' independent cognitive complexity ratings were discussed during consensus meetings held under the supervision of a senior reviewer, and the final rating was determined at that time.

Alignment and rating processes. The alignment (content) and rating (level of content alignment and cognitive complexity) processes consisted of six steps:

- *Step 1—selecting reviewers.* The reviewers who had participated in the recently completed Rolfhus et al. (2010) study were selected as reviewers for the current study. They were familiar with the ACT and ADP standards statements, the rating scales, and the independent rating and consensus process (for more information about reviewer qualifications, see appendix B).

- *Step 2—training reviewers.* Reviewers examined the structure, organization, and content of each standards set before training. During a three-hour training session, the reviewers were retrained on the three-level content alignment scale and the four-level cognitive complexity scale (Webb 2002), and they reviewed and discussed alignment samples and ratings and practiced conducting alignment and rating activities and reaching consensus.

- *Step 3—rating cognitive complexity levels.* Reviewers independently rated the cognitive complexity level of each TEKS ELAR statement using the Webb DoK scale to ensure familiarity with the contents. The Rolfhus et al. (2010) cognitive complexity ratings for the ADP and ACT were used for this study since the methodology and review team were the same.

- *Step 4—achieving consensus on cognitive complexity levels.* After completing individual cognitive complexity ratings for all TEKS ELAR statements, the two independent reviewers met with the senior reviewer to compare ratings and achieve consensus where ratings differed.

- *Step 5—comparing and aligning ACT–TEKS ELAR content.* Using the ACT–TEKS ELAR content alignment table and beginning with the first ACT statement in the first ACT strand, each reviewer independently and systematically searched all TEKS ELAR statements for any containing all or part of the same content. Once all fully and partially aligned TEKS ELAR statements were identified, the reviewer assigned a content alignment level rating to the ACT statement based on the cumulative content of all the aligned TEKS ELAR statements (fully, partially, or not aligned). Consensus meetings were held after completion of each ACT strand. The cycle was repeated until all possible ACT and TEKS ELAR statements were compared and the content alignment levels were rated.

- *Step 6—comparing and aligning ADP–TEKS ELAR content.* The same process as in step 5 was followed for the ADP–TEKS ELAR content alignment.

For further details on methodology, see appendixes A and B.

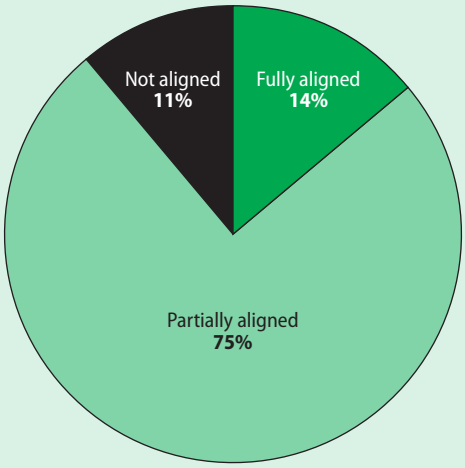
Limitations of the study. The main limitation of the study is the definition of partial alignment. The definition is broad, encompassing alignment between statements with a little shared content and those with a lot of shared content. Modifications to the number and definition of levels of alignment might result in different levels of consensus across the standards sets.

Note

1. This report uses "aligned with" to refer to the extent of the content alignment between the benchmark standards sets (ACT and ADP) and the TEKS ELAR standards set and "aligned to" to refer to how the TEKS ELAR standards map onto the benchmark sets of standards (ACT or ADP).

FIGURE 2

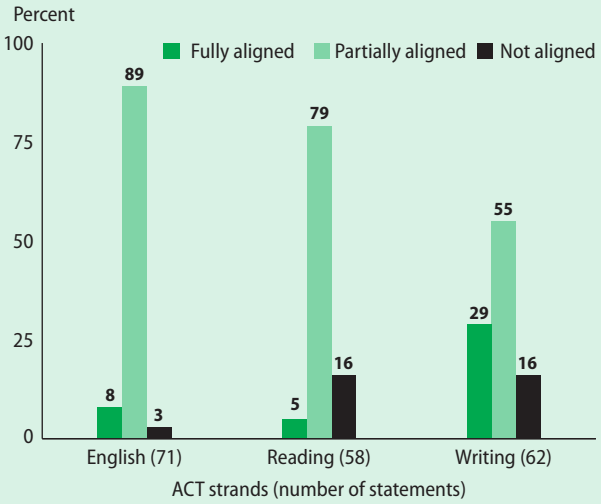
Percentage of ACT statements aligned with Texas Essential Knowledge and Skills for English language arts and reading statements at each level of content alignment, 2009



Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007) and Texas Education Agency (2008).

FIGURE 3

Percentage of ACT statements aligned with Texas Essential Knowledge and Skills for English language arts and reading statements at each level of content alignment, by ACT strand, 2009



Note: The number of statements at each level of alignment by strand is shown in table D1 in appendix D.

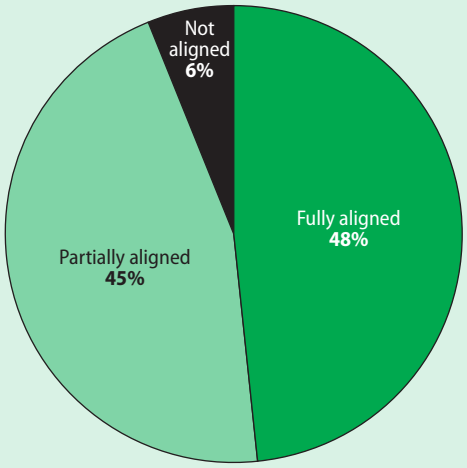
Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007) and Texas Education Agency (2008).

ACT's English language arts standards are organized into three strands (English, reading, and writing) and 191 standards statements. The percentage of ACT statements that align with TEKS ELAR statements varies across the three strands (figure 3). The majority of statements in all three ACT strands are partially aligned with TEKS ELAR. The English strand has the largest proportion of partially aligned statements, at 89 percent (63 of 71), while the writing strand has the smallest share, at 55 percent (34 of 62). The reading strand has the smallest share of fully aligned statements (5 percent), while the reading (9 of 58) and writing (10 of 62) strands have the largest shares of statements that are not aligned, at 16 percent.

American Diploma Project and Texas Essential Knowledge and Skills for English language arts and reading content alignment. The degree of alignment between the content in the ADP statements and in the TEKS ELAR statements is shown in figure 4. In total, 94 percent of ADP statements (58 of 62) align fully or partially with content in one or more TEKS ELAR statements: 48 percent (30

FIGURE 4

Percentage of American Diploma Project statements aligned with Texas Essential Knowledge and Skills for English language arts and reading statements at each level of content alignment, 2009

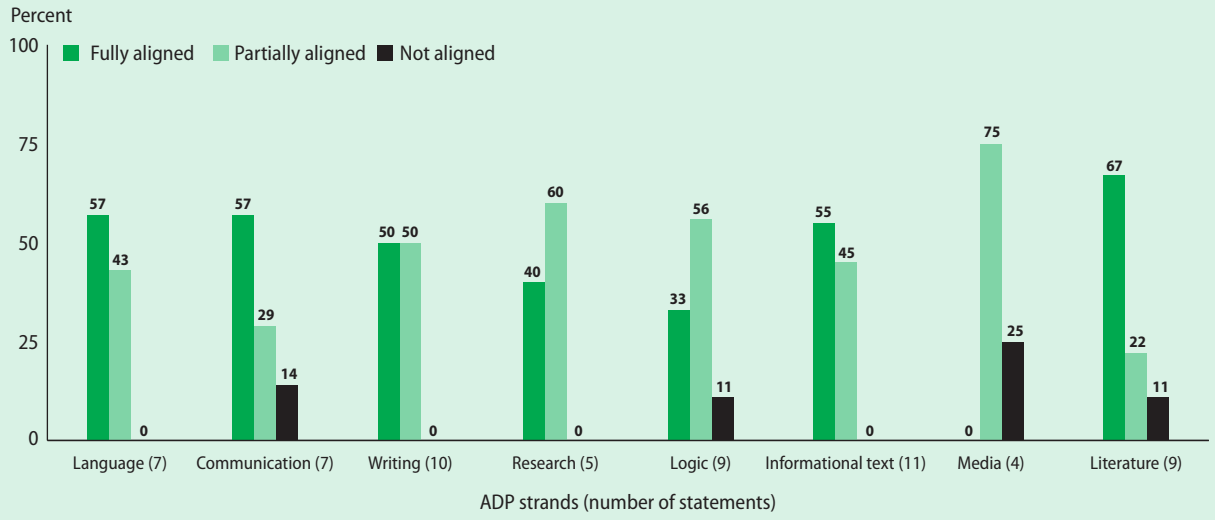


Note: Percentages do not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Achieve, Inc. (2004) and Texas Education Agency (2008).

FIGURE 5

Percentage of American Diploma Project statements aligned with Texas Essential Knowledge and Skills for English language arts and reading statements at each level of content alignment, by ADP strand, 2009



Note: The number of statements at each level of alignment by strand is shown in table D2 in appendix D.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Achieve, Inc. (2004) and Texas Education Agency (2008).

of 62) align fully and 45 percent align partially; 6 percent of ADP statements (4 of 62) do not align with TEKS ELAR statements.

The ADP English language arts college readiness standards are organized into eight strands with 62 standards statements. The ADP literature strand has the highest proportion of statements fully aligned with TEKS ELAR statements (67 percent, 6 of 9; figure 5). The language and communication strands have the next highest proportions of fully aligned statements (57 percent, 4 of 7). Across all strands, the proportion of ADP statements that align fully with TEKS ELAR statements ranges from 0 percent (media) to 67 percent (literature).

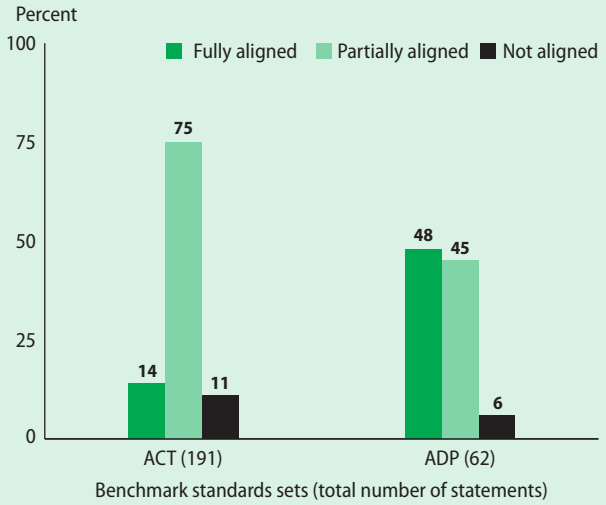
The media strand has the highest proportion (75 percent, 3 of 4) of ADP statements that align partially with TEKS ELAR statements, followed by the research (60 percent, 3 of 5) and logic (56 percent, 5 of 9) strands. Across all strands, the share of ADP statements that align partially with TEKS ELAR statements ranges from 22 percent (literature, 2 of 9) to 75 percent (media, 3 of 4).

In four of the eight ADP strands (language, writing, research, informational text), all the content aligns either fully or partially with content in TEKS ELAR; 11–25 percent of the statements in the other four ADP strands (communication, logic, media, literature) do not align with TEKS ELAR statements.

Summary of content alignment findings. The content of the ADP college readiness standards set is more closely aligned with the TEKS ELAR grades 9–12 standards set than is the content of the ACT college readiness standards set (figure 6). Forty-eight percent of the ADP standards statements align fully with the TEKS ELAR standards set. (Recall that 100 percent of the content in a statement must be aligned to achieve a rating of full alignment.) Another 45 percent of ADP statements align partially with the TEKS ELAR standards set. (Partial alignment includes alignment between statements with very little shared content and alignment between statements with extensive shared content.) Six percent of ADP standards statements are not aligned.

FIGURE 6

Percentage of ACT and American Diploma Project statements that align fully or partially with Texas Essential Knowledge and Skills for English language arts and reading statements, 2009

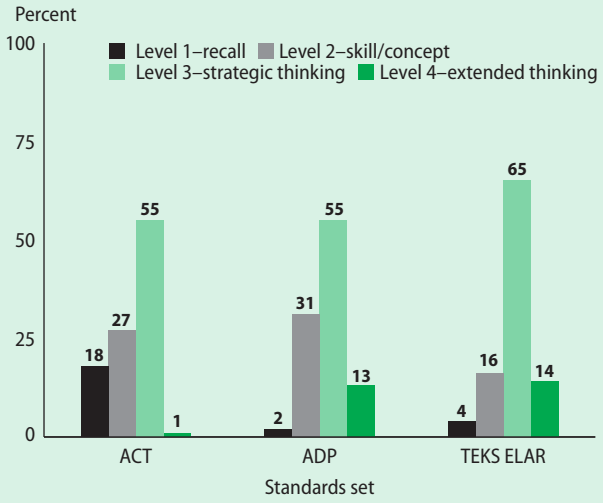


Note: Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008).

FIGURE 7

Distribution of cognitive complexity ratings across the four levels of the Webb depth of knowledge scale, by standards set (percent), 2009



Note: Percentages do not sum to 100 because of rounding.

Source: For ACT and American Diploma Project, Rolfhus et al. (2010); for TEKS ELAR, summary of reviewer ratings completed June–August 2009 drawing on standards statements in Texas Education Agency (2008).

In contrast, 14 percent of the ACT standards statements align fully with the TEKS ELAR standards statements, 75 percent align partially, and 11 percent do not align.

Cognitive complexity

For the second research question on the cognitive complexity levels of the three standards sets,[10] there was no benchmark, and all statements from each set were rated regardless of whether the statements contained aligned content. The distribution of cognitive complexity level ratings across the four levels of the Webb DoK scale is shown for each of the standards sets in figure 7.

All four levels of the Webb DoK scale are represented in each of the standards sets. More than half the standards statements in each set were rated level 3–strategic thinking. ACT has the highest share of statements rated at level 1–recall (18 percent) and the lowest share at level 4–extended thinking (1 percent). ADP has the highest share of statements rated at level 2–skill/concept (31 percent) and the lowest share at level 1–recall (2 percent). TEKS ELAR has the highest share of both level 3–strategic thinking (65 percent) and level 4–extended thinking (14 percent) statements.

The proportions of TEKS ELAR statements rated level 1 (4 percent) and level 4 (14 percent) are more similar to the proportions for ADP's level 1 (2 percent) and level 4 (13 percent) ratings than for ACT's level 1 (18 percent) and level 4 (1 percent) ratings. However, the proportion of TEKS ELAR level 2 ratings (16 percent) is closer to that of ACT (27 percent) than to that of ADP (31 percent). Because the proportion of level 3 ratings is identical for ACT and ADP (55 percent for each), the TEKS ELAR proportion (65 percent) differs equally from both of them. The distribution of Webb DoK ratings for each standards set is also reported by strand in appendix H.

Of the three standards sets examined, TEKS ELAR has the highest share of statements rated level

3–strategic thinking and level 4–extended thinking, whether the levels are considered individually or together (see figure 7). Together, 79 percent of TEKS ELAR statements were rated level 3 or level 4 for cognitive complexity, compared with 56 percent for ACT and 68 percent for ADP. In the distribution of cognitive complexity ratings across the four levels, the TEKS ELAR standards set is more similar to ADP than it is to ACT.

DISCUSSION AND CONCLUSIONS

The majority of the content in the ACT and ADP college readiness standards sets is addressed to some degree by the content in the TEKS ELAR standards. Fourteen percent of ACT statements fully align and 75 percent partially align with one or more TEKS ELAR statements (see figure 6). Forty-eight percent of ADP statements fully align and 45 percent partially align with TEKS ELAR statements.

These results are difficult to interpret in isolation, as there are no universally accepted criteria for determining good or poor levels of alignment. As with most qualitative research, these judgments must be made relative to other studies that use a similar methodology. While most alignment research focuses on the alignment of assessment items and content standards, Rolfhus et al. (2010) is another standards-to-standards alignment study that used the same methodology and rating scales as the current study and can be used for comparison.

Fourteen percent of ACT statements fully align and 75 percent partially align with one or more TEKS ELAR statements. Forty eight percent of ADP statements fully align and 45 percent partially align with TEKS ELAR statements

Rolfhus et al. focused on three pairwise comparisons of national English language arts college readiness standards, using ADP as the benchmark. Of five pairwise comparisons (three in Rolfhus et al. comparisons and two in the current study), the ADP–TEKS comparison in the current study resulted in the highest percentage of both fully aligned content and combined fully and partially aligned content. The ACT–TEKS comparison in the current study ranks fourth in fully aligned content and second in combined fully and partially aligned content. These two studies indicate that TEKS ELAR aligns more closely to ADP than any of the other three national English language arts college readiness standards examined. (See appendix F for an additional discussion.)

In aggregate, TEKS ELAR statements demand higher levels of cognitive complexity than both benchmark college readiness standards sets examined in this study. In the distribution of ratings across the four levels, the ADP and TEKS ELAR standards sets exhibit more similarities. In the Rolfhus et al. (2010) study, which also examined cognitive complexity levels using the same rating scales and methodology as the current study, the aggregate cognitive complexity levels of TEKS ELAR statements are also higher than those identified for two additional national college readiness standards sets (College Board, Standards for Success). This suggests that TEKS ELAR statements require higher aggregate cognitive complexity levels than the four sets of national college readiness sets for English language arts.

STUDY LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The definition of partial alignment in the current study was very broad. Alignment was considered partial whether just one element of an ACT or ADP statement was addressed by a TEKS ELAR statement or statements or whether all but one of multiple elements of an ACT or ADP statement was addressed by TEKS ELAR statements. Readers are encouraged to examine the complete alignment tables (available on request) to further explore the degree of partial alignment for particular ACT or ADP statements.

A second limitation is that just two dimensions were used for evaluating standards alignment

(content and cognitive complexity), whereas some researchers have used more (Rothman 2004). For example, Webb (2005) rates five dimensions, two of them equivalent to the two employed in this study and three that are not (range of knowledge correspondence, balance of representation, source of challenge). Use of other dimensions such as these might provide additional content detail that state standards writing teams or assessment writing teams could find useful.

One avenue for further research is an alignment study using the final Common Core State Standards, as they were not available at the time the current study was conducted. Given the growing importance of student performance comparisons across states—using the National Assessment of Educational Progress, assessments such as Achieve's multistate algebra initiative (Achieve, Inc. 2009b), or assessments developed from the Common Core State Standards—it will be important for Texas policymakers to understand how their standards differ from those of other states.

Future alignment studies could benefit from applying different definitions of partial alignment. While the current study included just a single partial alignment rating, a content alignment scale with more than three levels could include partial alignment ratings at varying levels. The results would more precisely describe the similarities between the benchmark and comparison sets of standards.

Finally, a study using more than two reviewers might have greater reliability (Webb, Herman, and Webb 2007, p. 25), although that remains an empirical question.

