



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





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

February 2010

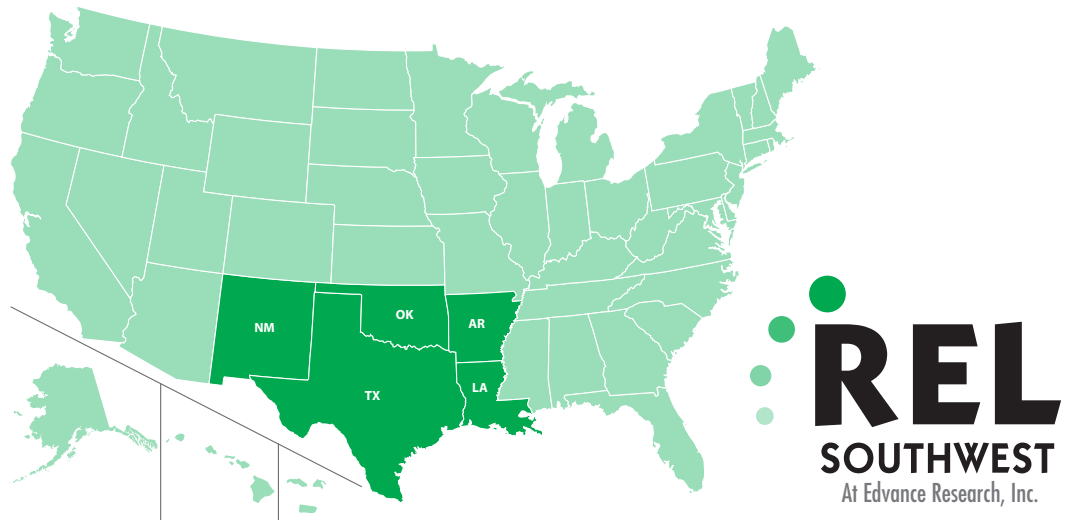
Prepared by

Eric Rolfhus, Ph.D.
Edvance Research

Lauren E. Decker, Ph.D.
Edvance Research

Jessica L. Brite, M.S.
Edvance Research

Lois Gregory, M.A.
Edvance Research



Issues & Answers is an ongoing series of reports from short-term Fast Response Projects conducted by the regional educational laboratories on current education issues of importance at local, state, and regional levels. Fast Response Project topics change to reflect new issues, as identified through lab outreach and requests for assistance from policymakers and educators at state and local levels and from communities, businesses, parents, families, and youth. All Issues & Answers reports meet Institute of Education Sciences standards for scientifically valid research.

February 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.

This report is in the public domain. While permission to reprint this publication is not necessary, it should be cited as:

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. 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>.

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

This study of four national English language arts college readiness standards sets compares content alignment and level of alignment of the standards statements in three comparison sets to a benchmark set, the American Diploma Project (ADP), and analyzes the cognitive complexity of all four sets. Standards statements in the comparison sets align completely or partially to varying proportions of the ADP benchmark’s 62 standards statements—77 percent for the College Board College Readiness Standards, 68 percent for Standards for Success, and 34 percent for the ACT College Readiness Standards. But only 5 percent of the ADP statements completely align with content in all three comparison sets, a share that rises to 27 percent when partial alignment is also considered. A majority of statements in the four sets (53–68 percent) were rated level 3 on a four-level cognitive complexity scale.

The country’s interest in college readiness has intensified in recent years. Four sets of English language arts college readiness standards—content statements specifying what students

should know and be able to do to succeed in entry-level college courses—intended for national use have been developed in the past decade. This report details an independent comparison of these four standards sets using the American Diploma Project (ADP; Achieve, Inc. 2004) standards set as the benchmark and the other three as comparison sets.

The Commission for a College Ready Texas (2007), which was guiding the development of college readiness standards, requested technical assistance from Regional Educational Laboratory (REL) Southwest for a comparison of English language arts college readiness definitions in the four standards sets. No previous independent comparisons had been identified. Once this study was complete, members of the REL Southwest Governing Board saw the technical assistance as relevant to college readiness standards work being conducted in other states in the Southwest Region that had not gone through a process of internally developing and formally adopting their own college readiness standards.

The board requested that the study be replicated using a more rigorous methodology so that the results could inform policymakers, curriculum

experts, standards-writing and review teams, and state assessment writing teams about similarities and differences in content and cognitive complexity between the ADP standards and each of the three comparison sets of college readiness standards for English language arts: the ACT College Readiness Standards (ACT; ACT, Inc. 2007), College Board College Readiness Standards (College Board 2006), and Standards for Success (S4S; Conley 2003).

Building on the initial technical assistance work, this two-part study includes a systematic examination of the content of the standards statements (the knowledge and skills explicitly stated or strongly implied) and an analysis of their cognitive complexity (the level of reasoning, cognitive demand, or depth of knowledge required to demonstrate mastery of the contents of a standards statement). ADP was again selected as the benchmark because the ADP standards set includes statements that represent the content deemed necessary by college readiness standards experts at a level of detail that is easily communicated to both policymakers and content experts (not too specific or too broad), because 35 states are part of the ADP network, and because several Texas policymakers were involved in developing the ADP standards. While ADP was thus considered the most appropriate choice for the benchmark in this study, any standards set could have been used as the benchmark, and ADP's selection does not imply superiority.