APPENDIX A METHODOLOGY

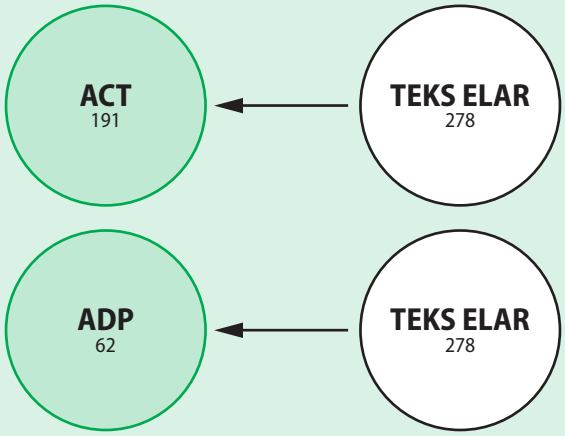
This appendix describes the methodology and rating scale used to examine content alignment and to compare the distribution of statements across four levels of a cognitive complexity scale, as well as the steps of the alignment (content) and rating (content alignment and cognitive complexity) processes.

Aligning content

The content alignment methodology used in a previous series of Regional Educational Laboratory Southwest studies (Shapley and Brite 2008a–e; Timms et al. 2007a–e; Rolfhus et al. 2010) was adapted for the current study. The Timms et al. and Shapley and Brite studies involved the alignment of state assessment standards and item specifications with the benchmark National Assessment of Educational Progress (NAEP).[11] The Rolfhus et al. study involved the content alignment of three sets of college readiness standards sets with a fourth college readiness standards set designated as a benchmark. The current study employed the same three-level content alignment rating scale and process for reconciling independent reviewer ratings to compute the percentage of benchmark standards statements in the ACT College Readiness Standards (ACT, Inc. 2007) and the American Diploma Project (ADP) College and Workplace Readiness Benchmarks (Achieve, Inc. 2004) that align fully, partially, or not at all with comparison statements in the Texas Essential Knowledge and Skills for English language arts and reading standards (TEKS ELAR; Texas Education Agency 2008).[12]

Because the current study examined three sets of standards, the pairwise comparison approach of the previous studies was adapted, with ACT and ADP designated in turn as the benchmark set and aligned individually with TEKS ELAR, the comparison set (figure A1). In many cases, the content in a single benchmark statement aligned with the content in multiple TEKS ELAR statements, and the content in a single TEKS ELAR statement aligned to the content in multiple benchmark statements.[13]

FIGURE A1
Pairwise comparison methodology using ACT and American Diploma Project standards sets as benchmarks for alignment with the Texas Essential Knowledge and Skills for English language arts and reading standards set, 2009



Source: Authors.

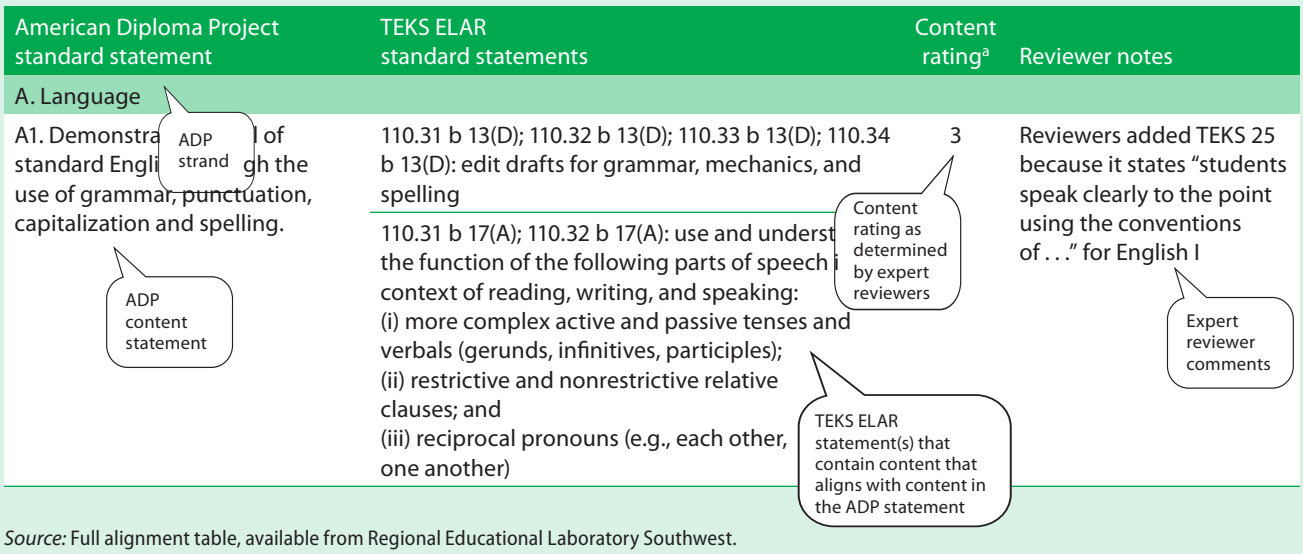
Two separate alignment tables were created to conduct these pairwise comparisons, with the left column populated by either the ACT standards statements (ACT–TEKS ELAR table) or the ADP standards statements (ADP–TEKS ELAR table). One standards statement forms one row of the alignment table for each benchmark standards set.

Two independent reviewers examined content in the ACT and ADP standards sets for content similar to that in the TEKS ELAR standards set. When similar content was found, each reviewer independently rated the level of alignment between the two standards statements as full or partial. The content alignment was independent of the cognitive complexity ratings—the reviewers did not consider the cognitive complexity ratings when comparing content statements or when rating the content alignment level.

Levels of content alignment were defined as follows:

- *Fully aligned.* All the content in a benchmark (ACT or ADP) statement aligns with content in one or more statements in the comparison (TEKS ELAR) standards set.

FIGURE A2
Example of the structure of the full alignment table, 2009



American Diploma Project standard statement	TEKS ELAR standard statements	Content rating[a]	Reviewer notes
A. Language			
A1. Demonstra[illegible] of standard Engli[illegible]gh the use of grammar, punctuation, capitalization and spelling.	110.31 b 13(D); 110.32 b 13(D); 110.33 b 13(D); 110.34 b 13(D): edit drafts for grammar, mechanics, and spelling	3	Reviewers added TEKS 25 because it states "students speak clearly to the point using the conventions of . . ." for English I
	110.31 b 17(A); 110.32 b 17(A): use and underst[illegible] the function of the following parts of speech i[illegible] context of reading, writing, and speaking: (i) more complex active and passive tenses and verbals (gerunds, infinitives, participles); (ii) restrictive and nonrestrictive relative clauses; and (iii) reciprocal pronouns (e.g., each other, one another)		

Source: Full alignment table, available from Regional Educational Laboratory Southwest.

- *Partially aligned.* Some of the content (1–99 percent) in the benchmark (ACT or ADP) statement aligns with some of the content in the comparison (TEKS ELAR) standards set.

- *Not aligned.* None of the content in the benchmark (ACT or ADP) statement aligns with any of the content in the comparison (TEKS ELAR) standards set.

A more detailed description of this three-level content alignment rating scale, including examples, is provided in appendix C. Final alignments and ratings were determined during a consensus meeting with the senior reviewer. Figure A2 shows how the content alignment tables were structured and populated and illustrates the one-to-many correspondence of a benchmark standards statement to TEKS ELAR standards statements.

The broad definition of *partial alignment,* ranging from statements with very little shared content to statements with almost complete shared content, is a limitation of this study. Modifying the number and definition of levels of alignment could result in different levels of consensus across the standards sets.

Rating cognitive complexity

Cognitive complexity was assessed by comparing the distribution of standards statements from each set of standards across four levels of cognitive complexity (Webb 2002). The cognitive complexity ratings were completed before the content alignment. Each statement from each set of standards was rated independently (there was no benchmark); as a result, there is no directionality to the cognitive complexity comparison.

Cognitive complexity ratings were assigned to each statement by two independent reviewers. A three-column cognitive complexity rating table was created for each standards set; each standards statement formed a single row in the first column of the table, and the cognitive complexity level corresponding to each statement formed the second column of the table (figure A3 provides an example). Individual reviewers worked independently to rate the cognitive complexity of each statement using Webb's (2002) depth of knowledge (DoK) scale:

- *Level 1–recall* requires students to use simple skills or abilities to retrieve or recite facts.

- *Level 2–skill/concept* requires a level of comprehension and subsequent processing across portions of text to make inferences beyond simple recall or recitation of stated facts.

- *Level 3–strategic thinking* focuses on reasoning, planning skills, making more complex inferences, and applying ideas from the text; students may be encouraged to explain, generalize, or connect ideas.

- *Level 4–extended thinking* requires investigation and higher order thinking skills to be able to process multiple solutions to a given problem.

A more detailed description of the Webb DoK scale, including examples, is provided in appendix G. The two primary reviewers' independent cognitive complexity ratings were discussed during consensus meetings under the supervision of a senior reviewer, and the final rating was determined at that time. An example of how each cognitive complexity rating table was structured and populated is provided in figure A3.

Steps in the alignment and rating process

Weekly progress meetings were held between the two teams managing the overall study: the research team that was responsible for the study design, implementation, analysis, and reporting and the review team that conducted the content alignment and cognitive complexity ratings. Also during these meetings, the review team provided any completed data tables to the research team for review.

Step 1—selecting reviewers. The study methodology required two independent reviewers to provide ratings of content alignment and cognitive complexity and a senior reviewer to supervise consensus discussions. The reviewers who had participated in the recently completed Rolfhus et al. (2010) study were selected as reviewers for the current study.[14] Because the Rolfhus et al. study involved alignment of English language arts college readiness standards, including the ACT and ADP, and used the same methodology and rating scales as the current study, the reviewers were familiar with the ACT and ADP standards statements,

FIGURE A3
Example of the structure of the cognitive complexity rating table, 2009

TEKS ELAR standards	Cognitive complexity rating[a]	Reviewer comments
Oral and Written Conventions		
110.31 b 17 Oral and Written C/Conventions. Students understand the function of and use the conventions of academic language when spea writing. Students will continue to apply earlier standards with greater complexity. Students are expected to:		
110.31 b 17(A) use and understand the function of the following parts of speech in the context of reading, writing, and speaking: (i) more complex active and passive tenses and verbals (gerunds, infinitives, participles); (ii) restrictive and nonrestrictive relative clauses; and (iii) reciprocal pronouns (e.g., each other, one another);	1	
110.31 b 17(B) identify and use the subjunctive mood to express doubts, wishes, and possibilities;	3	This verb tense is not as common as others, and does indicate a deeper knowledge of grammar.
110.31 b 17(C) use a variety of correctly structured sentences (e.g., compound, complex, compound-complex).	3	

TEKS ELAR strand
Cognitive complexity rating as determined by expert reviewers
Expert reviewer comments
TEKS ELAR statement

Source: Cognitive complexity table, available from Regional Educational Laboratory Southwest.

the rating scales, and the independent rating and consensus process. Information about reviewer qualifications and roles is provided in appendix B. The reviewers were recruited and managed by a university-based organization that specializes in quantitative and qualitative research, program evaluation, and professional development for educators.[15]

Step 2—training reviewers. Before training, reviewers received the three sets of standards used in this study with instructions to review their structure, organization, and content. During a three-hour training session, reviewers were retrained on the three-level content alignment scale and the four-level cognitive complexity scale (Webb 2002).[16] Training consisted of a careful review and discussion of the research questions and rationale for the study, each of the rating scales and how each scale level was defined and differentiated from the others, review and discussion of alignment samples and their appropriate ratings, and practice conducting alignment and rating activities and reaching consensus.

Step 3—rating cognitive complexity levels. Following training, reviewers independently rated the cognitive complexity level of each TEKS ELAR statement using the Webb (2002) DoK scale descriptions (see appendix G), so that they would be familiar with the TEKS ELAR statements before making content alignment decisions. Cognitive complexity ratings for the ACT and ADP sets of standards had been completed as part of the Rolfhus et al. (2010) study. Since that study and this one used the same methodology and review team, the ADP and ACT cognitive complexity ratings from Rolfhus et al. were used for the current study as well.

Step 4—achieving consensus on cognitive complexity levels. After completing individual cognitive complexity ratings for all TEKS ELAR statements, the two independent reviewers met with the senior reviewer to compare ratings and achieve consensus where ratings differed. The role of the senior reviewer was to facilitate consensus and make the final decision if consensus could not be reached.

Step 5—comparing and aligning ACT–TEKS ELAR content. Using the ACT–TEKS ELAR content alignment table and beginning with the first ACT statement in the first ACT strand, each reviewer independently and systematically[17] searched all TEKS ELAR statements for content aligned to the ACT statement. This review was intended to give reviewers an overall impression of content and structure. Next, each reviewer used the content alignment table to conduct a more detailed examination, starting with an ACT content statement and then searching TEKS ELAR for any statements that contained all or part of the same content.

This was an exhaustive search: all TEKS ELAR statements with aligning content were included. Once all fully and partially aligned TEKS ELAR statements were identified, the reviewer assigned a content alignment level rating to the ACT statement based on the cumulative content of all the aligned TEKS ELAR statements (fully, partially, or not aligned).

Consensus meetings between the independent reviewers and the senior reviewer were held after completion of an ACT strand—approximately every two weeks. After achieving consensus, the reviewers returned to independent statement alignment and rating on the next ACT strand. This cycle continued until all possible ACT and TEKS ELAR statements were aligned and the content alignment levels were rated.

Step 6—comparing and aligning ADP–TEKS ELAR content. The ADP–TEKS ELAR content alignment was conducted in the same manner as the ACT–TEKS ELAR alignment, with reviewers independently completing the first two ADP strands before holding a consensus meeting with the senior reviewer.

APPENDIX B
REVIEWER QUALIFICATIONS AND ROLES AND INTERRATER RELIABILITY FINDINGS

This appendix provides more detail on reviewer qualifications and interrater reliability.

Reviewer qualifications and roles

By using the same reviewers as the Rolfhus et al. (2010) study, the current study was able to take advantage of their recent experience with a large-scale alignment of English language arts college readiness standards intended for national use. The Rolfhus et al. (2010) study included the ACT College Readiness Standards (ACT, Inc. 2007) and the American Diploma Project (ADP) College and Workplace Readiness Benchmarks (Achieve, Inc. 2004) sets of standards and the same methodology and rating scales as applied here. The review team consisted of a senior reviewer and two primary reviewers.

The senior reviewer has a doctoral degree in English education and more than 13 years of combined experience designing and teaching English courses for grades 9–12, workshops for K–12 writing instruction and other writing seminars, and postsecondary level courses. The senior reviewer's research concentration is composition studies and writing center theory and practice. The two primary reviewers both have doctoral degrees in curriculum with a focus on reading education. One has nine years of experience teaching at the primary level, seven years at the postsecondary level, six years as a reading and English language arts specialist, and three years working for a state department of education. The other primary reviewer has 14 years of experience teaching at the primary level, 21 years of experience at the postsecondary level, and additional experience working with various state agencies.

The senior reviewer conducted the initial training, monitored the progress of ratings, held consensus meetings, and was ready to serve as the final judge should consensus not be reached on any individual rating. The two independent reviewers conducted the alignment and assigned the ratings. In practice, the senior reviewer did not need to intervene to reach consensus on any final rating.

Interrater reliability: content alignment

Standards alignment research is a subjective process, and the use of expert judgment is critical. Multiple experts are used so that the unique perspective and knowledge of each individual contributes to results that generalize beyond one individual's ratings. However, the use of multiple raters does not provide an advantage if there is little agreement. Low levels of reviewer agreement may indicate problems with the ratings scales, reviewer qualifications, training, or other methodology decisions. So it is important to evaluate agreement among reviewers as an indicator of the quality of the research process and the potential generalizability of the findings.

The term *interrater reliability* refers to the methods for summarizing the amount of agreement between multiple reviewers. Typically, the higher the level of agreement, the greater the confidence that the assigned ratings would be replicated by others following the same procedures. Because this study employed two expert reviewers to make independent judgments using a subjective rating scale, comparing the ratings can provide information about the initial consensus of the reviewers. However, because the final ratings were determined using a consensus methodology, initial agreement or disagreement is not critical to the final consensus ratings and alignment.

Two approaches to summarizing interrater agreement are reported here: percent agreement and intraclass correlation (table B1). Percent agreement is the proportion of identical ratings assigned by both reviewers. Because this approach does not consider the possibility of agreement by chance or of ratings that are close but not an exact match, the study also reports the intraclass correlation (Shrout and Fleiss 1979), which assumes that each

TABLE B1

Content alignment interrater agreement prior to consensus meeting, 2009

Benchmark standards set	Percent agreement[a]	Intraclass correlation[b]
ACT	65	0.74
American Diploma Project (ADP)	72	0.81

a. Overall percent agreement in independent alignment ratings prior to the consensus meeting for the 62 ADP benchmark statements and the 191 ACT benchmark statements.

b. Calculated using SPSS, version 16.0 (SPSS, Inc. 2007)—two-way random effects model, absolute agreement, average measures. This is equivalent to Shrout and Fleiss (1979) Case 2, which assumes that the two raters are drawn from a population of raters.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007) and Achieve, Inc. (2004).

reviewer brings measurement error into the rating process. The intraclass correlation also accounts for small discrepancies, such as when reviewer 1 assigns a rating of a fully aligned and reviewer 2 assigns a rating of partially aligned.

Interrater reliability: cognitive complexity

Interrater reliability for cognitive complexity is reported in the same way as for content alignment, with two exceptions. Table B2 contains all three standards sets and includes cognitive complexity ratings for every statement within each set, regardless of whether statements aligned to any statements from the benchmark set. The cognitive complexity ratings for ACT and ADP are taken from Rolfhus et al. (2010),[18] which used the same methodology and reviewers. The same reviewers completed the Texas Essential Knowledge and Skills for English language arts and reading standards (TEKS ELAR; Texas Education Agency 2008) ratings as a separate activity. Percent agreement may appear lower for the cognitive complexity ratings than for the content alignment ratings because the Webb depth of knowledge (DoK) scale has four levels and the content alignment scale has only three. A four-level scale provides more opportunity for rater disagreement than does a three-level scale.

TABLE B2

Cognitive complexity interrater agreement prior to consensus meeting, 2009

Standards set	Number of statements[a]	Percent agreement	Intraclass correlation[b]
ACT	191	46	0.67
American Diploma Project (ADP)	59[c]	75	0.77
Texas Essential Knowledge and Skills for English language arts and reading standards (TEKS ELAR)	278	68	0.75

a. Cognitive complexity ratings were conducted for all statements in each standards set.

b. Calculated using SPSS, version 16.0 (SPSS, Inc. 2007)—two-way random effects model, absolute agreement, average measures. This is equivalent to Shrout and Fleiss (1979) Case 2, which assumes the two raters are drawn from a population of raters.

c. Statistics for ADP are based on paired ratings for 59 of 62 statements. Reviewer 1 did not assign ratings to three statements prior to the consensus meeting due to uncertainty about how to apply the Webb DoK scale to "software presentations" and two statements about "explaining themes" and "demonstrating knowledge" of literature. These statements were discussed and consensus was reached as with all other ratings. It cannot be known how lack of three initial ratings may have affected final consensus ratings or agreement rates.

Source: For ACT and ADP expert rater activities, April–September 2008 (Rolfhus et al. 2010). For TEKS ELAR, summary of reviewer ratings completed June–August 2009 drawing on standards statements in Texas Education Agency (2008).

Interrater reliability results in context

Because there is limited research on studies of standards-to-standards alignment, it is difficult to draw direct comparisons with agreement rates reported in the alignment literature. Even for a typical test item to standard alignment study, there are no universal guidelines for agreement rates to be considered good. Agreement must be compared with similar studies. This is complicated by the fact that researchers often report different interrater agreement statistics (such as intraclass correlation, percent agreement, Cohen's Kappa, and generalizability coefficients), if they report anything at all.

The Webb Alignment Tool training manual (Webb 2005) provides rough guidelines. As a general rule, Webb (pp. 115–116) considers an intraclass correlation of 0.70 or more to be "adequate" and 0.80 or greater to be "good"; "pair-wise comparisons" (or percentage agreement) of less than 0.50 are considered "poor," while higher than 0.60 is "reasonable" and 0.70 or higher is "good." These categories are not formal or definitive, but useful benchmarks from one of the leaders in alignment research. Note that Webb's classifications use six to eight independent raters, while only two were used in the current study.

Agreement rates are shown for the current study and other research in figure B1 (percent agreement) and figure B2 (intraclass correlations) for both content alignment and cognitive complexity.

In the current study, only the ADP cognitive complexity agreement rates did not meet Webb's reasonable or good classification (see figure B1). ADP cognitive complexity rating was the first task completed by the new team as part of the Rolfhus et al. (2010) study nine months before the current study. This may have contributed to the lower agreement rates before consensus in that study, even though the same rating team participated in both.

All three comparison studies presented in figure B1 (the studies are neither representative nor exhaustive, but are recent examples of agreement results from leading researchers) had higher percent agreement levels than the current study. Wixson and Dutro (2002, p. 94), reporting 93 percent agreement, used two raters to align the content of reading standards for primary grades from 14 states to a limited benchmark list of 12 content statements developed by the research team. Stern and Ahlgren (2002), reporting 87 percent agreement (using a five-point scale), trained seven two-member teams to rate content alignment from nine science textbooks to a subset of science content benchmarks from Project 2061 (American Association for the Advancement of Science 2009). Wixson and Dutro (2002, p. 8) also reported 94 percent agreement on Webb cognitive complexity ratings for one state's grade K–5 reading objectives and 80 percent for the aligned assessment items.

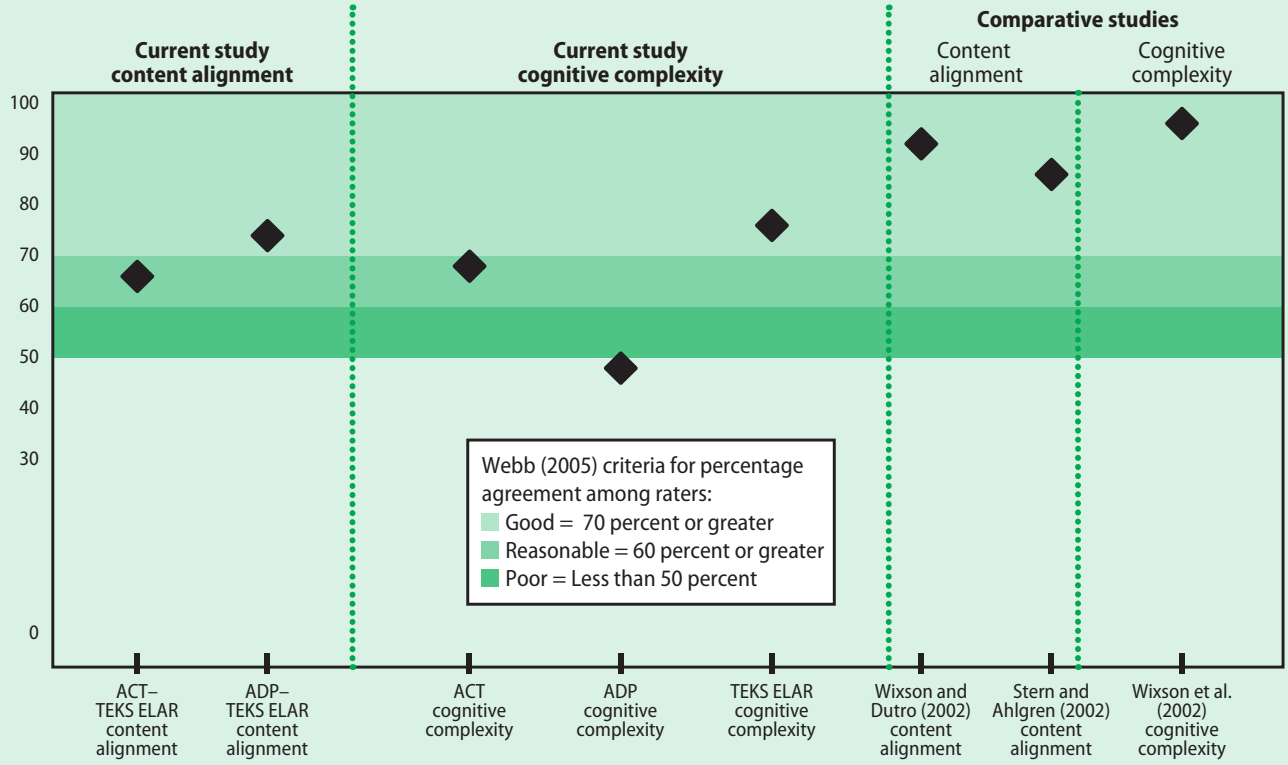
The intraclass correlations for the current study, with the exception of ACT cognitive complexity, are within Webb's (2005) adequate or good ranges (figure B2).

The intraclass correlation agreement rates for the comparison studies vary widely. Porter et al. (2007), in a recent study of a curriculum-to-standards alignment, compared English language arts standards with the curriculum actually taught in the classroom at three different grades in two states. The G-coefficients (equivalent to the intraclass correlations reported here—see tables B1 and B2) for two raters ranged from 0.47 to 0.83. The intraclass correlations in the current study are within the same range. Webb, Horton, and O'Neal (2002, p. 11) report intraclass correlations of 0.36–0.92 ($M = 0.73$) for Webb cognitive complexity ratings of language arts assessment items. The intraclass correlations in the current study are at the higher end of the ranges reported in these two comparative studies.

With the exception of percent agreement for ADP content alignment, the results indicate that interrater reliability in the current study was consistent with similar research for both content alignment and cognitive complexity ratings, at least within the broad range of agreement rates reported by the small number of alignment studies that provide them. High interrater agreement is important in studies that compute a mean rating from several raters (for example, Webb, Herman, and Webb 2007). The current study did not compute a mean from the individual raters; rather, a consensus approach was used to determine the final ratings. No studies, other than Rolfhus et el. (2010), were identified that applied an identical methodology for standards-to-standards content alignment and that also incorporated cognitive complexity ratings, so direct comparisons with a larger research base of studies using identical methods is not possible. To reiterate, very high initial agreement is not critical because this study used a consensus process, not a mean of multiple ratings to determine final ratings. Consequently, the level of agreement found in the present study's interim rating process is acceptable.

FIGURE B1

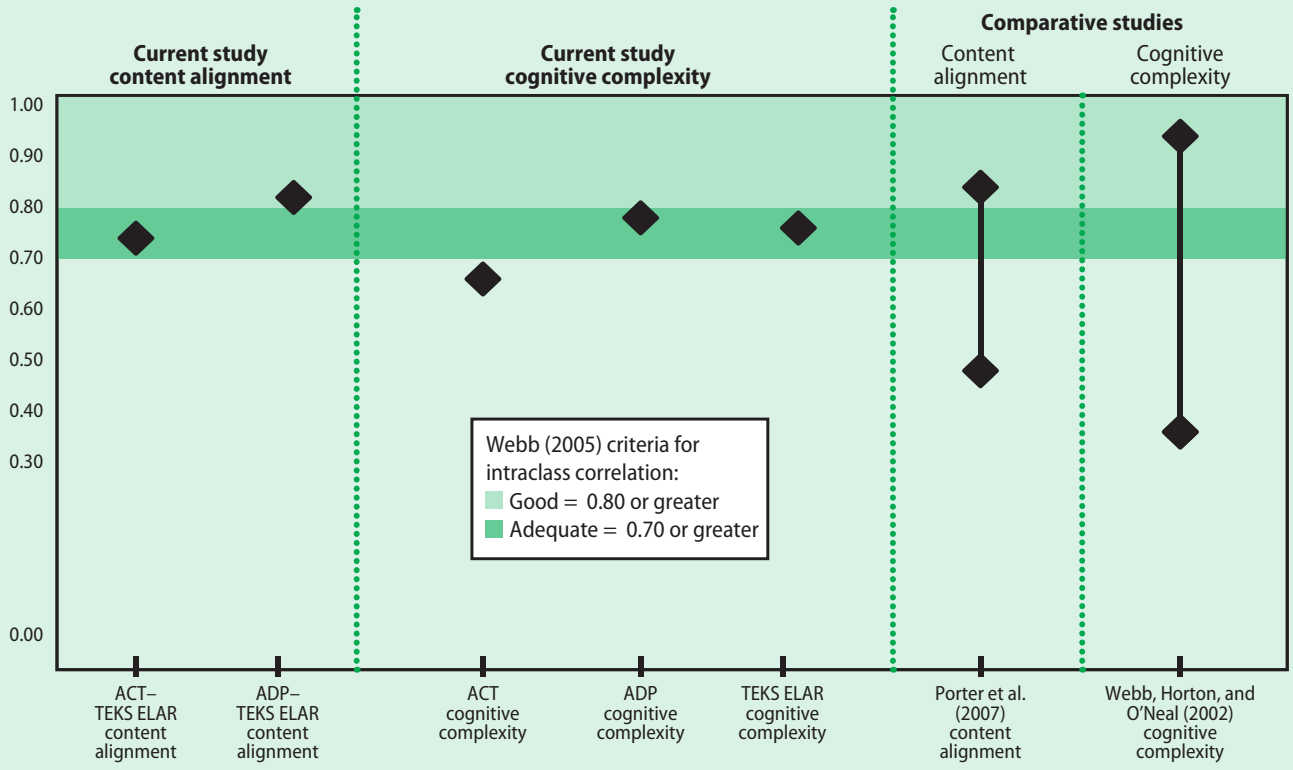
Interrater reliability in the current study and other research, 2009 (percent agreement)



Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008); Rolfhus et al. 2010; Stern and Ahlgren 2002; Webb 2005; Wixson and Dutro 2002; Wixson et al. 2002.

FIGURE B2

Interrater reliability in the current study compared to other research, 2009 (intraclass correlation)



Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008); Porter et al. 2008; Rolfhus et al. 2010; Webb et al. 2002; Webb 2005.

APPENDIX C
EXAMPLES OF FULLY AND PARTIALLY ALIGNED STATEMENTS

Fully aligned means that statements in the Texas Essential Knowledge and Skills for English language arts and reading standards (TEKS ELAR, Texas Education Agency 2008) aligned to all portions of a statement in the ACT College Readiness Standards (ACT, Inc. 2007) or the American Diploma Project (ADP) College and Workplace Readiness Benchmarks (Achieve, Inc. 2004). Table C1 shows two examples of full alignment. In example 1, one statement aligns fully to the ADP statement. The reviewer notes explain that there was an exact match of language so the reviewers did not have to infer the level of alignment. In example 2, the two statements from the comparison set when considered together align fully to the ADP statement.

The term *partially aligned* means that statements in the TEKS ELAR aligned to only some of the ADP or ACT standard. Table C2 provides two examples of partial alignment. In example 1, the three statements (considered together) partially align to the ADP statement. The reviewer notes explain that "ADP refers to broad use of roots, affixes, and cognates to read unfamiliar words," while the comparison standards set is

TABLE C1
Examples of fully aligned standards statements, 2009

American Diploma Project benchmark statement	Texas Essential Knowledge and Skills for English language arts and reading standards statements with full alignment to the ADP statement	Reviewer notes
Example 1		
ADP Logic strand E7. Understand the distinction between a deductive argument (where, if the premises are all true and the argument's form is valid, the conclusion is inescapably true) and inductive argument (in which the conclusion provides the best or most probable explanation of the truth of the premises, but is not necessarily true).	110.33 b 9(B): distinguish between inductive and deductive reasoning and analyze the elements of deductively and inductively reasoned texts and the different ways conclusions are supported	A complete match of language, didn't need to infer match.
Example 2		
ADP Informational Text strand F4. Distinguish between a summary and a critique.	110.31 b 9(A): summarize text and distinguish between a summary that captures the main ideas and elements of a text and a critique that takes a position and expresses an opinion; 110.32 b 9(A): summarize text and distinguish between a summary and a critique and identify non-essential information in a summary and unsubstantiated opinions in a critique	

Note: Statement identifier codes, such as E7 and 110.32 b 9 (A), were used to identify specific standard statements. The codes used to identify ADP statements followed ADP's coding format; for example, "E" indicates a statement in the logic strand and "7" indicates the seventh standard statement in that strand. The codes used to identify TEKS statements followed TEKS's coding format; for example, 110.32 indicates the standard is English II; "b" indicates the statement is within TEKS knowledge and skills; "9" indicates the standard is the ninth standard within TEKS knowledge and skills; and "(A)" indicates the standard statement is the first student expectation under standard 9.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008).

TABLE C2
Examples of partially aligned standards statements, 2009

American Diploma Project benchmark statement	Texas Essential Knowledge and Skills for English language arts and reading standards statements with partial alignment to the ADP statement	Reviewer notes
Example 1 ADP Language strand A3. Use roots, affixes and cognates to determine the meaning of unfamiliar words.	110.31 b 1(A); 110.32 b 1(A); 110.33 b 1(A); 110.34 b 1(A): determine the meaning of grade-level technical academic English words in multiple content areas (e.g., science, mathematics, social studies, the arts) derived from Latin, Greek, or other linguistic roots and affixes; 110.31 b 1(D): describe the origins and meanings of foreign words or phrases used frequently in written English (e.g., caveat emptor, carte blanche, tete a tete, pas de deux, bon appetit, quid pro quo) 110.33 b 1(D): recognize and use knowledge of cognates in different languages and of word origins to determine the meaning of words	The reviewers defined the interpretation of the word cognate to include "meanings across languages" which would include I: ID. They considered a rating of 3, but 1A at each level is very specific, specifying/limiting to content specific vocabulary, whereas ADP refers to broad use of roots, affixes, and cognates to read unfamiliar words.
Example 2 ADP Research strand D2. Gather relevant information from a variety of print and electronic sources, as well as from direct observation, interviews and surveys.	110.33 b 21(A); 110.34 b 21(A): follow the research plan to gather evidence from experts on the topic and texts written for informed audiences in the field, distinguishing between reliable and unreliable sources and avoiding over-reliance on one source;	There is not enough congruence in the language to make this a complete match. TEKS covers more broadly with no direct mention of observations, interviews, and surveys.

Note: Statement identifier codes, such as A3 and 110.31 b 1(A), were used to identify specific standard statements. The codes used to identify ADP statements followed ADP's coding format; for example, "A" indicates a statement in the language strand and "3" indicates the third standard statement in that strand. The codes used to identify TEKS statements followed TEKS's coding format; for example, 110.31 indicates the standard is English I; "b" indicates the statement is within TEKS knowledge and skills; "1" indicates the standard is the first standard within TEKS knowledge and skills; and "(A)" indicates the standard statement is the first student expectation under standard 1.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Achieve, Inc. (2004) and Texas Education Agency (2008).

more specific. In example 2, only one statement from the comparison standards set is partially aligned to the ADP statement. The reviewers note that the comparison statement does not include "direct mention of observations, interviews, and surveys."

APPENDIX D
CONTENT ALIGNMENT FINDINGS BY STRAND

The content alignment analyses examined whether statements in the benchmark standards sets, ACT College Readiness Standards (ACT, Inc. 2007) and the American Diploma Project (ADP) College and Workplace Readiness Benchmarks (Achieve, Inc. 2004) align fully, partially, or not at all with comparison statements in the Texas Essential Knowledge and Skills for English language arts and reading standards (TEKS ELAR; Texas Education Agency 2008). In many cases, the content in a single ACT or ADP statement aligns with content in more than one TEKS ELAR statement.

ACT content alignment findings

ACT's English language arts standards are organized into three strands (English, Reading, and Writing) containing 16 substrands (E-1 through W-5) and 191 standards statements. The level of content alignment between ACT and TEKS ELAR statements is shown in table D1.

American Diploma Project content alignment findings

ADP's English language arts college readiness standards are organized into eight strands consisting of 62 standards statements. The level of content alignment between ADP and TEKS ELAR content statements is shown in table D2.

TABLE D1

Alignment of ACT statements with Texas Essential Knowledge and Skills for English language arts and reading standards statements at each level of content alignment, by ACT strand and substrand, 2009

ACT strand and substrand	Total number	Fully aligned		Partially aligned		Not aligned	
		Number	Percent	Number	Percent	Number	Percent
English	71	6	8	63	89	2	3
E-1: Topic development	11	4	36	5	45	2	18
E-2: Organization	12	1	8	11	92	0	0
E-3: Word choice	13	0	0	13	100	0	0
E-4: Sentence structure	10	1	10	9	90	0	0
E-5: Conventions of usage	11	0	0	11	100	0	0
E-6: Conventions of punctuation	14	0	0	14	100	0	0
Reading	58	3	5	46	79	9	16
R-1: Main ideas	12	2	17	9	75	1	8
R-2: Supporting details	12	1	8	11	92	0	0
R-3: Sequential, comparative, and cause-and-effect relationships	18	0	0	11	61	7	39
R-4: Meanings of words	7	0	0	6	86	1	14
R-5: Generalizations and conclusions	9	0	0	9	100	0	0
Writing	62	18	29	34	55	10	16
W-1: Expressing judgments	14	0	0	12	86	2	14
W-2: Focusing on the topic	8	3	38	5	63	0	0
W-3: Developing a position	10	3	30	3	30	4	40
W-4: Organizing ideas	15	9	60	6	40	0	0
W-5: Using language	15	3	20	8	53	4	27
All strands and substrands	**191**	**27**	**14**	**143**	**75**	**21**	**11**

Note: Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007) and Texas Education Agency (2008).

TABLE D2

Alignment of American Diploma Project statements with Texas Essential Knowledge and Skills for English language arts and reading standards statements at each level of content alignment, by ADP strand, 2009

ADP strand	Total number	Fully aligned		Partially aligned		Not aligned	
		Number	Percent	Number	Percent	Number	Percent
A. Language	7	4	57	3	43	0	0
B. Communication	7	4	57	2	29	1	14
C. Writing	10	5	50	5	50	0	0
D. Research	5	2	40	3	60	0	0
E. Logic	9	3	33	5	56	1	11
F. Informational text	11	6	55	5	45	0	0
G. Media	4	0	0	3	75	1	25
H. Literature	9	6	67	2	22	1	11
All strands	**62**	**30**	**48**	**28**	**45**	**4**	**6**

Note: Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Achieve, Inc. (2004) and Texas Education Agency (2008).

APPENDIX E
NONALIGNED STANDARDS STATEMENTS

ACT College Readiness Standards (ACT, Inc. 2007) and the American Diploma Project (ADP) College and Workplace Readiness Benchmarks (Achieve, Inc. 2004) standards statements that do not align with Texas Essential Knowledge and Skills for English language arts and reading standards (TEKS ELAR; Texas Education Agency 2008) are shown in tables E1 and E2. TEKS ELAR standards statements that do not align to ACT and ADP standards statements are presented by strand in tables E3 and E4.