The report addresses two primary research questions:

- For what percentage of content statements in the American Diploma Project college readiness standards set (the benchmark) is there a completely or partially aligned content statement in each of the other three sets of comparison standards (ACT, College Board, Standards for Success)?
- For each standards set what is the distribution of content statements across the four levels of a cognitive complexity (cognitive demand) scale?

Alignment of the standards statements in each of the three comparison sets to the ADP standards statements was established by systematically comparing individual standards statements to determine whether content was shared (content alignment) and, if so, at what level (using a three-level content alignment rating scale—complete, partial, no alignment). The cognitive demand expected of students in each college readiness standards statement also was rated using Webb's (2002) four-level depth of knowledge (DoK) scale, which is typically used to evaluate the cognitive complexity alignment of test items to standards (Rothman 2004).

Among the study findings, four stand out. First, the percentage of ADP's 62 standards statements that align with standards statements in each of the comparison sets varies, from 77 percent completely or partially aligned statements in College Board to 68 percent in S4S, and 34 percent in ACT. Second, only 5 percent of ADP standards statements (3 of 62) completely align with content included in all three comparison sets. When partial alignment is also considered, the content shared by all four sets of standards rises to 27 percent (17 of the 62 ADP statements). Third, each set of standards contains content that does not align to ADP content—51 percent of

ACT statements, 30 percent of College Board statements, and 15 percent of S4S statements. Fourth, all four levels of the DoK scale are represented in each of the college readiness standards sets, although more than half the statements in each set of standards are written at level 3—strategic thinking, which requires students to demonstrate reasoning, planning skills, and the ability to make complex inferences. State standards and assessments at cognitive complexity levels 1 and 2 may therefore not reflect the level of demand intended by many college readiness standards.

The study has several limitations. Only one set of college readiness standards (ADP) was used as the benchmark, so a direct analysis of the content alignment between ACT, College Board, and S4S was not done. The standards sets align only on general content and cognitive complexity, not on other potentially useful dimensions—such as breadth, depth, and

specificity—that would provide additional content detail that state standards writing teams or assessment writing teams might find useful. No statement can be made about the superiority of one set of standards over another or about the degree to which mastery of the skills defined by the standards is associated with success in college (with the exception of ACT¹). In addition, the manner in which the terms *complete alignment*, *partial alignment*, and *no alignment* were defined and interpreted, and the subjectivity inherent in assigning ratings (an issue for all alignment studies), could have affected the findings.

February 2010

Note

1. The link between high ACT scores, first-year college success, and specific standards mastery has been established (ACT, Inc. 2007).

TABLE OF CONTENTS

Why this study?	1
Texas initiative to develop college readiness standards	1
The current study	2
Research questions	3
College readiness standards sets and cognitive complexity framework	3
Description of college readiness standards sets	4
Description of cognitive complexity framework	8
Findings	8
Interrater agreement	8
Content alignment findings	9
Cognitive complexity findings	12
Conclusions	13
Limitations and suggestions for further research	14
Appendix A Methodology	15
Appendix B Reviewer qualifications and roles and interrater reliability	22
Appendix C Content alignment by American Diploma Project strand	24
Appendix D Unaligned standards statements from benchmark and comparison standards sets	32
Appendix E Webb's cognitive complexity level descriptions	40
Appendix F Cognitive complexity by strand for all four college readiness standards sets	44
Appendix G Alternate content alignment methodologies	47
Notes	49
References	51
Box 1 Study methodology and ratings scales	6
Figures	
1 Percentage of American Diploma Project standards statements that completely or partially align with ACT, College Board, and Standards for Success standards statements, 2008	11
2 Percentage of American Diploma Project statements by strand at each level of alignment with the three comparison sets, 2008	11
3 Percentage of standards statements in each comparison set that do not align to American Diploma Project standards statements, 2008	12
4 Distribution of cognitive complexity level ratings across the four levels of the Webb depth of knowledge scale, by college readiness standards set, 2008 (percent)	12
A1 Pair-wise comparison methodology with the American Diploma Project standards set as the benchmark to which ACT, College Board, and Standards for Success were aligned, 2008	15

A2	Example of the structure of the full alignment table for the American Diploma Project benchmark standards set and the ACT comparison standards set, 2008	18
A3	Example of the structure of the cognitive complexity rating table for American Diploma Project college readiness standards statements, 2008	20
F1	Percentage of American Diploma Project standards statements at each level of cognitive complexity, by strand, 2008	44
F2	Percentage of ACT standards statements at each level of cognitive complexity, by strand, 2008	45
F3	Percentage of College Board standards statements at each level of cognitive complexity, by strand, 2008	45
F4	Percentage of Standards for Success standards statements at each level of cognitive complexity, by strand, 2008	46