TABLE E1

ACT statements that did not align with Texas Essential Knowledge and Skills for English language arts and reading standards, by ACT strand, 2009

Statement identifier	Standards statement
R: Reading strand statements	
R-1 Main ideas and author's approach	
13-15-1	Recognize a clear intent of an author or narrator in uncomplicated literary narratives
R-3 Sequential, comparative, and cause-and-effect relationships	
13-15-2	Recognize clear cause-effect relationships described within a single sentence in a passage
16-19-2	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
20-23-3	Identify clear cause-effect relationships in uncomplicated passages
24-27-4	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
24-27-5	Identify clear cause-effect relationships in more challenging passages
28-32-3	Understand implied or subtly stated cause-effect relationships in more challenging passages
33-36-3	Understand implied, subtle, or complex cause-effect relationships in virtually any passage
R-4 Meanings of words	
16-19-1	Use context to understand basic figurative language
E: English strand statements	
E-1 Topic development in terms of purpose and focus	
16-19-1	Identify the basic purpose or role of a specified phrase or sentence
33-36-1	Determine whether a complex essay has accomplished a specific purpose
W: Writing strand statements	
W-1 Expressing judgments	
03-4-1	Show a little understanding of the persuasive purpose of the task but neglect to take or to maintain a position on the issue in the prompt
03-4-2	Show limited recognition of the complexity of the issue in the prompt
W-3 Developing a position	
03-4-1	Offer a little development, with one or two ideas; if examples are given, they are general and may not be clearly relevant; resort often to merely repeating ideas
03-4-2	Show little or no movement between general and specific ideas or examples
05-6-1	Offer limited development of ideas using a few general examples; resort sometimes to merely repeating ideas
05-6-2	Show little movement between general and specific ideas and examples
W-5 Using language	
03-4-1-a	Show limited control of language by correctly employing some of the conventions of standard English grammar, usage, and mechanics, but with distracting errors that sometimes significantly impede understanding

(CONTINUED)

TABLE E1 (CONTINUED)

ACT statements that did not align with Texas Essential Knowledge and Skills for English language arts and reading standards, by ACT strand, 2009

Statement identifier	Standards statement
03-4-1-b	Show limited control of language by using simple vocabulary
03-4-1-c	Show limited control of language by using simple sentence structure
05-6-1-a	Show a basic control of language by correctly employing some of the conventions of standard English grammar, usage, and mechanics, but with distracting errors that sometimes impede understanding
05-6-1-b	Show a basic control of language by using simple but appropriate vocabulary

Note: The codes used to identify ACT statements partially followed ACT's coding format and were modified by researchers to facilitate use. The coding scheme included a number-letter combination conveying the score range and location of the standard statement in the ACT standards document.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007) and Texas Education Agency (2008).

TABLE E2

American Diploma Project statements that did not align with Texas Essential Knowledge and Skills for English language arts and reading standards, by ADP strand, 2009

Statement identifier	Standards statement
B. Communication	
B3.	Paraphrase information presented orally by others.
E. Logic	
E2.	Identify false premises in an argument.
G. Media	
G4.	Apply and adapt the principles of written composition to create coherent media productions using effective images, text, graphics, music and/or sound effects—if possible—and present a distinctive point of view on a topic (for example, PowerPoint presentations, videos).
H. Literature	
H2.	Analyze foundational U.S. documents for their historical and literary significance (for example, The Declaration of Independence, the Preamble to the U.S. Constitution, Abraham Lincoln's "Gettysburg Address," Martin Luther King's "Letter from Birmingham Jail").

Note: Statement identifier codes, such as B1, were used in the study to identify specific standard statements. The codes used to identify ADP statements followed ADP's coding format; for example, "B" indicates a statement in the communication strand and "3" indicates the third standard statement in that strand.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Achieve, Inc. (2004) and Texas Education Agency (2008).

TABLE E3

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
English I	
Research/research plan	
110.31 b 20	Students ask open-ended research questions and develop a plan for answering them:
110.31 b 20(A)	Students are expected to brainstorm, consult with others, decide upon a topic, and formulate a major research question to address the major research topic.
110.31 b 20(B)	Students are expected to formulate a plan for engaging in research on a complex, multi-faceted topic.
Research/gathering sources	
110.31 b 21	Students determine, locate, and explore the full range of relevant sources addressing a research question and systematically record the information they gather:
110.31 b 21(A)	Students are expected to follow the research plan to compile data from authoritative sources in a manner that identifies the major issues and debates within the field of inquiry.
110.31 b 21(B)	Students are expected to organize information gathered from multiple sources to create a variety of graphics and forms (e.g., notes, learning logs).
110.31 b 21(C)	Students are expected to paraphrase, summarize, quote, and accurately cite all researched information according to a standard format (e.g., author, title, page number).
Research/synthesizing information	
110.31 b 22	Students clarify research questions and evaluate and synthesize collected information:
110.31 b 22(A)	Students are expected to modify the major research question as necessary to refocus the research plan.
110.31 b 22(B)	Students are expected to evaluate the relevance of information to the topic and determine the reliability, validity, and accuracy of sources (including Internet sources) by examining their authority and objectivity.
110.31 b 22(C)	Students are expected to critique the research process at each step to implement changes as the need occurs and is identified.
Research/organizing and presenting ideas	
110.31 b 23	Students organize and present their ideas and information according to the purpose of the research and their audience. Students are expected to synthesize the research into a written or an oral presentation.
110.31 b 23(D)	Students are expected to uses a variety of evaluative tools (e.g., self-made rubrics, peer reviews, teacher and expert evaluations) to examine the quality of the research.
Listening and speaking/listening	
110.31 b 24	Students will use comprehension skills to listen attentively to others in formal and informal settings. Students will continue to apply earlier standards with greater complexity:
110.31 b 24(A)	Students are expected to listen responsively to a speaker by taking notes that summarize, synthesize, or highlight the speaker's ideas for critical reflection and by asking questions related to the content for clarification and elaboration.
110.31 b 24(C)	Students are expected to evaluate the effectiveness of a speaker's main and supporting ideas.
Listening and speaking/teamwork	
110.31 b 26	Students work productively with others in teams. Students will continue to apply earlier standards with greater complexity. Students are expected to participate productively in teams, building on the ideas of others, contributing relevant information, developing a plan for consensus-building, and setting ground rules for decision-making.

(CONTINUED)

TABLE E3 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
English II	
Reading/vocabulary development	
110.32 b 1	Students understand new vocabulary and use it when reading and writing:
110.32 b 1 (C)	Students are expected to infer word meaning through the identification and analysis of analogies and other word relationships.
Reading/comprehension of literary text/theme and genre	
110.32 b 2	Students analyze, make inferences and draw conclusions about theme and genre in different cultural, historical, and contemporary contexts and provide evidence from the text to support their understanding:
110.32 b 2(A)	Students are expected to compare and contrast differences in similar themes expressed in different time periods.
110.32 b 2(B)	Students are expected to analyze archetypes (e.g., journey of a hero, tragic flaw) in mythic, traditional and classical literature.
110.32 b 2(C)	Students are expected to relate the figurative language of a literary work to its historical and cultural setting.
Reading/comprehension of literary text/poetry	
110.32 b 3	Students understand, make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support their understanding. Students are expected to analyze the structure or prosody (e.g., meter, rhyme scheme) and graphic elements (e.g., line length, punctuation, word position) in poetry.
Reading/comprehension of literary text/drama	
110.32 b 4	Students understand, make inferences and draw conclusions about the structure and elements of drama and provide evidence from text to support their understanding. Students are expected to analyze how archetypes and motifs in drama affect the plot of plays.
Reading/comprehension of literary text/fiction	
110.32 b 5	Students understand, make inferences and draw conclusions about the structure and elements of fiction and provide evidence from text to support their understanding:
110.32 b 5(A)	Students are expected to analyze isolated scenes and their contribution to the success of the plot as a whole in a variety of works of fiction.
110.32 b 5(D)	Students are expected to demonstrate familiarity with works by authors from non-English-speaking literary traditions with emphasis on 20th century world literature.
Reading/comprehension of literary text/sensory language	
110.32 b 7	Students understand, make inferences and draw conclusions about how an author's sensory language creates imagery in literary text and provide evidence from text to support their understanding. Students are expected to explain the function of symbolism, allegory, and allusions in literary works.
Reading/comprehension of informational text/persuasive text	
110.32 b 10	Students analyze, make inferences and draw conclusions about persuasive text and provide evidence from text to support their analysis:
110.32 b 10(B)	Students are expected to analyze contemporary political debates for such rhetorical and logical fallacies as appeals to commonly held opinions, false dilemmas, appeals to pity, and personal attacks.
Reading/comprehension of informational text/procedural texts	
110.32 b 11	Students understand how to glean and use information in procedural texts and documents:
110.32 b 11(A)	Students are expected to evaluate text for the clarity of its graphics and its visual appeal.
110.32 b 11(B)	Students are expected to synthesize information from multiple graphical sources to draw conclusions about the ideas presented (e.g., maps, charts, schematics).

(CONTINUED)

TABLE E3 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
Reading/media literacy	
110.32 b 12	Students use comprehension skills to analyze how words, images, graphics, and sounds work together in various forms to impact meaning. Students will continue to apply earlier standards with greater depth in increasingly more complex texts:
110.32 b 12(A)	Students are expected to evaluate how messages presented in media reflect social and cultural views in ways different from traditional texts.
110.32 b 12(B)	Students are expected to analyze how messages in media are conveyed through visual and sound techniques (e.g., editing, reaction shots, sequencing, background music).
110.32 b 12(C)	Students are expected to examine how individual perception or bias in coverage of the same event influences the audience.
110.32 b 12(D)	Students are expected to evaluate changes in formality and tone within the same medium for specific audiences and purposes.
Writing/writing process	
110.32 b 13	Students use elements of the writing process (planning, drafting, revising, editing, and publishing) to compose text:
110.32 b 13(E)	Students are expected to revise final draft in response to feedback from peers and teacher and publish written work for appropriate audiences.
Writing/literary texts	
110.32 b 14	Students write literary texts to express their ideas and feelings about real or imagined people, events, and ideas. Students are responsible for at least two forms of literary writing:
110.32 b 14(A)	Students are expected to write an engaging story with a well-developed conflict and resolution, interesting and believable characters, a range of literary strategies (e.g., dialogue, suspense) and devices to enhance the plot, and sensory details that define the mood or tone.
110.32 b 14(B)	Students are expected to write a poem using a variety of poetic techniques (e.g., structural elements, figurative language) and a variety of poetic forms (e.g., sonnets, ballads).
110.32 b 14(C)	Students are expected to write a script with an explicit or implicit theme and details that contribute to a definite mood or tone.
Writing/expository and procedural texts	
110.32 b 15	Students write expository and procedural or work-related texts to communicate ideas and information to specific audiences for specific purposes:
110.32 b 15(C)	Students are expected to write an interpretative response to an expository or a literary text (e.g., essay or review) that: (i) extends beyond a summary and literal analysis; (ii) addresses the writing skills for an analytical essay and provides evidence from the text using embedded quotations; and (iii) analyzes the aesthetic effects of an author's use of stylistic and rhetorical devices.
110.32 b 15(D)	Students are expected to produce a multimedia presentation (e.g., documentary, class newspaper, docudrama, infomercial, visual or textual parodies, theatrical production) with graphics, images, and sound that conveys a distinctive point of view and appeals to a specific audience.
Research/research plan	
110.32 b 20	Students ask open-ended research questions and develop a plan for answering them:
110.32 b 20(A)	Students are expected to brainstorm, consult with others, decide upon a topic, and formulate a major research question to address the major research topic.
110.32 b 20(B)	Students are expected to formulate a plan for engaging in research on a complex, multi-faceted topic.

(CONTINUED)

TABLE E3 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
Research/gathering sources	
110.32 b 21	Students determine, locate, and explore the full range of relevant sources addressing a research question and systematically record the information they gather:
110.32 b 21(A)	Students are expected to follow the research plan to compile data from authoritative sources in a manner that identifies the major issues and debates within the field of inquiry.
110.32 b 21(B)	Students are expected to organize information gathered from multiple sources to create a variety of graphics and forms (e.g., notes, learning logs).
110.32 b 21(C)	Students are expected to paraphrase, summarize, quote, and accurately cite all researched information according to a standard format (e.g., author, title, page number).
Research/synthesizing information	
110.32 b 22	Students clarify research questions and evaluate and synthesize collected information:
110.32 b 22(A)	Students are expected to modify the major research question as necessary to refocus the research plan.
110.32 b 22(B)	Students are expected to evaluate the relevance of information to the topic and determine the reliability, validity, and accuracy of sources (including Internet sources) by examining their authority and objectivity.
110.32 b 22(C)	Students are expected to critique the research process at each step to implement changes as the need occurs and is identified.
Research/organizing and presenting ideas	
110.32 b 23	Students organize and present their ideas and information according to the purpose of the research and their audience:
110.32 b 23(D)	Students are expected to synthesize the research into a written or an oral presentation that uses a variety of evaluative tools (e.g., self-made rubrics, peer reviews, teacher and expert evaluations) to examine the quality of the research.
110.32 b 23(E)	Students are expected to synthesize the research into a written or an oral presentation that uses a style manual (e.g., Modern Language Association, Chicago Manual of Style) to document sources and format written materials.
Listening and speaking/listening	
110.32 b 24	Students will use comprehension skills to listen attentively to others in formal and informal settings. Students will continue to apply earlier standards with greater complexity:
110.32 b 24(A)	Students are expected to listen responsively to a speaker by taking notes that summarize, synthesize, or highlight the speaker's ideas for critical reflection and by asking questions related to the content for clarification and elaboration.
110.32 b 24(C)	Students are expected to evaluate how the style and structure of a speech support or undermine its purpose or meaning.
Listening and speaking/speaking	
110.32 b 25	Students speak clearly and to the point, using the conventions of language. Students will continue to apply earlier standards with greater complexity. Students are expected to advance a coherent argument that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate (e.g., pauses for effect), volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively.
Listening and speaking/teamwork	
110.32 b 26	Students work productively with others in teams. Students will continue to apply earlier standards with greater complexity. Students are expected to participate productively in teams, building on the ideas of others, contributing relevant information, developing a plan for consensus-building and setting ground rules for decision-making.

(CONTINUED)

TABLE E3 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
English III	
Reading/vocabulary development	
110.33 b 1	Students understand new vocabulary and use it when reading and writing:
110.33 b 1(C)	Students are expected to infer word meaning through the identification and analysis of analogies and other word relationships.
110.33 b 1(D)	Students are expected to recognize and use knowledge of cognates in different languages and of word origins to determine the meaning of words.
110.33 b 1(E)	Students are expected to use general and specialized dictionaries, thesauri, glossaries, histories of language, books of quotations, and other related references (printed or electronic) as needed.
Reading/comprehension of literary text/theme and genre	
110.33 b 2	Students analyze, make inferences and draw conclusions about theme and genre in different cultural, historical, and contemporary contexts and provide evidence from the text to support their understanding:
110.33 b 2(B)	Students are expected to relate the characters and text structures of mythic, traditional, and classical literature to 20th and 21st century American novels, plays, or films.
Reading/comprehension of literary text/poetry	
110.33 b 3	Students understand, make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support their understanding. Students are expected to analyze the effects of metrics, rhyme schemes (e.g., end, internal, slant, eye), and other conventions in American poetry.
Reading/comprehension of literary text/drama	
110.33 b 4	Students understand, make inferences and draw conclusions about the structure and elements of drama and provide evidence from text to support their understanding. Students are expected to analyze the themes and characteristics in different periods of modern American drama.
Reading/comprehension of literary text/fiction	
110.33 b 5	Students understand, make inferences and draw conclusions about the structure and elements of fiction and provide evidence from text to support their understanding:
110.33 b 5(D)	Students are expected to demonstrate familiarity with works by authors in American fiction from each major literary period.
Reading/comprehension of literary text/literary nonfiction	
110.33 b 6	Students understand, make inferences and draw conclusions about the varied structural patterns and features of literary nonfiction and provide evidence from text to support their understanding. Students are expected to analyze how rhetorical techniques (e.g., repetition, parallel structure, understatement, overstatement) in literary essays, true life adventures, and historically important speeches influence the reader, evoke emotions, and create meaning.
Reading/comprehension of literary text/sensory language	
110.33 b 7	Students understand, make inferences and draw conclusions about how an author's sensory language creates imagery in literary text and provide evidence from text to support their understanding. Students are expected to analyze the meaning of classical, mythological, and biblical allusions in words, phrases, passages, and literary works.
Reading/comprehension of informational text/expository text	
110.33 b 9	Students analyze, make inferences and draw conclusions about expository text and provide evidence from text to support their understanding:
110.33 b 9(B)	Students are expected to distinguish between inductive and deductive reasoning and analyze the elements of deductively and inductively reasoned texts and the different ways conclusions are supported.

(CONTINUED)

TABLE E3 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
Reading/comprehension of informational text/persuasive text	
110.33 b 10	Students analyze, make inferences and draw conclusions about persuasive text and provide evidence from text to support their analysis:
110.33 b 10(B)	Students are expected to analyze historical and contemporary political debates for such logical fallacies as non-sequiturs, circular logic, and hasty generalizations.
Reading/comprehension of informational text/procedural texts	
110.33 b 11	Students understand how to glean and use information in procedural texts and documents:
110.33 b 11(B)	Students are expected to translate (from text to graphic or from graphic to text) complex, factual, quantitative, or technical information presented in maps, charts, illustrations, graphs, timelines, tables, and diagrams.
Reading/media literacy	
110.33 b 12	Students use comprehension skills to analyze how words, images, graphics, and sounds work together in various forms to impact meaning. Students will continue to apply earlier standards with greater depth in increasingly more complex texts:
110.33 b 12(A)	Students are expected to evaluate how messages presented in media reflect social and cultural views in ways different from traditional texts.
110.33 b 12(B)	Students are expected to evaluate the interactions of different techniques (e.g., layout, pictures, typeface in print media, images, text, sound in electronic journalism) used in multi-layered media.
110.33 b 12(C)	Students are expected to evaluate the objectivity of coverage of the same event in various types of media.
110.33 b 12(D)	Students are expected to evaluate changes in formality and tone across various media for different audiences and purposes.
Writing/writing process	
110.33 b 13	Students use elements of the writing process (planning, drafting, revising, editing, and publishing) to compose text:
110.33 b 13(E)	Students are expected to revise final draft in response to feedback from peers and teacher and publish written work for appropriate audiences.
Writing/literary texts	
110.33 b 14	Students write literary texts to express their ideas and feelings about real or imagined people, events, and ideas. Students are responsible for at least two forms of literary writing:
110.33 b 14(A)	Students are expected to write an engaging story with a well-developed conflict and resolution, complex and non-stereotypical characters, a range of literary strategies (e.g., dialogue, suspense) and devices to enhance the plot, and sensory details that define the mood or tone.
110.33 b 14(B)	Students are expected to write a poem that reflects an awareness of poetic conventions and traditions within different forms (e.g., sonnets, ballads, free verse).
110.33 b 14(C)	Students are expected to write a script with an explicit or implicit theme, using a variety of literary techniques.
Writing/expository and procedural texts	
110.33 b 15	Students write expository and procedural or work-related texts to communicate ideas and information to specific audiences for specific purposes:
110.33 b 15(C)	Students are expected to write an interpretation of an expository or a literary text that: (i) advances a clear thesis statement; (ii) addresses the writing skills for an analytical essay, including references to and commentary on quotations from the text; (iii) analyzes the aesthetic effects of an author's use of stylistic or rhetorical devices; (iv) identifies and analyzes the ambiguities, nuances, and complexities within the text; and (v) anticipates and responds to readers' questions or contradictory information.