Tables

1	Overview of the four sets of college readiness standards and their English language arts strands, 2008	4
2	The 17 (of 62) standards statements of the American Diploma Project for which comparison sets exhibited complete or partial alignment in 2008 (number of statements aligned)	10
A1	Examples of complete alignment of the content of the American Diploma Program benchmark college readiness standards statements with the content of comparison standards sets, 2008	16
A2	Examples of partial alignment of the content of the American Diploma Program benchmark college readiness standards statements with the content of comparison standards sets, 2008	17
B1	Content alignment interrater agreement prior to consensus meeting, 2008	23
B2	Cognitive complexity interrater agreement prior to consensus meeting, 2008	23
C1	Alignment of American Diploma Project language strand statements with ACT, College Board, and Standards for Success statements, 2008	24
C2	Alignment of American Diploma Project communication strand statements with ACT, College Board, and Standards for Success statements, 2008	25
C3	Alignment of American Diploma Project writing strand statements with ACT, College Board, and Standards for Success statements, 2008	26
C4	Alignment of American Diploma Project research strand statements with ACT, College Board, and Standards for Success statements, 2008	27
C5	Alignment of American Diploma Project logic strand statements with ACT, College Board, and Standards for Success statements, 2008	28
C6	Alignment of American Diploma Project informational text strand statements with ACT, College Board, and Standards for Success statements, 2008	29
C7	Alignment of American Diploma Project media strand statements with ACT, College Board, and Standards for Success statements, 2008	30
C8	Alignment of American Diploma Project literature strand statements with ACT, College Board, and Standards for Success statements, 2008	31

D1	American Diploma Project unique statements, by strand, 2008	32
D2	ACT statements that did not align to American Diploma Project statements, by strand, 2008	32
D3	College Board statements that did not align to American Diploma Standards statements, by strand, 2008	36
D4	Standards for Success statements that did not align to American Diploma Program statements, by strand, 2008	38
E1	Examples of standards statements rated at cognitive complexity level 1	40
E2	Examples of standards statements rated at cognitive complexity level 2	41
E3	Examples of standards statements rated at cognitive complexity level 3	42
E4	Examples of standards statements rated at cognitive complexity level 4	43

This study of four national English language arts college readiness standards sets compares content alignment and level of alignment of the standards statements in three comparison sets to a benchmark set, the American Diploma Project (ADP), and analyzes the cognitive complexity of all four sets. Standards statements in the comparison sets align completely or partially to varying proportions of the ADP benchmark’s 62 standards statements—77 percent for the College Board College Readiness Standards, 68 percent for Standards for Success, and 34 percent for the ACT College Readiness Standards. But only 5 percent of the ADP statements completely align with content in all three comparison sets, a share that rises to 27 percent when partial alignment is also considered. A majority of statements in the four sets (53–68 percent) were rated level 3 on a four-level cognitive complexity scale.

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). Thus began the national movement to develop high standards for instruction for all students, also known as standards-based reform. While the adoption of K–12 standards (statements defining the knowledge and skills that students should have in specific content domains as they progress from kindergarten through grade 12) was initially voluntary, it was eventually required by federal legislation beginning with the Improving America’s Schools Act of 1994 (1995) and followed by the No Child Left Behind (NCLB) Act of 2001 (No Child Left Behind Act 2002).

While all states have adopted K–12 standards, the proper alignment of these standards to the demands of postsecondary education (often termed P–16 alignment) is not federally mandated. State efforts in this area lag behind the establishment of rigorous K–12 standards (Achieve, Inc. 2008). Some states such as Texas, however, have developed separate college readiness standards (Texas Higher Education Coordinating Board 2008). College readiness standards define the knowledge and skills thought to be required for students to succeed in the first year of a four-year college program (ACT, Inc. 2008a).

Texas initiative to develop college readiness standards

In 2006 the Texas legislature passed House Bill 1, Section 5.01, which called for the development of college readiness standards and the formation of the Commission for a College Ready Texas (CCRT) to guide the effort (Commission for a College Ready Texas 2007). The CCRT invited expert testimony from four organizations that had developed college readiness standards for national use: the American Diploma Project (ADP; Achieve, Inc. 2004), the ACT College Readiness Standards (ACT, Inc. 2007),

This study focuses on college readiness standards for English language arts and examines two dimensions of alignment: content and cognitive complexity

College Board College Readiness Standards (College Board 2006), and Standards for Success (S4S; Conley 2003). These organizations had consulted with various states in developing more rigorous K–12 standards that encompass college readiness standards and requirements (Achieve, Inc. 2008; ACT, Inc. 2008b; College Board 2008;

Conley 2007). Because of the varied nature and volume of these college readiness standards, the CCRT requested technical assistance from Regional Educational Laboratory (REL) Southwest in evaluating similarities across the four sets of standards to ensure that essential knowledge and skills were reflected in the Texas standards.¹

To meet the CCRT’s time constraints, REL Southwest proposed to align three of the sets to a fourth set (designated as the benchmark set of standards) using a single-reviewer alignment methodology that aligns statements based on shared content as defined by one content expert’s opinion. The CCRT requested that Achieve’s ADP standards set be used as the benchmark, in part because this set is widely used (currently in 35 states; Achieve, Inc. 2009) and in part because several Texas stakeholders participated in the original meetings to develop this standards set (Achieve, Inc. 2004).

The findings of the initial technical assistance study (Commission for a College Ready Texas 2007) were valuable in the CCRT effort.² Once the study was complete, members of the REL Southwest Governing Board (including all five state education chiefs) requested that REL Southwest conduct a study with a more rigorous methodology. The Governing Board members saw the technical assistance as relevant to college readiness standards work being conducted in other states in the Southwest Region that had not gone through a process of internally developing and formally adopting their own state-specific college readiness standards. The importance of college readiness standards is evidenced by stipulations in the American Recovery and Reinvestment Act of 2009 that states requesting stimulus funds for

education show “[p]rogress toward adopting standards and assessments that prepare students to succeed in college and the workplace and to compete in the global economy” (U.S. Department of Education 2009, para. 3).

The current study

The current study, which focuses on college readiness standards for English language arts,³ examines two dimensions of alignment: content and cognitive complexity. While researchers have defined other dimensions by which standards can be described and aligned, such as breadth, depth, and specificity (La Marca 2001; Rothman 2004), La Marca (2001, para. 4) concluded that content knowledge and cognitive complexity were the “two overarching dimensions” of alignment, and Texas policymakers and educators identified them as the primary alignment dimensions of interest.⁴

This study defines *content* as the knowledge and skills explicitly stated or strongly implied in a standards statement (such as “demonstrate knowledge of 18th and 19th century foundational works of American literature and write an academic essay”). It defines *content alignment* as 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 from another set of standards (the benchmark set).

The study also examines the cognitive complexity of both the individual statements and the standards sets as a whole. *Cognitive complexity* is defined as the level of cognitive demand, depth of knowledge, or reasoning (level of abstraction, number of steps, type of thinking) required to demonstrate the knowledge or skills represented by a standards statement (Rothman 2004; Webb 1999). Knowing the level of cognitive complexity is useful to ensure that test items in state assessments are measuring state curriculum standards at the appropriate level of difficulty (Näsström and Henriksson 2008). Knowing the aggregate distribution of the statements at various levels of cognitive complexity was hypothesized to be useful

for identifying differences in college readiness expectations in each of the four sets of standards.

The current study employs a more rigorous approach than the initial technical assistance study in four ways: two independent reviewers were used instead of one;⁵ in addition to content alignment, the level of content alignment (completely, partially, not aligned) between statements in the comparison standards sets and the ADP benchmark statements was rated; a consensus process between the two reviewers and a third, senior reviewer, was implemented to finalize decisions on the level of content alignment (alignment ratings); and a second dimension of alignment was evaluated by assigning cognitive complexity ratings to the standards statements using the same consensus process.

The same content alignment design was employed to determine the level of alignment between ADP standards statements and ACT, College Board, and S4S in order to build on the previous CCRT work (the steps involved in aligning more than one comparison set to a benchmark, the determination that the benchmark alignment methodology was easily understood and well received by policymakers).^{6,7} While any standards set could have been employed as the benchmark, using the ADP standards set was considered most appropriate for this study for several reasons: the ADP standards statements of the content deemed necessary by college readiness standards experts are presented at a level of detail that is easily communicated to both policymakers and content experts (not too specific or too broad), 35 states are part of the ADP network, and several Texas policymakers were involved in developing the ADP standards.

This report is intended to be used in several ways. For policymakers the body of the report contains a high-level content comparison of college readiness standards sets using the ADP standards as the benchmark and the distribution of statements from each standards set across four levels of cognitive complexity. This information communicates the broad issues on which there is substantial agreement and disagreement and provides

information that may be useful to policymakers in their own standards development. For curriculum experts and members of state college readiness standards-writing or review teams, a detailed table describing the level of alignment of each ADP standards statement with statements in comparison standards sets is available from REL Southwest to inform their work of examining existing standards sets for agreement, disagreement, and exemplars. For state assessment writing teams the cognitive complexity ratings can inform the development and alignment of individual test items with individual statements in terms of the level of cognitive demand.

This report communicates the broad issues on which there is substantial agreement and disagreement and provides information that may be useful to policymakers in their own standards development

Research questions

The primary research questions addressed in this report are:

- For what percentage of content statements in the American Diploma Project college readiness standards set (the benchmark) is there a completely or partially aligned content statement in each of the other three sets of comparison standards (ACT, College Board, Standards for Success)?
- For each standards set what is the distribution of content statements across the four levels of a cognitive complexity (cognitive demand) scale?

COLLEGE READINESS STANDARDS SETS AND COGNITIVE COMPLEXITY FRAMEWORK

This section details the four sets of English language arts college readiness standards used in this study (summarized in table 1)—describing the development processes, goals of the developing organizations, intended uses, and strand structures

TABLE 1

Overview of the four sets of college readiness standards and their English language arts strands, 2008

Item	American Diploma Project	ACT	College Board	Standards for Success
Year first published	2004	2007	2006	2003
Publisher	Achieve, Inc.	ACT, Inc.	College Board	University of Oregon Center for Educational Policy Research
Organization type	Education reform organization promoting postsecondary readiness	Test publisher	Test publisher	University researcher in partnership with Pew Charitable Trust and the American Association of Universities
Method for deriving standards statements	Committees of postsecondary academic leaders and business leaders	National Curriculum Survey to inform test development—standards derived from test content	Expert standards advisory committee of selected high school and postsecondary academic leaders	Committees of postsecondary faculty and representatives from 40 prominent universities
English language arts strands	<ul style="list-style-type: none"> • Communication • Informational text • Language • Literature • Logic • Media • Research • Writing 	<ul style="list-style-type: none"> • English • Reading • Writing 	<ul style="list-style-type: none"> • Listening • Media literacy • Reading • Speaking • Writing 	<ul style="list-style-type: none"> • Critical thinking skills • Reading and comprehension • Research skills • Writing
Number of English language arts standards statements	62	191	115	73

Source: Achieve, Inc. 2004; ACT, Inc. 2007; College Board 2006; Conley 2003.

of each set—and explains the framework used for characterizing the cognitive complexity of standards.