(CONTINUED)

TABLE E3 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
110.33 b 15(D)	Students are expected to produce a multimedia presentation (e.g., documentary, class newspaper, docudrama, infomercial, visual or textual parodies, theatrical production) with graphics, images, and sound that appeals to a specific audience and synthesizes information from multiple points of view.
Research/research plan	
110.33 b 20	Students ask open-ended research questions and develop a plan for answering them:
110.33 b 20(A)	Students are expected to brainstorm, consult with others, decide upon a topic, and formulate a major research question to address the major research topic.
110.33 b 20(B)	Students are expected to formulate a plan for engaging in in-depth research on a complex, multi-faceted topic.
Research/gathering sources	
110.33 b 21	Students determine, locate, and explore the full range of relevant sources addressing a research question and systematically record the information they gather:
110.33 b 21(A)	Students are expected to follow the research plan to gather evidence from experts on the topic and texts written for informed audiences in the field, distinguishing between reliable and unreliable sources and avoiding over-reliance on one source.
110.33 b 21(B)	Students are expected to systematically organize relevant and accurate information to support central ideas, concepts, and themes, outline ideas into conceptual maps/timelines, and separate factual data from complex inferences.
110.33 b 21(C)	Students are expected to paraphrase, summarize, quote, and accurately cite all researched information according to a standard format (e.g., author, title, page number), differentiating among primary, secondary, and other sources.
Research/synthesizing information	
110.33 b 22	Students clarify research questions and evaluate and synthesize collected information:
110.33 b 22(A)	Students are expected to modify the major research question as necessary to refocus the research plan.
110.33 b 22(B)	Students are expected to differentiate between theories and the evidence that supports them and determine whether the evidence found is weak or strong and how that evidence helps create a cogent argument.
110.33 b 22(C)	Students are expected to critique the research process at each step to implement changes as the need occurs and is identified.
Research/organizing and presenting ideas	
110.33 b 23	Students organize and present their ideas and information according to the purpose of the research and their audience:
110.33 b 23(D)	Students are expected to synthesize the research into an extended written or oral presentation that uses a style manual (e.g., Modern Language Association, Chicago Manual of Style) to document sources and format written materials.
110.33 b 23(E)	Students are expected to synthesize the research into an extended written or oral presentation that is of sufficient length and complexity to address the topic.
Listening and speaking/listening	
110.33 b 24	Students will use comprehension skills to listen attentively to others in formal and informal settings. Students will continue to apply earlier standards with greater complexity:
110.33 b 24(A)	Students are expected to listen responsively to a speaker by framing inquiries that reflect an understanding of the content and by identifying the positions taken and the evidence in support of those positions.
110.33 b 24(B)	Students are expected to evaluate the clarity and coherence of a speaker's message and critique the impact of a speaker's diction and syntax on an audience.

(CONTINUED)

TABLE E3 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
Listening and speaking/speaking	
110.33 b 25	Students speak clearly and to the point, using the conventions of language. Students will continue to apply earlier standards with greater complexity. Students are expected to give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices, and that employs eye contact, speaking rate (e.g., pauses for effect), volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively.
English IV	
Reading/vocabulary development	
110.34 b 1	Students understand new vocabulary and use it when reading and writing:
110.34 b 1(C)	Students are expected to use the relationship between words encountered in analogies to determine their meanings (e.g., synonyms/antonyms, connotation/denotation).
110.34 b 1(D)	Students are expected to analyze and explain how the English language has developed and been influenced by other languages.
110.34 b 1(E)	Students are expected to use general and specialized dictionaries, thesauri, histories of language, books of quotations, and other related references (printed or electronic) as needed.
Reading/comprehension of literary text/theme and genre	
110.34 b 2	Students analyze, make inferences and draw conclusions about theme and genre in different cultural, historical, and contemporary contexts and provide evidence from the text to support their understanding:
110.34 b 2(A)	Students are expected to compare and contrast works of literature that express a universal theme.
110.34 b 2(B)	Students are expected to compare and contrast the similarities and differences in classical plays with their modern day novel, play, or film versions.
Reading/comprehension of literary text/poetry	
110.34 b 3	Students understand, make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support their understanding. Students are expected to evaluate the changes in sound, form, figurative language, graphics, and dramatic structure in poetry across literary time periods.
Reading/comprehension of literary text/drama	
110.34 b 4	Students understand, make inferences and draw conclusions about the structure and elements of drama and provide evidence from text to support their understanding. Students are expected to evaluate how the structure and elements of drama change in the works of British dramatists across literary periods.
Reading/comprehension of literary text/fiction	
110.34 b 5	Students understand, make inferences and draw conclusions about the structure and elements of fiction and provide evidence from text to support their understanding:
110.34 b 5(D)	Students are expected to demonstrate familiarity with works of fiction by British authors from each major literary period.
Reading/comprehension of literary text/literary nonfiction	
110.34 b 6	Students understand, make inferences and draw conclusions about the varied structural patterns and features of literary nonfiction and provide evidence from text to support their understanding. Students are expected to analyze the effect of ambiguity, contradiction, subtlety, paradox, irony, sarcasm, and overstatement in literary essays, speeches, and other forms of literary nonfiction.
Reading/comprehension of literary text/sensory language	
110.34 b 7	Students understand, make inferences and draw conclusions about how an author's sensory language creates imagery in literary text and provide evidence from text to support their understanding. Students are expected to analyze how the author's patterns of imagery, literary allusions, and conceits reveal theme, set tone, and create meaning in metaphors, passages, and literary works.

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TABLE E3 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
Reading/comprehension of informational text/expository text	
110.34 b 9	Students analyze, make inferences and draw conclusions about expository text and provide evidence from text to support their understanding:
110.34 b 9(B)	Students are expected to explain how authors writing on the same issue reached different conclusions because of differences in assumptions, evidence, reasoning, and viewpoints.
Reading/comprehension of informational text/persuasive text	
110.34 b 10	Students analyze, make inferences and draw conclusions about persuasive text and provide evidence from text to support their analysis:
110.34 b 10(B)	Students are expected to draw conclusions about the credibility of persuasive text by examining its implicit and stated assumptions about an issue as conveyed by the specific use of language.
Reading/comprehension of informational text/procedural texts	
110.34 b 11	Students understand how to glean and use information in procedural texts and documents:
110.34 b 11(A)	Students are expected to draw conclusions about how the patterns of organization and hierarchic structures support the understandability of text.
110.34 b 11(B)	Students are expected to evaluate the structures of text (e.g., format, headers) for their clarity and organizational coherence and for the effectiveness of their graphic representations.
Reading/media literacy	
110.34 b 12	Students use comprehension skills to analyze how words, images, graphics, and sounds work together in various forms to impact meaning. Students will continue to apply earlier standards with greater depth in increasingly more complex texts:
110.34 b 12(A)	Students are expected to evaluate how messages presented in media reflect social and cultural views in ways different from traditional texts.
110.34 b 12(B)	Students are expected to evaluate the interactions of different techniques (e.g., layout, pictures, typeface in print media, images, text, sound in electronic journalism) used in multi-layered media.
110.34 b 12(C)	Students are expected to evaluate how one issue or event is represented across various media to understand the notions of bias, audience, and purpose.
110.34 b 12(D)	Students are expected to evaluate changes in formality and tone across various media for different audiences and purposes.
Writing/writing process	
110.34 b 13	Students use elements of the writing process (planning, drafting, revising, editing, and publishing) to compose text:
110.34 b 13(E)	Students are expected to revise final draft in response to feedback from peers and teacher and publish written work for appropriate audiences.
Writing/literary texts	
110.34 b 14	Students write literary texts to express their ideas and feelings about real or imagined people, events, and ideas. Students are responsible for at least two forms of literary writing:
110.34 b 14(A)	Students are expected to write an engaging story with a well-developed conflict and resolution, a clear theme, complex and non-stereotypical characters, a range of literary strategies (e.g., dialogue, suspense), devices to enhance the plot, and sensory details that define the mood or tone.
110.34 b 14(B)	Students are expected to write a poem that reflects an awareness of poetic conventions and traditions within different forms (e.g., sonnets, ballads, free verse).
110.34 b 14(C)	Students are expected to write a script with an explicit or implicit theme, using a variety of literary techniques.

(CONTINUED)

TABLE E3 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
Writing/expository and procedural texts	
110.34 b 15	Students write expository and procedural or work-related texts to communicate ideas and information to specific audiences for specific purposes:
110.34 b 15(C)	Students are expected to write an interpretation of an expository or a literary text that: (i) advances a clear thesis statement; (ii) addresses the writing skills for an analytical essay including references to and commentary on quotations from the text; (iii) analyzes the aesthetic effects of an author's use of stylistic or rhetorical devices; (iv) identifies and analyzes ambiguities, nuances, and complexities within the text; and (v) anticipates and responds to readers' questions and contradictory information.
110.34 b 15(D)	Students are expected to produce a multimedia presentation (e.g., documentary, class newspaper, docudrama, infomercial, visual or textual parodies, theatrical production) with graphics, images, and sound that appeals to a specific audience and synthesizes information from multiple points of view.
Research/research plan	
110.34 b 20	Students ask open-ended research questions and develop a plan for answering them:
110.34 b 20(A)	Students are expected to brainstorm, consult with others, decide upon a topic, and formulate a major research question to address the major research topic.
110.34 b 20(B)	Students are expected to formulate a plan for engaging in in-depth research on a complex, multi-faceted topic.
Research/gathering sources	
110.34 b 21	Students determine, locate, and explore the full range of relevant sources addressing a research question and systematically record the information they gather:
110.34 b 21(A)	Students are expected to follow the research plan to gather evidence from experts on the topic and texts written for informed audiences in the field, distinguishing between reliable and unreliable sources and avoiding over-reliance on one source.
110.34 b 21(B)	Students are expected to systematically organize relevant and accurate information to support central ideas, concepts, and themes, outline ideas into conceptual maps/timelines, and separate factual data from complex inferences.
110.34 b 21(C)	Students are expected to paraphrase, summarize, quote, and accurately cite all researched information according to a standard format (e.g., author, title, page number), differentiating among primary, secondary, and other sources.
Research/synthesizing information	
110.34 b 22	Students clarify research questions and evaluate and synthesize collected information:
110.34 b 22(A)	Students are expected to modify the major research question as necessary to refocus the research plan.
110.34 b 22(B)	Students are expected to differentiate between theories and the evidence that supports them and determine whether the evidence found is weak or strong and how that evidence helps create a cogent argument.
110.34 b 22(C)	Students are expected to critique the research process at each step to implement changes as the need occurs and is identified.
Research/organizing and presenting ideas	
110.34 b 23	Students organize and present their ideas and information according to the purpose of the research and their audience:
110.34 b 23(D)	Students are expected to synthesize the research into an extended written or oral presentation that uses a style manual (e.g., Modern Language Association, Chicago Manual of Style) to document sources and format written materials.
110.34 b 23(E)	Students are expected to synthesize the research into an extended written or oral presentation that is of sufficient length and complexity to address the topic.

(CONTINUED)

TABLE E3 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
Listening and speaking/listening	
110.34 b 24	Students will use comprehension skills to listen attentively to others in formal and informal settings. Students will continue to apply earlier standards with greater complexity:
110.34 b 24(A)	Students are expected to listen responsively to a speaker by framing inquiries that reflect an understanding of the content and by identifying the positions taken and the evidence in support of those positions.
110.34 b 24(B)	Students are expected to assess the persuasiveness of a presentation based on content, diction, rhetorical strategies, and delivery.
Listening and speaking/speaking	
110.34 b 25	Students speak clearly and to the point, using the conventions of language. Students will continue to apply earlier standards with greater complexity. Students are expected to formulate sound arguments by using elements of classical speeches (e.g., introduction, first and second transitions, body, and conclusion), the art of persuasion, rhetorical devices, eye contact, speaking rate (e.g., pauses for effect), volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively.
Listening and speaking/teamwork	
110.34 b 26	Students work productively with others in teams. Students will continue to apply earlier standards with greater complexity. Students are expected to participate productively in teams, offering ideas or judgments that are purposeful in moving the team towards goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision-making, and evaluating the work of the group based on agreed-upon criteria.

Note: The codes used to identify TEKS statements followed TEKS's coding format; for example, 110.31 indicates the standard is English I; "b" indicates the statement is within TEKS knowledge and skills; "20" indicates the standard is the 20th standard within TEKS knowledge and skills; and "(A)" indicates the standard statement is a the first student expectation under standard 20.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007) and Texas Education Agency (2008).

TABLE E4

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to America Diploma Project statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
English I	
Reading/vocabulary development	
110.31 b 1	Students understand new vocabulary and use it when reading and writing:
110.31 b 1(E)	Student are expected to use a dictionary, a glossary, or a thesaurus (printed or electronic) to determine or confirm the meanings of words and phrases, including their connotations and denotations, and their etymology.
Reading/comprehension of literary text/sensory language	
110.31 b 7	Students understand, make inferences and draw conclusions about how an author's sensory language creates imagery in literary text and provide evidence from text to support their understanding. Students are expected to explain the role of irony, sarcasm, and paradox in literary works.
Writing/literary texts	
110.31 b 14	Students write literary texts to express their ideas and feelings about real or imagined people, events, and ideas. Students are responsible for at least two forms of literary writing:
110.31 b 14(A)	Students are expected to write an engaging story with a well-developed conflict and resolution, interesting and believable characters, and a range of literary strategies (e.g., dialogue, suspense) and devices to enhance the plot.
Research/synthesizing information	
110.31 b 22	Students clarify research questions and evaluate and synthesize collected information:

(CONTINUED)

TABLE E4 (CONTINUED)

Texas Essential Knowledge and Skills for English language arts and reading standards statements that did not align to ACT statements, by TEKS ELAR strand, 2009

Statement identifier	Standards statement
110.31 b 22(C)	Students are expected to critique the research process at each step to implement changes as the need occurs and is identified.
English II	
Reading/vocabulary development	
110.32 b 1	Students understand new vocabulary and use it when reading and writing:
110.32 b 1 (D)	Students are expected to show the relationship between the origins and meaning of foreign words or phrases used frequently in written English and historical events or developments (e.g., glasnost, avant-garde, coup d'état).
Writing/literary texts	
110.32 b 14	Students write literary texts to express their ideas and feelings about real or imagined people, events, and ideas. Students are responsible for at least two forms of literary writing:
110.32 b 14(A)	Students are expected to write an engaging story with a well-developed conflict and resolution, interesting and believable characters, a range of literary strategies (e.g., dialogue, suspense) and devices to enhance the plot, and sensory details that define the mood or tone.
Research/synthesizing information	
110.32 b 22	Students clarify research questions and evaluate and synthesize collected information:
110.32 b 22(C)	Students are expected to critique the research process at each step to implement changes as the need occurs and is identified.
English III standards	
Writing/literary texts	
110.33 b 14	Students write literary texts to express their ideas and feelings about real or imagined people, events, and ideas. Students are responsible for at least two forms of literary writing:
110.33 b 14(A)	Students are expected to write an engaging story with a well-developed conflict and resolution, complex and non-stereotypical characters, a range of literary strategies (e.g., dialogue, suspense) and devices to enhance the plot, and sensory details that define the mood or tone.
Research/synthesizing information	
110.33 b 22	Students clarify research questions and evaluate and synthesize collected information:
110.33 b 22(C)	Students are expected to critique the research process at each step to implement changes as the need occurs and is identified.
English IV standards	
Reading/vocabulary development	
110.34 b 1	Students understand new vocabulary and use it when reading and writing:
110.34 b 1(D)	Students are expected to analyze and explain how the English language has developed and been influenced by other languages.
Writing/literary texts	
110.34 b 14	Students write literary texts to express their ideas and feelings about real or imagined people, events, and ideas. Students are responsible for at least two forms of literary writing:
110.34 b 14(A)	Students are expected to write an engaging story with a well-developed conflict and resolution, a clear theme, complex and non-stereotypical characters, a range of literary strategies (e.g., dialogue, suspense), devices to enhance the plot, and sensory details that define the mood or tone.
Research/synthesizing information	
110.34 b 22	Students clarify research questions and evaluate and synthesize collected information:
110.34 b 22(C)	Students are expected to critique the research process at each step to implement changes as the need occurs and is identified.

Note: The codes used to identify TEKS statements followed TEKS's coding format; for example, 110.31 indicates the standard is English I; "b" indicates the statement is within TEKS knowledge and skills; "1" indicates the standard is the first standard within TEKS knowledge and skills; and "(E)" indicates the standard statement is a the fifth student expectation under standard 1.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Achieve, Inc. (2004) and Texas Education Agency (2008).

APPENDIX F
OTHER STANDARDS-TO-STANDARDS ALIGNMENT STUDY FINDINGS

Because there are no universal criteria for determining what levels of alignment are poor or good, it is difficult to interpret the results of the current study in isolation. Interpreting the results relative to those of similar research provides meaningful context for policymakers and other readers of this report. The Rolfhus et al. (2010) study provides such a context because it is a standards-to-standards alignment study that applied the same rating scales and methodology in comparing three sets of college readiness standards in English language arts[19] to a fourth benchmark set, the American Diploma Project (ADP). As in the current study, it evaluated alignment on two dimensions: content and cognitive complexity.

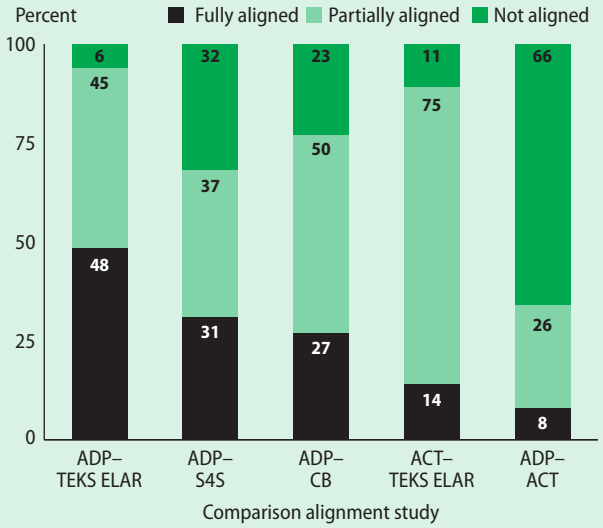
This appendix presents the findings of the current study with those of Rolfhus et al. (2010). Note that while the Texas Essential Knowledge and Skills for English language arts and reading (TEKS ELAR) standards are a set of standards for grades 9–12 vertically aligned with the Texas College and Career Readiness Standards, the other four sets are college readiness standards.

Comparison of content alignment findings

Figure F1 presents the five pairwise comparisons of the current study (ACT–TEKS ELAR and ADP–TEKS ELAR) and of Rolfhus et al. (2010) (ADP–ACT, ADP–College Board, and ADP–Standards for Success)[20] ordered by the percentage of fully aligned benchmark statements. Figure F2 presents the same data ordered by the percentage of combined fully and partially aligned benchmark statements.

Of the five comparisons, the ADP–TEKS ELAR content alignment had the highest percentage of fully aligned benchmark statements (48 percent) and the highest percentage of combined fully and partially aligned benchmark statements (93 percent). These findings show that ADP is more closely aligned with TEKS ELAR than with the other three sets of national English language arts college readiness standards (Rolfhus et al. 2010). Of the five comparisons, the ACT–TEKS ELAR content alignment had the fourth highest percentage of fully aligned benchmark statements (14 percent) and the second highest percentage of combined fully and partially aligned benchmark statements (89 percent).

FIGURE F1
Alignment study findings ordered by percentage of fully aligned standards statements, 2009



Note: Percentages may not sum to 100 because of rounding.
ADP = American Diploma Project; TEKS ELAR = Texas Essential Knowledge and Skills for English language arts and reading; S4S = Standards for Success; CB = College Board.

Source: Rolfhus et al. 2010; summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008).

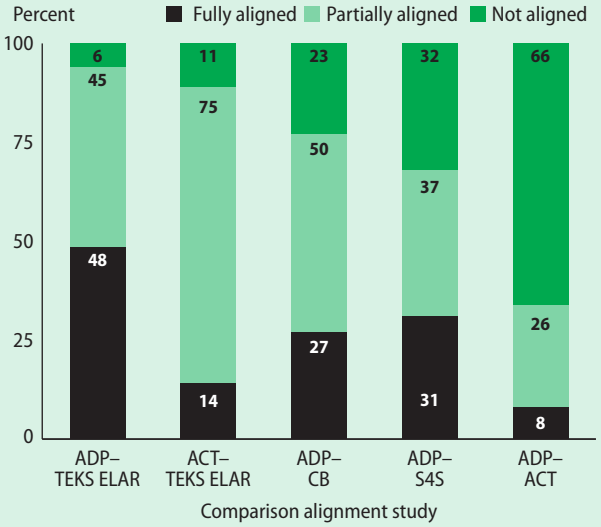
Comparison of cognitive complexity findings

Figure F3 presents cognitive complexity findings for the five standards sets ordered by percentage of statements rated at the combined highest levels of cognitive complexity (3 and 4) on the Webb (2002) depth of knowledge (DoK) scale.

Of the five sets of standards, TEKS ELAR has the highest percentage of statements rated at cognitive complexity level 4 (14 percent) and at

FIGURE F2

Alignment study findings ordered by percentage of fully and partially aligned standards statements, 2009

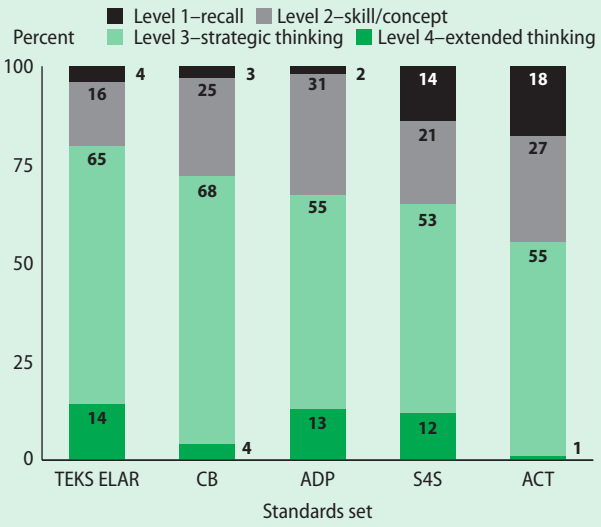


Note: Percentages may not sum to 100 because of rounding. ADP = American Diploma Project; TEKS ELAR = Texas Essential Knowledge and Skills for English language arts and reading; CB = College Board; S4S = Standards for Success.

Source: Rolfhus et al. 2010; summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008).

FIGURE F3

Alignment study findings ordered by percentage of standards statements rated at the combined highest levels of cognitive complexity (3 and 4) on the Webb depth of knowledge scale, 2009



Note: Percentages may not sum to 100 because of rounding. TEKS ELAR = Texas Essential Knowledge and Skills for English language arts and reading; CB = College Board; ADP = American Diploma Project; S4S = Standards for Success.

Source: Rolfhus et al. 2010; summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008).

the highest aggregate cognitive complexity level (79 percent). At 72 percent, College Board has the second highest percentage of statements rated at levels 3 and 4 combined. ACT, at 56 percent, has lowest percentage of statements rated at levels 3 and 4 combined.

APPENDIX G
WEBB'S COGNITIVE COMPLEXITY LEVEL DESCRIPTIONS AND EXAMPLE STATEMENTS

The following cognitive complexity level descriptions for reading and writing (with the exception of the tables with examples) are taken verbatim from Webb's (2002, pp. 1–3) *Cognitive Complexity Criteria: Language Arts Levels for Depth of Knowledge* and used for initial training of reviewers. Both the reading and writing scales are based on the four levels described in the main body of this report: level 1–recall, level 2–skill/concept, level 3–strategic thinking, and level 4–extended thinking. Reviewers used either the reading or the writing scale to rate cognitive complexity based on the content of the statement being rated. Consensus meetings among the review team refined how this language and terminology was interpreted during the rating process. Examples of statements from the four sets of college readiness standards in this study that reviewers rated at each depth of knowledge level are shown in tables G1–G4.

Level 1

Reading (Webb 2002, p. 1). Level 1 (recall) requires students to retrieve or recite facts or to use simple skills or abilities. Oral reading that does not include analysis of the text as well as basic comprehension of a text are included. Items require minimal understanding of text and often consist of verbatim recall from text or simple understanding of a single word or phrase. Some examples that represent but do not constitute all of level 1 performance are:

- Support ideas by reference to details in the text.
- Use a dictionary to find the meaning of words.
- Identify figurative language in a reading passage.

Writing (Webb 2002, p. 2). Level 1 (recall) requires the student to write or recite simple facts. This writing or recitation does not include complex synthesis or analysis but basic ideas. The students are engaged in listing ideas or words as in a brainstorming activity prior to written composition, are engaged in a simple spelling or vocabulary assessment, or are asked to write simple sentences. Students are expected to write and speak using standard English conventions. This includes using appropriate grammar, punctuation, capitalization, and spelling. Some examples that represent but do not constitute all of level 1 performance follow (see also table G1):

- Use punctuation marks correctly.
- Identify standard English grammatical structures and refer to resources for correction.

TABLE G1
Examples of standards statements rated at cognitive complexity level 1, 2009

Standards set	Statement identifier	Statement
ACT	R-2 13-15-1	Supporting details: Locate basic facts (e.g., names, dates, events) clearly stated in a passage
American Diploma Project	A1	Demonstrate control of standard English through the use of grammar, punctuation, capitalization and spelling
Texas Essential Knowledge and Skills for English language arts and reading standards	110.34 b 18	Oral and written conventions/handwriting, capitalization, and punctuation: Students write legibly and use appropriate capitalization and punctuation in their compositions. Students are expected to correctly and consistently use conventions of punctuation and capitalization

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008).

Level 2

Reading (Webb 2002, p. 1). Level 2 (skill/concept) includes the engagement of some mental processing beyond recalling or reproducing a response; it requires both comprehension and subsequent processing of text or portions of text. Inter-sentence analysis of inference is required. Some important concepts are covered but not in a complex way. Standards and items at this level may include words such as summarize, interpret, infer, classify, organize, collect, display, compare, and the distinction between fact and opinion. Literal main ideas are stressed. A level 2 assessment item may require students to apply some of the skills and concepts that are covered in level 1. Some examples that represent but do not constitute all of level 2 performance are:

- Use context cues to identify the meaning of unfamiliar words.
- Predict a logical outcome based on information in a reading selection.
- Identify and summarize the major events in a narrative.

Writing (Webb 2002, pp. 2–3). Level 2 (skill/concept) requires some mental processing. At this level, students are engaged in first draft writing or brief extemporaneous speaking for limited purposes and audiences. Students are beginning to connect ideas using a simple organizational structure. For example, students may be engaged in note taking, outlining, or simple summaries. Text may be limited to one paragraph. Students demonstrate a basic understanding and appropriate use of such reference materials as a dictionary, thesaurus, or website. Some examples that represent but do not constitute all of level 2 performance follow (see also table G2):

- Construct compound sentences.
- Use simple organizational strategies to structure written work.
- Write summaries that contain the main idea and pertinent ideas of a reading selection.

Level 3

Reading (Webb 2002, pp. 1–3). Deep knowledge becomes more of a focus at level 3 (strategic thinking). Students are encouraged to go beyond the text; however, they are still required to show understanding of the ideas in the text. Students may be encouraged to explain, generalize, or connect ideas. Standards and items at level 3 involve reasoning and planning. Students must be able to support their thinking. Items may involve abstract theme identification, inference across an entire passage, or students' application of prior knowledge. Items may also involve more superficial connections between texts. Some examples

TABLE G2

Examples of standards statements rated at cognitive complexity level 2, 2009

Standards set	Statement identifier	Statement
ACT	R-1 16-19-1	Main ideas and author's approach: Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives
American Diploma Project	A3	Use roots, affixes and cognates to determine the meaning of unfamiliar words
Texas Essential Knowledge and Skills for English language arts and reading standards	110.31 b 21(C)	Paraphrase, summarize, quote, and accurately cite all researched information according to a standard format (e.g., author, title, page number)

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008).

TABLE G3
Examples of standards statements rated at cognitive complexity level 3, 2009

Standards set	Statement identifier	Statement
ACT	W-4 03-4-1	Organizing ideas: Provide a discernible organization with some logical grouping of ideas in parts of the essay
American Diploma Project	D3	Make distinctions about the credibility, reliability, consistency, strengths and limitations of resources, including information gathered from Web sites
Texas Essential Knowledge and Skills for English language arts and reading standards	110.31 b 24(A)	Listen responsively to a speaker by taking notes that summarize, synthesize, or highlight the speaker's ideas for critical reflection and by asking questions related to the content for clarification and elaboration

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008).

that represent but do not constitute all of level 3 performance are:

- Determine the author's purpose and describe how it affects the interpretation of a reading selection.
- Summarize information from multiple sources to address a specific topic.
- Analyze and describe the characteristics of various types of literature.

Writing (Webb 2002, p. 3). Level 3 (strategic thinking) requires some higher level mental processing. Students are engaged in developing compositions that include multiple paragraphs. These compositions may include complex sentences and may demonstrate some synthesis and analysis. Students show awareness of their audience and purpose through focus, organization, and the use of appropriate compositional elements. The use of appropriate compositional elements includes such things as addressing chronological order in a narrative or including supporting facts and details in an informational report. At this stage students are engaged in editing and revising to improve the quality of the composition. Some examples that represent but do not constitute all of level 3 performance follow (see also table G3):

- Support ideas with details and examples.
- Use voice appropriate to the purpose and audience.
- Edit writing to produce a logical progression of ideas.

Level 4

Reading (Webb 2002, p. 2). Higher order thinking is central and knowledge is deep at level 4 (extended thinking). The standard or assessment item at this level will probably be an extended activity with extended time provided. The extended time period is not a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher order thinking. Students take information from at least one passage and are asked to apply this information to a new task. They may also be asked to develop hypotheses and perform complex analyses of the connections among texts. Some examples that represent but do not constitute all of level 4 performance are:

- Analyze and synthesize information from multiple sources.
- Examine and explain alternative perspectives across a variety of sources.
- Describe and illustrate how common themes are found across texts from different cultures.

TABLE G4
Examples of standards statements rated at cognitive complexity level 4, 2009

Standards set	Statement identifier	Statement
ACT	W-2 11-12-2	Focusing on the topic: Present a critical thesis that clearly establishes the focus on the writer's position on the issue
American Diploma Project	E8	Analyze two or more texts addressing the same topic to determine how authors reach similar or different conclusions
Texas Essential Knowledge and Skills for English language arts and reading standards	110.34 b 23(C)	Develop an argument that incorporates the complexities of and discrepancies in information from multiple sources and perspectives while anticipating and refuting counter-arguments

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007), Achieve, Inc. (2004), and Texas Education Agency (2008).

Writing (Webb 2002, p. 3). Higher level thinking is central to level 4 (extended thinking). The standard at this level is a multi-paragraph composition that demonstrates synthesis and analysis of complex ideas or themes. Evident is a deep awareness of purpose and audience. For example, informational papers include hypotheses and supporting evidence. Students are expected to create compositions that demonstrate a distinct voice and that stimulate the reader or listener to consider new perspectives on the addressed ideas and themes. An example that represents but does not constitute all of level 4 performance is (also see table G4):

- Write an analysis of two selections, identifying the common theme and generating a purpose that is appropriate for both.

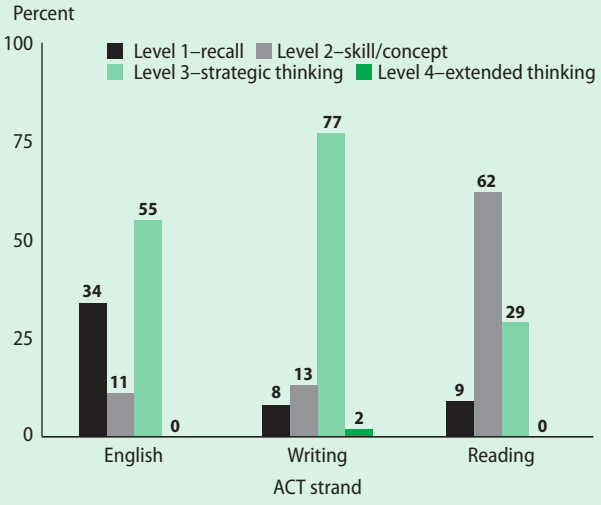
APPENDIX H
COGNITIVE COMPLEXITY BY STRAND

This appendix presents the findings on cognitive complexity by strand for ACT College Readiness Standards (ACT, Inc. 2007), the American Diploma Project (ADP) College and Workplace Readiness Benchmarks (Achieve, Inc. 2004), and the Texas Essential Knowledge and Skills for English language arts and reading standards (TEKS ELAR; Texas Education Agency 2008).

ACT cognitive complexity

The ACT strands vary in the distribution of statements across the four levels of cognitive complexity. Level 3–strategic thinking is well represented in ACT and is the most represented level within the English and writing strands; the majority of the reading strand is represented by level 2–skill/concept (figure H1). Compared with the other sets of standards, ACT displays a relatively high percentage of statements rated at level 1–recall, ranging from 8 percent to 34 percent across strands. ACT strands exhibit a relatively low percentage of statements rated at level 4–extended thinking, ranging from 0 percent to 2 percent across strands. One reason for this may be that the wording of the ACT strands is very detailed in order to facilitate the development of ACT test items. Because of this detail, it may be difficult to assess some of the more abstract constructs described under level 4–extending thinking, resulting in the lowest percentage of level 4 cognitive complexity ratings on the depth of knowledge scale among the three standards sets.

FIGURE H1
Percentage of ACT standards statements at each level of cognitive complexity, by strand, 2009



Note: Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed May–September 2008 (Rolfhus et al. 2010) drawing on standards statements in ACT, Inc. (2007).

American Diploma Project cognitive complexity

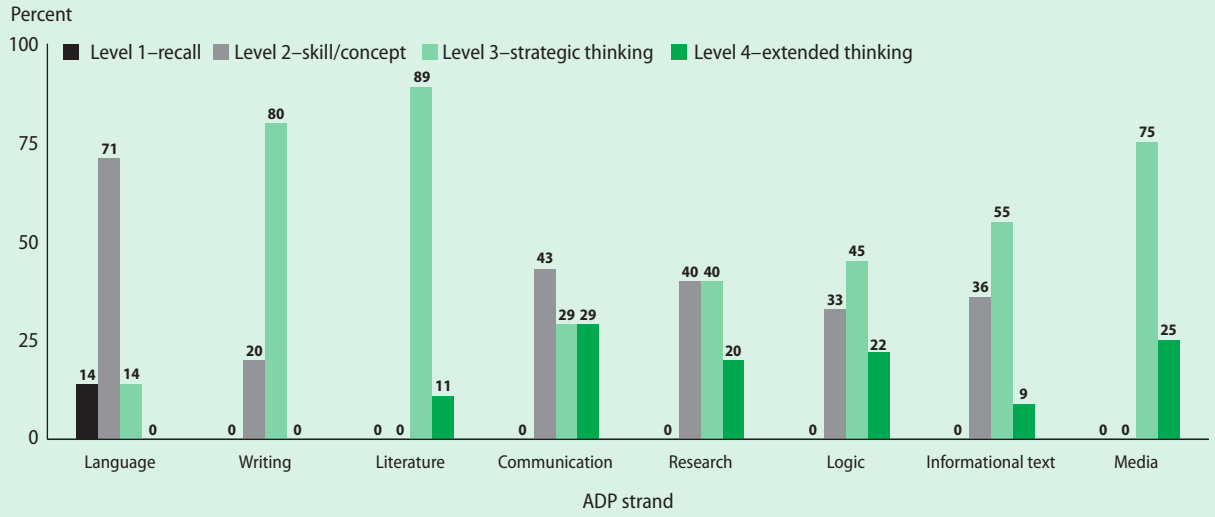
Variation in cognitive complexity was also observed across the eight ADP strands (figure H2). More than a quarter of the content in seven of the eight strands (the exception being language) was at cognitive complexity level 3–strategic thinking. But the distributions of the other three complexity levels differ greatly across strands. For example, level 1–recall is represented only in the language strand (14 percent). Level 2–skill/concept is not represented by either literature or media strands, but has 71 percent representation in language. Finally, statements at the highest level of cognitive complexity are absent from both the language and writing strands; the greatest representations of level 4–extended thinking are displayed in communication (29 percent) and media (25 percent).

Texas Essential Knowledge and Skills for English language arts and reading standards statements cognitive complexity

In each of the TEKS ELAR strands, level 3–strategic thinking is represented at the highest percentage of all four Webb levels, with the highest rates in the reading (84 percent) and listening and speaking (89 percent) strands. Level 1–recall is represented at a high level (40 percent) only in the oral and written convention strand. Level 2–skill/concept appears at the highest percentage (46 percent) in the research strand. Level 4–extended thinking appears at a high percentage (42 percent) only within the writing strand.