Description of college readiness standards sets

The English language arts domain of each set of college readiness standards is organized into strands, or clusters of related standards statements.⁸ For example, the College Board speaking strand contains the individual statements “Understands how speakers’ and listeners’ internal variables affect communication” and “Understands how contextual variables affect communication” (S1.1.2 and S1.1.3; College Board 2006). Strand names vary across the standards sets, and the

organization of statements into strands can help identify areas of emphasis.

American Diploma Project. The ADP, created by Achieve, Inc., has assembled a network of state policymakers and other leaders to align state standards and assessments and raise them to a level that will prepare students for success in postsecondary education. As of 2009, 35 states were part of the ADP network (Achieve, Inc. 2009).

The ADP standards were developed through a two-year process that solicited input from business leaders and postsecondary educators from five states, including Texas (the others were Indiana, Kentucky, Massachusetts, and Nevada; Achieve,

Inc. 2004). This group identified prerequisite knowledge and skills for success in postsecondary education such as entry-level English courses. A working set of standards representing content in the domains of English and math emerged from this research as a basis for refining state K–12 standards and assessments. The ADP English language arts standards are divided into eight strands: communication, informational text, language, literature, logic, media, research, and writing.

ACT. The ACT College Readiness Standards, developed by ACT, Inc., are intended to represent the range of knowledge and skills that most students should be able to demonstrate based on their scores on the ACT assessments (ACT, Inc. 2007). Students receive individual results, and their performance relative to the standards is intended to assist students, parents, and teachers in identifying individual skill deficits and assist teachers in modifying instruction to address student needs.

The ACT assessment standards were developed through a multistage process by ACT, Inc. staff and reviewed by scholars (identified by ACT as nationally recognized) from high school and university English and reading education departments. Based on the distribution of student scores on ACT’s Educational and Planning Assessment System and 40 years of research on ACT student assessment data, ACT identified eight score ranges that most accurately identified students’ levels of achievement. Four ACT content teams reviewed several forms of the ACT assessments by content domain—English, math, science, and reading—and conceptualized what each ACT assessment measured. ACT staff wrote the college readiness standards based on their expert analysis of the knowledge and skills a student needs to respond correctly to the assessment items. Finally, independent reviewers validated the English language arts college readiness standards, which were divided into three strands: English, reading, and writing.

College Board. The College Board Standards for College Success were designed to increase the

success of students enrolled in first-year college courses, to increase their scores on the SAT, to increase college attendance and college completion, and to reduce college remediation rates. College Board standards were developed in two content domains—English language arts, and math and statistics—to provide a framework of model courses for states and districts to follow in preparing students for college (College Board 2006).

The Expert Standards Advisory Committee—composed of postsecondary teacher education faculty, middle and high school teachers, and assessment and curriculum specialists with experience in developing standards—developed the standards over four years using a multistep expert judgment process. The committee first identified the English language arts knowledge and skills required for entry-level college students. Then working backward from these skills, the committee identified the prerequisite knowledge and skills from grade 6 through college. These skill sets subsequently became sets of standards. The College Board set of standards for English language arts define performance expectations for five strands: listening, media literacy, reading, speaking, and writing.

Standards for Success. The S4S set of standards was developed by Dr. David Conley at the University of Oregon Center for Educational Policy Research under a grant from the Pew Charitable Trusts in partnership with the American Association of Universities (Conley 2003, 2005). The S4S require students to correctly use and apply general concepts to interpret or explain more specific knowledge and skills. The standards represent six content domains: English, math, natural sciences, social sciences, second languages, and the arts.

The English language arts domain of each set of college readiness standards is organized into strands, or clusters of related standards statements. Strand names vary across the standards sets, and the organization of statements into strands can help identify areas of emphasis

BOX 1

Study methodology and ratings scales

This box describes the methodology and rating scales used to examine content alignment and cognitive complexity (for more detail, see appendix A).

Content alignment methodology. Content alignment is the identification of content in a statement from one set of standards (a comparison set of standards) as the same as content in a statement from another set (the benchmark set). The content alignment rating indicates the level of content alignment on a three-level scale (complete, partial, no alignment).

This study adapted the content alignment methodology used in a previous series of REL Southwest studies (Timms et al. 2007; Shapley and Brite 2008), employing the same three-level content alignment scale and the same process for reconciling independent ratings. It follows the same pair-wise comparison approach, individually aligning the 191 standard statements of the ACT, the 115 statements of the College Board, and the 73 statements of the S4S to the 62 standard statements of the ADP. Three content alignment tables were created to conduct these pair-wise comparisons, with the first column populated with ADP standards statements. Two raters used the following three-level content alignment scale to rate the level of content alignment at the statement level (see appendix A for details):

- *Complete alignment.* All content in the benchmark statement

aligns with content in the comparison standards set.