FIGURE H2

Percentage of America Diploma Project standards statements at each level of cognitive complexity by strand, 2009

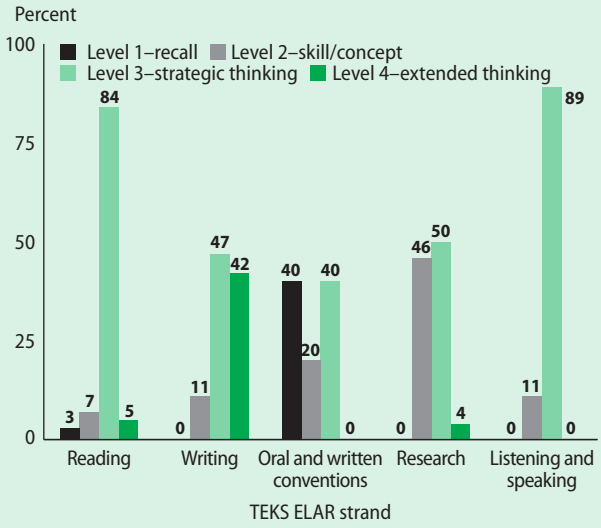


Note: Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed May–September 2008 (Rolfhus et al. 2010) drawing on standards statements in Achieve, Inc. (2004).

FIGURE H3

Percentage of Texas Essential Knowledge and Skills for English language arts and reading standards statements at each level of cognitive complexity by strand, 2009



Note: Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Texas Education Agency (2008).

APPENDIX I
COGNITIVE COMPLEXITY COMPARISON FOR FULLY AND PARTIALLY ALIGNED STATEMENTS

In addition to the cognitive complexity analysis conducted in response to research question 2, another analysis was conducted comparing cognitive complexity ratings for the statements in the benchmark ACT College Readiness Standards (ACT, Inc. 2007) and American Diploma Project (ADP) College and Workplace Readiness Benchmarks (Achieve, Inc. 2004) standards sets and the Texas Essential Knowledge and Skills for English language arts and reading standards (TEKS ELAR; Texas Education Agency 2008) sets that contain aligned content.

For ease of reference, this appendix uses the terms *ACT–TEKS ELAR aligned statements* and *ADP–TEKS ELAR aligned statements* to refer to the statements that make up a fully or partially aligned relationship (the one fully or partially aligned ACT or ADP statement and the one or more TEKS ELAR statements that fully or partially align to that ACT or ADP statement). When multiple TEKS ELAR statements combine to fully or partially align to a single ACT or ADP statement, each individual comparison statement contributed to the calculations reported in this section. For example, if a single ACT statement was aligned fully with the cumulative content of four TEKS ELAR statements, four comparisons were conducted (the cognitive complexity level of the ACT statement was individually compared with the cognitive complexity level of each of the four aligned TEKS ELAR statements). Because each of the 278 TEKS ELAR statements could align to more than one statement in each benchmark set, there are more instances of TEKS ELAR statements aligned to benchmark statements than there are actual TEKS ELAR statements.

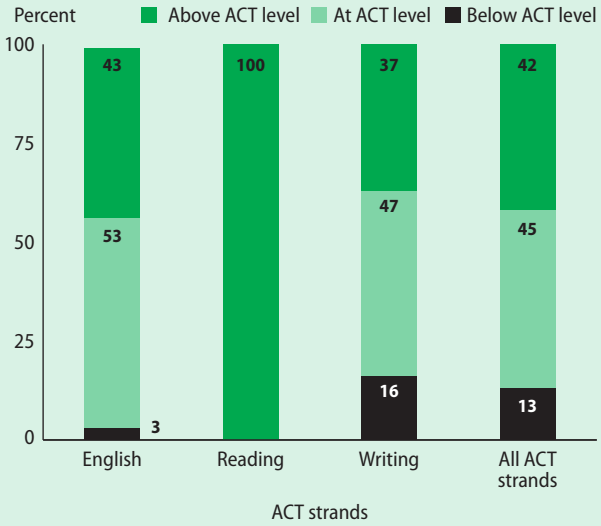
ACT findings

Cognitive complexity findings are presented for the 170 (of 191) ACT statements and 174 (of 278) TEKS ELAR statements that contain fully or partially aligned content. The content alignment found that 27 of ACT's 191 statements align fully with TEKS ELAR statements, with 227 instances in which TEKS ELAR statements contributed to these full alignments. The content alignment also found that 143 of ACT's 191 statements align partially with TEKS ELAR statements, with 777 instances in which TEKS ELAR statements contributed to these partial alignments. Cognitive complexity comparisons were conducted for each instance of ACT–TEKS ELAR fully aligned statements and ACT–TEKS ELAR partially aligned statements. Tables I1 and I2 present the total number of TEKS ELAR aligned statements per ACT strand.

Cognitive complexity results for ACT–TEKS ELAR fully aligned statements. Overall results for the cognitive complexity analysis of the ACT–TEKS ELAR fully aligned statements are presented in figure I1; detailed results are presented in table I1.

FIGURE I1

Overall cognitive complexity comparison findings for ACT–Texas Essential Knowledge and Skills for English language arts and reading standards fully aligned statements, 2009



Note: The number of statements at each level of cognitive complexity by strand is shown in table I1. Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007) and Texas Education Agency (2008).

Across all strands, for fully aligned ACT–TEKS ELAR statements, the TEKS ELAR cognitive complexity level is above the level of the associated ACT statement in 42 percent of the instances of fully aligned statements, at the level in 45 percent of the instances of fully aligned statements, and below the level in 13 percent of the instances of fully aligned statements. The one exception is the reading strand, where the TEKS ELAR cognitive complexity level is above the cognitive complexity level of the associated ACT statement in 100 percent of the instances of ACT–TEKS ELAR fully aligned statements.

Cognitive complexity results for ACT–TEKS ELAR partially aligned statements. Overall results for cognitive complexity analysis of the ACT–TEKS ELAR partially aligned statements are presented in figure I2; detailed results are presented in table I2. Across all ACT strands, in 49 percent of the instances of

TABLE I1

Detailed cognitive complexity comparison findings for ACT–Texas Essential Knowledge and Skills for English language arts and reading standards fully aligned statements, 2009

ACT		Total number of fully aligned statements		Fully aligned TEKS ELAR statements by level of cognitive complexity					
				Above ACT level		At ACT level		Below ACT level	
Strand and substrand	Number of statements	ACT	TEKS ELAR	Number	Percent	Number	Percent	Number	Percent
English	71	6	30	13	43	16	53	1	3
E-1: Topic development	11	4	17	8	47	9	53	0	0
E-2: Organization	12	1	8	5	63	3	38	0	0
E-3: Word choice	13	0	0	0	0	0	0	0	0
E-4: Sentence structure	10	1	5	0	0	4	80	1	20
E-5: Conventions of usage	11	0	0	0	0	0	0	0	0
E-6: Conventions of punctuation	14	0	0	0	0	0	0	0	0
Reading	58	3	14	14	100	0	0	0	0
R-1: Main ideas	12	2	6	6	100	0	0	0	0
R-2: Supporting details	12	1	8	8	100	0	0	0	0
R-3: Sequential, comparative, and cause-and-effect relationships	18	0	0	0	0	0	0	0	0
R-4: Meanings of words	7	0	0	0	0	0	0	0	0
R-5: Generalizations and conclusions	9	0	0	0	0	0	0	0	0
Writing	62	18	183	68	37	86	47	29	16
W-1: Expressing judgment	14	0	0	0	0	0	0	0	0
W-2: Focusing on topic	8	3	23	8	35	10	43	5	22
W-3: Developing a position	10	3	60	21	35	39	65	0	0
W-4: Organizing ideas	15	9	84	36	43	24	29	24	29
W-5: Using language	15	3	16	3	19	13	81	0	0
All strands and substrands	191	27	227	95	42	102	45	30	13

Note: Because an individual TEKS ELAR statement may have aligned to multiple statements in the benchmark set, the total number of aligned TEKS ELAR statements varies. Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007) and Texas Education Agency (2008).

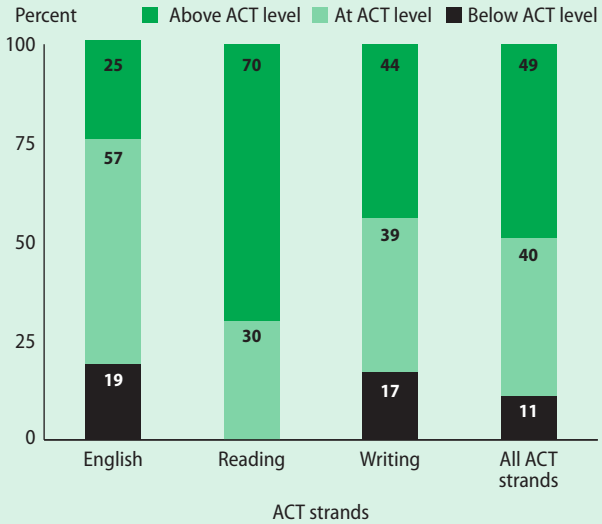
ACT–TEKS ELAR partially aligned statements, the cognitive complexity level of the TEKS ELAR statement was above that of the associated ACT statement; in 40 percent of the instances of ACT–TEKS ELAR partially aligned statements, the TEKS ELAR statement was at the cognitive complexity level of the associated ACT statement; and in 11 percent of the instances of ACT–TEKS ELAR partially aligned statements, the cognitive complexity level of the TEKS ELAR statement was below that of the ACT statement. As with the fully aligned ACT–TEKS ELAR statements, the highest percentage of TEKS ELAR statements above the cognitive complexity level of the associated ACT statements is found in the reading strand (70 percent).

American Diploma Project findings

Cognitive complexity findings are presented for the 58 (of 62) ADP statements and 255 (of 278) TEKS ELAR statements that contain fully or partially aligned content. Again, a single TEKS ELAR statement could align to several ADP statements.

FIGURE I2

Overall cognitive complexity comparison findings for ACT–Texas Essential Knowledge and Skills for English language arts and reading standards partially aligned statements, 2009



Note: The number of statements at each level of cognitive complexity by strand is provided in table I2. Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007) and Texas Education Agency (2008).

Therefore, the instances of TEKS ELAR aligned statements in many cases exceed the number of original TEKS ELAR statements. As with the TEKS ELAR and ACT cognitive complexity analyses, fully and partially aligned results are presented separately. Results of the content alignment indicate that 30 of ADP's 62 statements aligned fully with TEKS ELAR statements; there were 232 instances in which TEKS ELAR statements contributed to these full alignments. In addition, the content alignment indicates that 28 of ADP's 62 statements aligned partially with TEKS ELAR statements; there were 176 instances in which TEKS ELAR statements contributed to these partial alignments. Cognitive complexity comparisons were conducted for each instance of ADP–TEKS ELAR fully aligned statements and ADP–TEKS ELAR partially aligned statements. Values in tables I3 and I4 present the total number of instances of TEKS ELAR aligned statements per ADP strand.

Cognitive complexity results for ADP–TEKS ELAR fully aligned statements. Overall results for the cognitive complexity analysis of ADP–TEKS ELAR fully aligned statements are in figure I3; detailed results are in table I3. Across all strands, in 24 percent of the instances of ADP–TEKS ELAR fully aligned statements, the TEKS ELAR cognitive complexity level is above the level of the associated ADP statement; in 59 percent of the instances of ADP–TEKS ELAR fully aligned statements, the TEKS ELAR cognitive complexity level is at the level of the associated ADP statement, and in 16 percent of the instances of ADP–TEKS ELAR fully aligned statements, the TEKS ELAR statement is below the cognitive complexity level of the associated ADP statement.

Cognitive complexity findings vary across ADP strands. For example, in language strand comparisons, 62 percent of the TEKS ELAR statements were above the cognitive complexity level of the associated ADP statements, while 70 percent of logic strand comparisons found the TEKS ELAR statements below the cognitive complexity level of the associated ADP statements. Note that no values are reported for the media strand because no ADP media statements fully align with TEKS ELAR statements.

TABLE I2

Detailed cognitive complexity comparison findings for ACT–Texas Essential Knowledge and Skills for English language arts and reading standards partially aligned statements, 2009

ACT		Total number of partially aligned statements		Partially aligned TEKS ELAR statements by level of cognitive complexity					
				Above ACT level		At ACT level		Below ACT level	
Strand and substrand	Number of statements	ACT	TEKS ELAR	Number	Percent	Number	Percent	Number	Percent
English	71	63	216	53	25	123	57	40	19
E-1: Topic development	11	5	19	4	21	15	79	0	0
E-2: Organization	12	11	56	20	36	19	34	17	30
E-3: Word choice	13	13	28	1	4	23	82	4	14
E-4: Sentence structure	10	9	43	10	23	16	37	17	40
E-5: Conventions of usage	11	11	21	11	52	8	38	2	10
E-6: Conventions of punctuation	14	14	49	7	14	42	86	0	0
Reading	58	46	291	204	70	87	30	0	0
R-1: Main ideas	12	9	68	68	100	0	0	0	0
R-2: Supporting details	12	11	73	73	100	0	0	0	0
R-3: Sequential, comparative, and cause-and-effect relationships	18	11	81	43	53	38	47	0	0
R-4: Meanings of words	7	6	15	13	87	2	13	0	0
R-5: Generalizations and conclusions	9	9	54	7	13	47	87	0	0
Writing	62	34	270	120	44	104	39	46	17
W-1: Expressing judgment	14	12	63	24	38	39	62	0	0
W-2: Focusing on topic	8	5	70	20	29	25	36	25	36
W-3: Developing a position	10	3	38	21	55	17	45	0	0
W-4: Organizing ideas	15	6	56	24	43	16	29	16	29
W-5: Using language	15	8	43	31	72	7	16	5	12
All strands and substrands	191	143	777	377	49	314	40	86	11

Note: Because an individual TEKS ELAR statement may have aligned to multiple statements in the benchmark set, the total number of aligned TEKS ELAR statements varies. Percentages may not sum to 100 because of rounding.

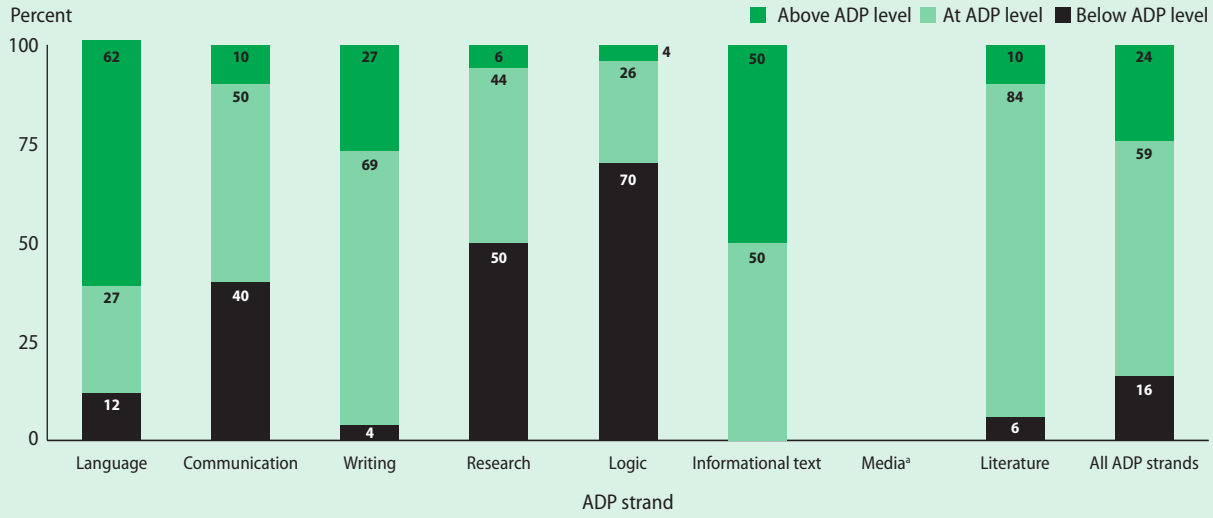
Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in ACT, Inc. (2007) and Texas Education Agency (2008).

Cognitive complexity results for ADP –TEKS ELAR partially aligned statements. Overall results for the cognitive complexity analysis of ADP–TEKS ELAR partially aligned statements are presented in figure I4; detailed results are presented in table I4. Across all strands, in 22 percent of the instances of ADP–TEKS ELAR partially aligned statements, the cognitive complexity level of the TEKS ELAR statements is above that of the associated ADP statement; in 73 percent of the instances of ADP–TEKS ELAR partially aligned statements, the TEKS ELAR statement is at the cognitive complexity level of the associated ADP statement; and in 6 percent of the instances of ADP–TEKS ELAR partially aligned statements, the cognitive complexity level of the TEKS ELAR statement is below that of the associated ADP statement.

While findings vary somewhat across ADP strand, in every strand the cognitive complexity level of the TEKS ELAR statement is at that of the associated ADP statement in at least 56 percent of the instances. Comparisons for five of the eight strands (language, logic, informational

FIGURE I3

Overall cognitive complexity comparison findings for American Diploma Project–Texas Essential Knowledge and Skills for English language arts and reading standards fully aligned statements, 2009



Note: The number of statements at each level of cognitive complexity by strand is provided in table H3.

a. No ADP media statements fully align with TEKS ELAR statements.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Achieve, Inc. (2004) and Texas Education Agency (2008).

TABLE I3

Detailed cognitive complexity comparison findings for American Diploma Project–Texas Essential Knowledge and Skills for English language arts and reading standards fully aligned statements, 2009

ADP		Total number fully aligned statements		Fully aligned TEKS ELAR statements by level of cognitive complexity					
				Above ADP level		At ADP level		Below ADP level	
Strand and substrand	Number of state ments	ADP	TEKS ELAR	Number	Percent	Number	Percent	Number	Percent
A. Language	7	4	26	16	62	7	27	3	12
B. Communication	7	4	10	1	10	5	50	4	40
C. Writing	10	5	55	15	27	38	69	2	4
D. Research	5	2	18	1	6	8	44	9	50
E. Logic	9	3	23	1	4	6	26	16	70
F. Informational text	11	6	30	15	50	15	50	0	0
G. Media	4	0	0	0	0	0	0	0	0
H. Literature	9	6	70	7	10	59	84	4	6
All strands	62	30	232	56	24	138	59	38	16

Note: Because an individual TEKS ELAR statement may have aligned to multiple statements in the benchmark set, the total number of aligned TEKS ELAR statements varies. Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Achieve, Inc. (2004) and Texas Education Agency (2008).

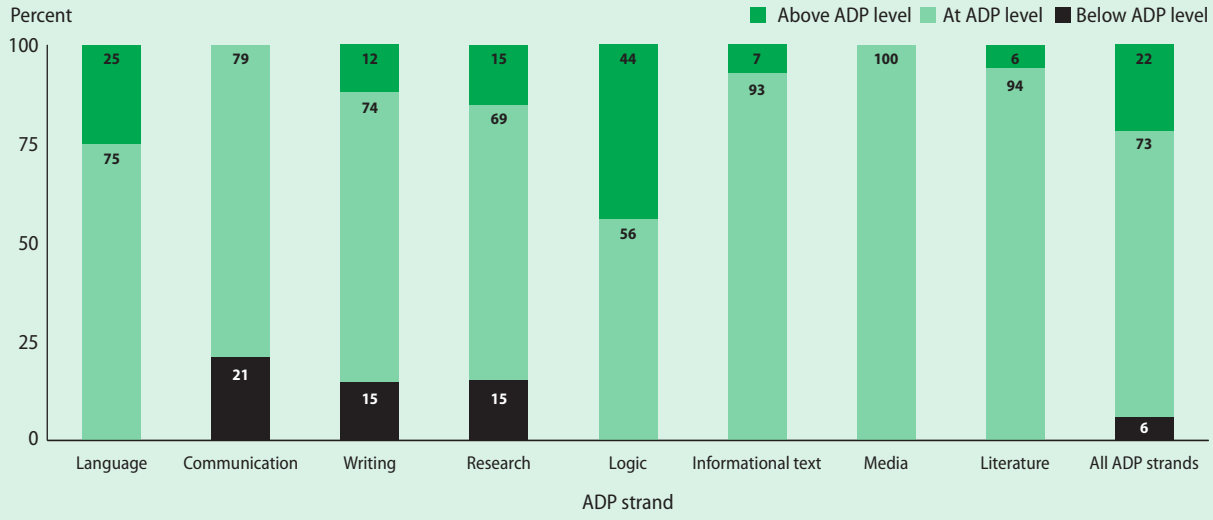
text, media, and literature) found that all TEKS ELAR statements are above or at the cognitive complexity level of their associated ADP statements.

Summary

The findings presented above demonstrate that, in general, the TEKS ELAR statements are written at

FIGURE I4

Overall cognitive complexity comparison findings for American Diploma Project–Texas Essential Knowledge and Skills for English language arts and reading standards partially aligned statements, 2009



Note: The number of statements at each level of cognitive complexity by strand is provided in table I4. Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Achieve, Inc. (2004) and Texas Education Agency (2008).

TABLE I4

Detailed cognitive complexity comparison findings for American Diploma Project–Texas Essential Knowledge and Skills for English language arts and reading standards partially aligned statements, 2009

ADP		Total number partially aligned statements		Partially aligned TEKS ELAR statements by level of cognitive complexity					
				Above ADP level		At ADP level		Below ADP level	
Strand and substrand	Number of statements	ADP	TEKS ELAR	Number	Percent	Number	Percent	Number	Percent
A. Language	7	3	12	3	25	9	75	0	0
B. Communication	7	2	14	0	0	11	79	3	21
C. Writing	10	5	34	4	12	25	74	5	15
D. Research	5	3	13	2	15	9	69	2	15
E. Logic	9	5	61	27	44	34	56	0	0
F. Informational text	11	5	14	1	7	13	93	0	0
G. Media	4	3	11	0	0	11	100	0	0
H. Literature	9	2	17	1	6	16	94	0	0
All strands	62	28	176	38	22	128	73	10	6

Note: Because an individual TEKS ELAR statement may have aligned to multiple statements in the benchmark set, the total number of aligned TEKS ELAR statements varies. Percentages may not sum to 100 because of rounding.

Source: Summary of reviewer ratings completed June–August 2009 drawing on standards statements in Achieve, Inc. (2004) and Texas Education Agency (2008).

the same or a higher level of cognitive complexity than the ACT or ADP benchmark statements to which they align. This finding was consistent for TEKS ELAR statements that contributed to full alignments as well as for those contributing to partial alignments.

NOTES

1. Content standards define the knowledge and skills students should have in specific content domains as they progress from kindergarten through grade 12.

2. Hamilton, Stecher, and Yuan (2008, p. 11) identify six critical aspects of standards-based reform: academic expectations for students, alignment of the key elements of the education system to promote attainment of these expectations, assessments of student achievement to measure outcomes, decentralization to schools of responsibility for decisions on curriculum and instruction, state and district support and technical assistance to foster improvement of education services, and rewards or sanctions of schools or students based on measured performance (accountability provisions). The first two aspects are most directly relevant to the current study.

3. Vertical alignment has been an important criterion in judging the quality of K–12 standards (for example, Stotsky 2005).

4. Terry's (2007) estimates, derived from enrollment data provided by the Texas Higher Education Coordinating Board, were calculated by dividing the number of students enrolled in remedial coursework in 2006 (in both two- and four-year institutions) by total enrollment in each type of institution. The Provasnik and Planty (2008) estimates were derived from a nationally representative sample survey that asked first-year postsecondary students to self-report whether they were enrolled in remedial courses (Cominole et al. 2007).

5. A major program for funding the American Reinvestment and Recovery Act education agenda is the Race to the Top Fund competition, which gives priority to states that have participated in the Common Core State Standards Initiative and agreed to adopt those standards when they are finalized (U.S. Department of Education 2009).

6. Rolfhus et al. (2010) involved three pairwise comparisons of national college readiness standards sets in English language arts—ACT College Readiness Standards (ACT, Inc. 2007), College Board (College Board 2006), and Standards For Success (Conley 2003)—to a fourth set, American Diploma Project (Achieve, Inc. 2004) that was designated the benchmark. See appendix F for additional information about the findings from this study.

7. The study addresses only the English language arts and reading domain, as mathematics alignment information has already been provided to the Texas Education Agency at the agency's request.

8. English I–IV are the only English language arts and reading courses required for graduation; so elective ELAR courses offered in grades 9–12 are not included in this alignment study.

9. Webb DoK level 1–recall requires students to use simple skills or abilities to retrieve or recite facts. A full description of all four levels is provided in the next section.

10. In addition to the cognitive complexity analysis conducted in response to the second research question, a secondary analysis comparing the cognitive complexity levels of statements with aligned content was conducted. See appendix I for the details and results of this technical analysis.

11. The Timms et al. (2007a–e) studies aligned the science domains of the 2009 NAEP assessment standards and item specifications with state K–12 assessment standards; the Shapley and Brite studies (2008a–e) aligned the mathematics domains of those same sets of assessment standards and item specifications.

12. The current study did not use additional coding employed in the NAEP studies; codes representing higher/lower grade alignment are not relevant for college readiness standards, which have only one level.

13. In this report, "aligned with" is used when referring to the extent of the content alignment between the benchmark standards sets (ACT and ADP) and the TEKS ELAR comparison set. "Aligned to" is used when referring to how the TEKS ELAR standards map to the benchmark set of standards (either ACT or ADP).

14. Rating activities for the Rolfhus et al. (2010) study took place during May–September 2008; rating activities for the current project took place during June–August 2009.

15. Educational Training, Evaluation, Assessment, and Measurement (E-TEAM); College of Continuing Education, University of Oklahoma.

16. The retraining session was intended to ensure that rating process for the TEKS ELAR statements was consistent with that of Rolfhus et al. (2010).

17. *Systematically* here means that each standard statement was read and evaluated for a content match, in the same order as they appeared in the source document. This was an exhaustive search, so that even if a fully aligned content match to the benchmark was found immediately, all remaining standards statements in the comparison set were also read and evaluated.

18. Rating activities for the previous project were completed in September 2008; rating activities for the current project occurred in June–August 2009. A complete retraining session was held to ensure that the rating of the TEKS ELAR statements was consistent with that of the ACT and ADP standards.

19. ACT College Readiness Standards (ACT); College Board (CB); and Standards for Success (S4S)

20. The set of standards used as the benchmark in each pairwise comparison is identified first.

REFERENCES

Achieve, Inc. (n.d.). *State alignment services*. Retrieved April 3, 2009, from http://www.achieve.org/node/323

Achieve, Inc. (2004). *Ready or not: creating a high school diploma that counts, the American Diploma Project.* Retrieved May 4, 2008, from http://www.achieve.org/files/ADPreport_7.pdf

Achieve, Inc. (2009a). *ADP network.* Retrieved December 9, 2009, from http://www.achieve.org/ADPNetwork

Achieve, Inc. (2009b). *ADP assessment consortium*. Retrieved December 9, 2009, from http://www.achieve.org/ADPAssessmentConsortium

ACT, Inc. (2007). *ACT's college readiness standards and college readiness benchmarks: helping to prepare every student for college and work*. Iowa City, IA: ACT, Inc.

American Association for the Advancement of Science. (2009). *Project 2061.* Retrieved November 18, 2009, from http://www.project2061.org/

American Recovery and Reinvestment and Act of 2009, H.R. 1, 111 Cong. (2009).

Blank, R.K. (2002). Using surveys of enacted curriculum to evaluate quality of instruction and alignment with standards. *Peabody Journal of Education*, *77*(4), 86–121.

The College Board. (2006). *College Board College Readiness Standards for College Success™ English Language Arts.* The College Board: The College Board.

Cominole, M., Wheeless, S., Dudley, K., Franklin, J., and Wine, J. (2007). *2004/06 Beginning Postsecondary Students Longitudinal Study (BPS:04/06) Field Test Methodology Report* [working paper series]. Washington, D.C.: U.S. Department of Education, Institute for Education Sciences, National Center for Education Statistics. Retrieved February 12, 2010, from http://nces.ed.gov/pubs2006/200601.pdf

Common Core State Standards Initiative. (2009). *Common Core State Standards initiative frequently asked questions.* Retrieved December 16, 2009, from http://www.corestandards.org/FAQ.htm

Conley, D.T. (2003). *Understanding university success: a report from Standards for Success.* Eugene, OR: University of Oregon, Center for Educational Policy Research. Retrieved February 11, 2008, from http://www.s4s.org/3_UUS_English.pdf

Cook, H.G. (2005). *Milwaukee Public Schools alignment study of Milwaukee Public Schools' learning targets in reading and math to Wisconsin Student Assessment System criterion-referenced test frameworks in reading and math* (Research Report #0504). Milwaukee, WI: Milwaukee Public Schools Office of Assessment and Accountability.

Hamilton, L. S., Stecher, B. M., and Yuan, K. (2008). *Standards-based reform in the United States: history, research, and future directions.* Washington, DC: RAND Corporation.

Improving America's Schools Act of 1994. (1995). Public Law 103–382.

La Marca, P.M. (2001). Alignment of standards and assessments as an accountability criterion. *Practical Assessment, Research & Evaluation*, *7*(21). Retrieved July 20, 2008, from http://PAREonline.net/getvn.asp?v=7&n=21

Missouri Department of Elementary and Secondary Education. (2009, August 7). *State Board of Education agrees to join "Common Core State Standards" project.* Retrieved December 19, 2009, from http://dese.mo.gov/news/2009/corestandards.htm

Näsström, G., and Henriksson, W. (2008). Alignment of standards and assessment: a theoretical and empirical study of methods for alignment. *Electronic Journal of Research in Educational Psychology, 16*(6), 667–690. Retrieved August 1, 2009, from http://www.investigacion-psicopedagogica.org/revista/articulos/16/english/Art_16_216.pdf

National Commission on Excellence in Education. (1983). *A nation at risk: the imperative for educational reform*. Washington, DC: U.S. Department of Education.

National Governors Association (2009). *Forty-nine states and territories join common core standards initiative*. Retrieved December 4, 2009, from www.nga.org

No Child Left Behind Act of 2001. (2002). Public Law 107–110.

Porter, A.C. (2002). Measuring the content of instruction: uses in research and practice. *Educational Researcher. 31*(7), 3–14.

Porter, A.C., Smithson, J., Blank, R., and Zeidner, T. (2007). Alignment as a teacher variable. *Applied Measurement in Education, 20*(1), 27–51.

Provasnik, S., and Planty, M. (2008). *Community colleges: special supplement to The Condition of Education 2008* (NCES 2008-033). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Rolfhus, E., Decker, L.E., Brite, J.L., and Gregory, L. (2010). *A systematic comparison of the American Diploma Project English language arts college readiness standards with those of the ACT, College Board, and Standards for Success* (Issues & Answers Report, REL 2010–No. 086). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest.

Rothman, R. (2004). *Imperfect matches: the alignment of standards and tests.* Washington, DC: National Academy of Sciences.

Rothman, R., J.B. Slattery, J.L. Vranek, and L.B. Resnick. (2002). *Benchmarking and alignment of standards and testing.* CSE Technical Report 566. Los Angeles, CA: University of California, Los Angeles, Graduate School of Education and Information Science, National Center for Research on Evaluation, Standards, and Student Testing.

Shapley, K., and Brite, J. (2008a). *Aligning mathematics assessment standards: Arkansas and the 2009 National Assessment of Educational Progress (NAEP).* (REL Technical Brief, REL 2008–No. 08). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved February 11, 2010, from http://ies.ed.gov/ncee/edlabs

Shapley, K., and Brite, J. (2008b). *Aligning mathematics assessment standards: Louisiana and the 2009 National Assessment of Educational Progress (NAEP).* (REL Technical Brief, REL 2008–No. 09). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved February 11, 2010, from http://ies.ed.gov/ncee/edlabs

Shapley, K., and Brite, J. (2008c). *Aligning mathematics assessment standards: New Mexico and the 2009 National Assessment of Educational Progress (NAEP).* (REL Technical Brief, REL 2008–No. 11). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved February 11, 2010, from http://ies.ed.gov/ncee/edlabs

Shapley, K., and Brite, J. (2008d). *Aligning mathematics assessment standards: Oklahoma and the 2009 National Assessment of Educational Progress (NAEP).* (REL Technical Brief, REL 2008–No. 10). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved February 11, 2010, from http://ies.ed.gov/ncee/edlabs

Shapley, K., and Brite, J. (2008e). *Aligning mathematics assessment standards: Texas and the 2009 National Assessment of Educational Progress (NAEP).* (REL Technical Brief, REL 2008–No. 07). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved February 11, 2010, from http://ies.ed.gov/ncee/edlabs.

Shrout, P.E., and Fleiss, J.L. (1979). Intraclass correlations: uses in assessing rater reliability. *Psychological Bulletin*, *86*(2), 420–428.

South Carolina Department of Education. (2009, September 2). *South Carolina becomes 48th state to join national Common Core Standards project.* Retrieved December 6, 2009, from http://www.ed.sc.gov/news/more.cfm?articleID=1301

SPSS, Inc. (2007). *SPSS for Windows, Rel. 16.1.* Chicago: SPSS, Inc.

Stern, L., and Ahlgren, A. (2002). Analysis of students' assessments in middle school curriculum materials: aiming precisely at benchmarks and standards. *Journal of Research in Science Teaching*, *39*(9), 889–910.

Stotsky, S. (2005). *The state of state English standards.* Washington, DC: Fordham Foundation. Retrieved February 11, 2010, from http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1b/ab/31.pdf

Terry, B.D. (2007). *The cost of remedial education.* Center for Education Policy: Austin, TX. Retrieved May 6, 2008, from http://www.texaspolicy.com/pdf/2007-09-PP25-remediation-bt.pdf

Texas Education Agency. (1997). *Texas Essential Knowledge and Skills.* Austin, TX: Texas Education Agency.

Texas Education Agency. (2008). Texas Essential Knowledge and Skills for English Language Arts and Reading, Texas Administrative Code, § 110-30-66 (2008). Retrieved December 21, 2009, from http://ritter.tea.state.tx.us/rules/tac/chapter110/ch110c.pdf

Texas Education Agency. (2009). *Texas Essential Knowledge and Skills (TEKS) processes/instructional materials/college readiness standards (CRS) timelines.* Retrieved December 19, 2009, from, http://ritter.tea.state.tx.us/teks/TEKSTimeline051109.pdf

Texas Higher Education Coordinating Board. (2008). *Texas college and career readiness standards.* Retrieved January 6, 2008, from http://www.thecb.state.tx.us/index.cfm?objectid=EADF962E-0E3E-DA80-BAAD2496062F3CD8.

Texas Legislature. (2006). House Bill 1, Texas 79th Legislature, 3rd Congressional Session, Section 5.01 (2006) (enacted).

Texas Legislature. (2009). House Bill 3, Texas 81st Legislature, Section 28.014 (d) (2009) (enacted).

Timms, M., Schneider, S., Lee, C., and Rolfhus, E. (2007a). *Aligning science assessment standards: Arkansas and the 2009 National Assessment of Educational Progress (NAEP)* (Issues & Answers Report, REL 2007–No. 019). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved from http://ies.ed.gov/ncee/edlabs

Timms, M., Schneider, S., Lee, C., and Rolfhus, E. (2007b). *Aligning science assessment standards: Louisiana and the 2009 National Assessment of Educational Progress (NAEP)* (Issues & Answers Report, REL 2007–No. 020). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved from http://ies.ed.gov/ncee/edlabs

Timms, M., Schneider, S., Lee, C., and Rolfhus, E. (2007c). *Aligning science assessment standards: New Mexico and the 2009 National Assessment of Educational Progress (NAEP)* (Issues & Answers Report, REL 2007–No. 021). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved from http://ies.ed.gov/ncee/edlabs

Timms, M., Schneider, S., Lee, C., and Rolfhus, E. (2007d). *Aligning science assessment standards: Oklahoma and the 2009 National Assessment of Educational Progress (NAEP)* (Issues & Answers Report, REL 2007–No. 022); Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional

Educational Laboratory Southwest. Retrieved February 11, 2010, from http://ies.ed.gov/ncee/edlabs

Timms, M., Schneider, S., Lee, C., and Rolfhus, E. (2007e). *Aligning science assessment standards: Texas and the 2009 National Assessment of Educational Progress (NAEP)* (Issues & Answers Report, REL 2007–No. 011); Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved February 11, 2010, from http://ies.ed.gov/ncee/edlabs

U.S. Department of Education. (2008). *A nation accountable: twenty-five years after a nation at risk.* Washington, DC: U.S. Department of Education. Retrieved April 8, 2009, from www.ed.gov/rschstat/research/pubs/accountable

U.S. Department of Education (2009). *Race to the Top Fund–Executive summary notice of proposed priorities, requirements, definitions, and selection criteria*. Retrieved November 19, 2009, from http://www.ed.gov/programs/racetothetop/executive-summary.pdf

Webb, N.L. (1997). *Criteria for alignment of expectations and assessments in mathematics and science education.* (Research Monograph No. 6.) Washington, DC: Council of Chief State School Officers. Retrieved December 1, 2008, from http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED414305

Webb, N.L. (1999). *Alignment of science and mathematics standards and assessments in four states* (Research Monograph No. 18). Madison, WI: University of Wisconsin-Madison, National Institute for Science Education.

Webb, N.L. (2002). *Alignment study in language arts, mathematics, science, and social studies of state standards and assessments for four states. A study of the State Collaborative on Assessment & Student Standards (SCASS)* Technical Issues in Large-Scale Assessment (TILSA). Washington, DC: Council of Chief State School Officers.

Webb N.L. (2005). *Web alignment tool: training manual.* Madison, WI: Wisconsin Center for Educational Research.

Webb, N.M., Herman, J., and Webb, N.L. (2007, Summer). Alignment of science and mathematics state-level standards and assessments: the role of reviewer agreement. *Educational Measurement: Issues and Practices*, *26*(2), 17–29. Retrieved September 15, 2009, from http://www3.interscience.wiley.com/journal/118495110/issue

Webb, N.L., Horton, M. and O'Neal, S. (2002). *An analysis of the alignment between language arts standards and assessments for four states.* Madison, WI: Wisconsin Center for Education Research. Retrieved March 3, 2007, from http://facstaff.wcer.wisc.edu/normw/AERA%202002/Alignment%20Analysis%20Language%20Arts%20%20Four%20States%2031202.pdf

Wixson, K.K. and Dutro, E. (2002). Standards for primary-grade reading: an analysis of state frameworks. *The Elementary School Journal, 100*(2), 89–110.

Wixson, K.K., Fisk, M.C., Dutro, E., and McDaniel, J. (2002). *The alignment of state standards and assessments in elementary reading* (CIERA Report #3-024). Ann Arbor, MI: University of Michigan School of Education, Center for the Improvement of Early Reading Achievement.