- *Partial alignment.* Some of the content (1–99 percent) in the benchmark statement aligns with some portion of the content in the comparison standards set.
- *No alignment.* None of the content in the benchmark statement aligns with any of the content in the comparison standards set.

Final alignments and ratings were determined during a consensus meeting with a third senior reviewer. An example of how each content alignment table was structured and populated is provided in figure A2 in appendix A.

Although the two reviewers independently aligned the standards sets using the three content alignment tables, for ease of reference and greater utility the results for each pair-wise comparison are represented in a single alignment table (available upon request) instead of as separate tables for each pair. The findings are also presented by strand in appendix C. Only statements from the comparison standards sets that could be aligned to ADP statements appear in the alignment tables; the statements that could not be aligned are provided in appendix D.

Cognitive complexity rating methodology. The cognitive complexity rating indicates the depth of knowledge required to demonstrate mastery of the knowledge and skills represented by a standards statement. Cognitive complexity was assessed by two reviewers

who independently compared the distribution of standards statements from each set of standards across four levels of cognitive complexity using Webb's (2002) depth of knowledge (DoK) scale (see appendix E 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 two-column cognitive complexity rating table was created for each standards set, with each standards statement in the first column and the cognitive complexity level in the second column. The cognitive complexity ratings of the two independent reviewers were discussed, and final ratings were determined during meetings to achieve consensus with a senior reviewer. An example of a cognitive complexity rating table is provided in figure A3 in appendix A.

(CONTINUED)

Review process. The review process consisted of eight steps:

- *Step 1—selecting reviewers.* English language arts teachers with experience in alignment studies were recruited as primary reviewers, and an experienced researcher was selected as the supervising senior reviewer (for more information about reviewer qualifications, see appendix B).
- *Step 2—training reviewers.* The senior reviewer conducted a three-hour training session for the reviewers on the three-level content alignment rating scale and the Webb (2002) rating scale. The primary reviewers then independently practiced aligning and rating a small number of standards statements, which they then discussed with the senior reviewer and resolved any discrepancies.
- *Step 3—rating ADP cognitive complexity levels.* To familiarize reviewers with each standards statement before content alignment began, reviewers individually rated each ADP standards statement on the cognitive complexity scale (see appendix E).
- *Step 4—achieving consensus on ADP cognitive complexity levels.* The two independent reviewers

met with the senior reviewer to compare ADP cognitive complexity ratings and reach consensus in cases of disagreement. Reviewers then again independently rated 5 percent of the statements and compared the results with their original ratings to check for rater drift.¹

- *Step 5—rating and achieving consensus on comparison sets' cognitive complexity levels.* Reviewers individually rated each standards statement of the comparison sets for cognitive complexity (starting with ACT and moving on to College Board and finally S4S) and then met with the senior reviewer to compare ratings and achieve consensus. Reviewers then again independently rated 5 percent of the statements and reviewed them for rater drift.
- *Step 6—comparison and alignment of ADP—ACT content.* Using the ADP—ACT content alignment table, each reviewer independently searched all ACT statements for content aligned to the ADP benchmark statements. Once all completely and partially aligned ACT statements were identified, the reviewer assigned a content alignment rating based on the cumulative content of all the aligned ACT statements to the ADP standard statement

(complete alignment, partial alignment, or no alignment). Meetings to achieve consensus were held after completion of every two ADP strands until all ADP statements were aligned and content alignment levels were rated. Reviewers then again independently rated 5 percent of the ADP statements and reviewed them for rater drift.

- *Steps 7 and 8—comparison and alignment of ADP—College Board and ADP—S4S content.* The same process as in step 6 was followed for ADP—College Board and ADP—S4S content alignment.

This study can be seen as three separate content alignment studies. The methodology (pair-wise comparison of three sets to a single benchmark set) is consistent with the initial work conducted for the Commission for a College Ready Texas, but it is limited in several ways (see section in report on limitations and suggestions for further research).

Note

1. *Rater drift* is the tendency for raters or assessors to unintentionally redefine criteria over time. Because drift occurred so infrequently (zero to one occurrence per weekly check), instances were not formally recorded, and the drift that did occur did not influence the final consensus ratings for either content alignment or cognitive complexity ratings.

A group of 400 faculty members representing 20 universities participated in meetings to identify a broad range of skills that students should possess to perform well in entry-level postsecondary courses. Neither the universities nor participants were selected to be representative of such

institutions as a whole, but they did cover a range of institutional sizes and geographic diversity. The S4S English language arts statements are divided into four strands: critical thinking skills, reading and comprehension, research skills, and writing.

Description of cognitive complexity framework

In addition to the content specified in a standard, stakeholders interested in creating or modifying curriculum standards for college readiness may need to attend to how students are expected to manipulate or express knowledge and skills. Standards statements can communicate the difficulty level, or demand, intended through the use of specific language and key terms (Rothman 2004; Webb 1997, 1999, 2002). The demand embodied in a statement can strongly influence the development of instructional materials and assessments. For example, statements that require students only to “identify” or “recognize” certain content would require lower levels of knowledge and skills than standards that require students to “reason with,” “synthesize,” or “produce” complex materials.

For this study, the Webb (2002) depth of knowledge (DoK) scale was selected for evaluating differences and similarities in the cognitive demand required by each of the college readiness standards sets (see box 1 and appendix A for details). Using a four-level DoK scale (recall, skill/concept, strategic thinking, and extended thinking) to examine standards statements in four states, Webb (1999) found that DoK ratings varied substantially across statements representing the same content and that the distribution of ratings across the four levels differed by state. Thus the DoK scale appeared

to be a useful differentiator for understanding the level of demand expressed by different state documents. The College Board used the DoK scale to assess the level of cognitive demand expected when describing the alignment between expectations for student learning articulated in Texas K–12 standards (the Texas Essential Knowledge and Skills) and the SAT

(College Board 2005). The DoK scale has also been used in other studies (Webb 1997, 2002; Wixson et al. 2002) to assess depth of knowledge and was therefore adopted to measure cognitive complexity in the current study.

Only 5 percent of ADP statements completely align with all three comparison sets of standards. That share rises to 27 percent if both partial and complete alignment are considered

FINDINGS

The level of interrater agreement can provide an important context for interpreting study results, so it is discussed before the results on content alignment and cognitive complexity.

Interrater agreement

In general, high levels of agreement in studies employing expert judgments suggest that the rating scales, reviewer training, and alignment methodology were appropriate and that the findings are replicable. High levels of interrater agreement are especially important in studies that compute a mean rating from several raters (for example, Webb, Herman, and Webb 2007). This study did not compute a mean rating but used a consensus-forming process to determine the final ratings. Interrater results are described here to provide context for the interim rating process (before consensus). The level of agreement in this interim rating process is acceptable given the consensus process that followed (the procedures for calculating two interrater agreement measures are discussed in appendix B).

Interrater agreement for subjective judgments is rarely perfect. Results should be interpreted relative to agreement levels found in similar studies. All interrater agreement measures were calculated using individual ratings prior to the consensus process. While the senior reviewer was to make the final decision in cases where the independent reviewers could not reach consensus, this process never had to be invoked to resolve discrepancies in this study.

The two independent reviewers achieved 73 percent agreement with an intraclass correlation of 0.78 for the ADP–ACT content alignment ratings, a 48 percent agreement rate with an intraclass correlation of 0.69 for the ADP–College Board content alignment, and a 69 percent agreement rate with an intraclass correlation of 0.57 for the ADP–S4S content alignment. For comparison, only one recent study of curriculum to standards alignment was identified that also reported

interrater reliability (Porter et al. 2008). Porter et al. reviewed English language arts alignment studies in two states at three grades. They calculated *G*-coefficients (equivalent to the intraclass correlations reported here—see tables B1 and B2 in appendix B) of 0.47–0.83 for two raters. The intraclass correlation in the current study are within the same range; however, the alignment methodologies are not directly comparable.

The two independent reviewers achieved a 75 percent agreement rate with an intraclass correlation of 0.77 for the ADP cognitive complexity ratings, a 46 percent agreement rate with an intraclass correlation of 0.67 for the ACT cognitive complexity ratings, a 54 percent agreement rate with an intraclass correlation of 0.50 for the College Board, and a 53 percent agreement rate with an intraclass correlation of 0.62 for the S4S. These findings are within the broad range found in Webb, Horton, and O’Neal (2002, p. 11) who report intraclass correlations of 0.36–0.92 ($M = 0.73$) for cognitive complexity ratings of English language arts assessment items. The results of the current study are not directly comparable to the results of Webb, Horton, and O’Neal (2002) because of differences in what was being rated (test items in Webb, Horton, and O’Neal and standards in the current study). In addition, since the final ratings in the current study were determined using a consensus methodology, the degree of initial agreement is not critical to the final consensus ratings for content alignment or cognitive complexity.

Content alignment findings

Alignment to ADP standards statements. A primary goal of this study was to determine the percentage of agreement between the skills and knowledge ADP identifies as essential for college readiness and the skills and knowledge each of the three comparison sets of college readiness standards identifies as essential. Alignment tables C1–C8 in appendix C were examined for ADP content also contained in the other standards sets. Complete alignment was stringently defined for this study. Only 5 percent of ADP statements (3 of 62) completely align with all three comparison sets

of standards (bolded rows in table 2). That share rises to 27 percent (17 of 62) if both partial and complete alignment are considered (table 2).

At the broadest level each of the three pair-wise comparisons can be characterized by the percentage of content statements in the ADP standards set (the benchmark) that completely or partially align with content in the comparison standards set (ACT, College Board, and S4S). These results identify knowledge and skills that are considered important for English language arts college readiness by ADP and at least one other set of college readiness standards.

The levels of agreement with ADP among the comparison sets varies considerably (figure 1).

The share of ADP standards statements with complete or partial alignment is 34 percent (21 of 62 standards statements) for ACT standards statements, 77 percent (48 of 62) for College Board standards statements, and 68 percent (42 of 62) for S4S standards statements.

Alignment to ADP strands. Figure 2 summarizes the percentage of ADP standards statements within each of the eight strands that align at each level (complete, partial, no alignment) with the comparison sets. Statements in the ADP informational text, writing, and language strands completely or partially align with ACT at levels of 50–71 percent. The ADP literature and logic strands statements are minimally addressed by ACT, and the ADP media, research, and communication strands contain content that does not align with any ACT statements.

Standards statements in all eight ADP strands are completely or partially aligned with College Board statements at levels of approximately

The levels of agreement with ADP among the comparison sets varies considerably. The share of ADP standards statements with complete or partial alignment is 34 percent for ACT standards statements, 77 percent for College Board standards statements, and 68 percent for S4S standards statements

TABLE 2

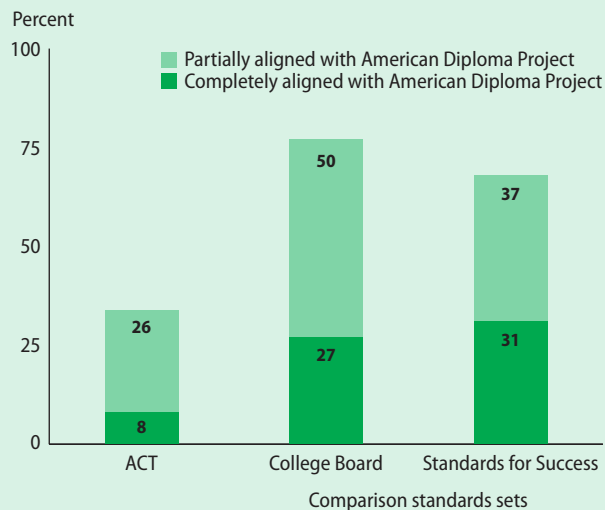
The 17 (of 62) standards statements of the American Diploma Project for which comparison sets exhibited complete or partial alignment in 2008 (number of statements aligned)

American Diploma Project strands and statements	ACT	College Board	Standards for Success
Language			
A1. Demonstrate control of standard English through the use of grammar, punctuation, capitalization and spelling.	28	2	10
A4. Use context to determine the meaning of unfamiliar words.	1	1	2
A5. Identify the meaning of common idioms, as well as literary, classical and biblical allusions; use them in oral and written communication.	4	3	2
A6. Recognize nuances in the meanings of words; choose words precisely to enhance communication.	3	5	2
Writing			
C2. Select and use formal, informal, literary or technical language appropriate for the purpose, audience and context of the communication.	3	3	6
C3. Organize ideas in writing with a thesis statement in the introduction, well constructed paragraphs, a conclusion and transition sentences that connect paragraphs into a coherent whole.	11	6	3
C4. Drawing on readers' comments on working drafts, revise documents to develop or support ideas more clearly, address potential objections, ensure effective transitions between paragraphs and correct errors in logic.	20	2	3
C5. Edit both one's own and others' work for grammar, style and tone appropriate to audience, purpose and context.	33	4	2
C9. Write an academic essay (for example, a summary, an explanation, a description, a literary analysis essay) that: develops a thesis; creates an organizing structure appropriate to purpose, audience, and context; includes relevant information and excludes extraneous information; makes valid inferences; supports judgments with relevant and substantial evidence and well-chosen details; and provides a coherent conclusion.	15	22	7
Logic			
E4. Evaluate the range and quality of evidence used to support or oppose an argument.	10	3	5
E9. Construct arguments (both orally and in writing) that: develop a thesis that demonstrates clear and knowledgeable judgment; structure ideas in a sustained and logical fashion; use a range of strategies to elaborate and persuade, such as descriptions, anecdotes, case studies, analogies and illustrations; clarify and defend positions with precise and relevant evidence, including facts, expert opinions, quotations and/or expressions of commonly accepted beliefs and logical reasoning; anticipate and address the reader's concerns and counterclaims; and provide clear and effective conclusions.	5	38	9
Informational Text			
F3. Summarize informational and technical texts and explain the visual components that support them.	1	6	2
F6. Identify interrelationships between and among ideas and concepts within a text, such as cause-and-effect relationships.	17	2	2
F8. Draw conclusions based on evidence from informational and technical texts.	4	1	1
F9. Analyze the ways in which a text's organizational structure supports or confounds its meaning or purpose.	3	1	4
Literature			
H4. Analyze the setting, plot, theme, characterization and narration of classic and contemporary short stories and novels.	7	5	4
H8. Analyze the moral dilemmas in works of literature, as revealed by characters' motivation and behavior.	6	1	1

Note: The darker shade represents complete alignment to the ADP statement and the lighter shade represents partial alignment. Project strands and statements in bold are those for which all three comparison standards sets completely align to the ADP. Statement identifier codes, such as A1, were used in the study to identify specific standards statements. The codes follow ADP's prescribed coding format; for example, "A" indicates a statement in the language strand, and "1" indicates the first standard statement in that strand.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); and Conley (2003); see appendixes A–C for details.

FIGURE 1
Percentage of American Diploma Project standards statements that completely or partially align with ACT, College Board, and Standards for Success standards statements, 2008



Note: The percentages are the sum of the results in tables C1–C8 in appendix C divided by the total number of ADP statements.

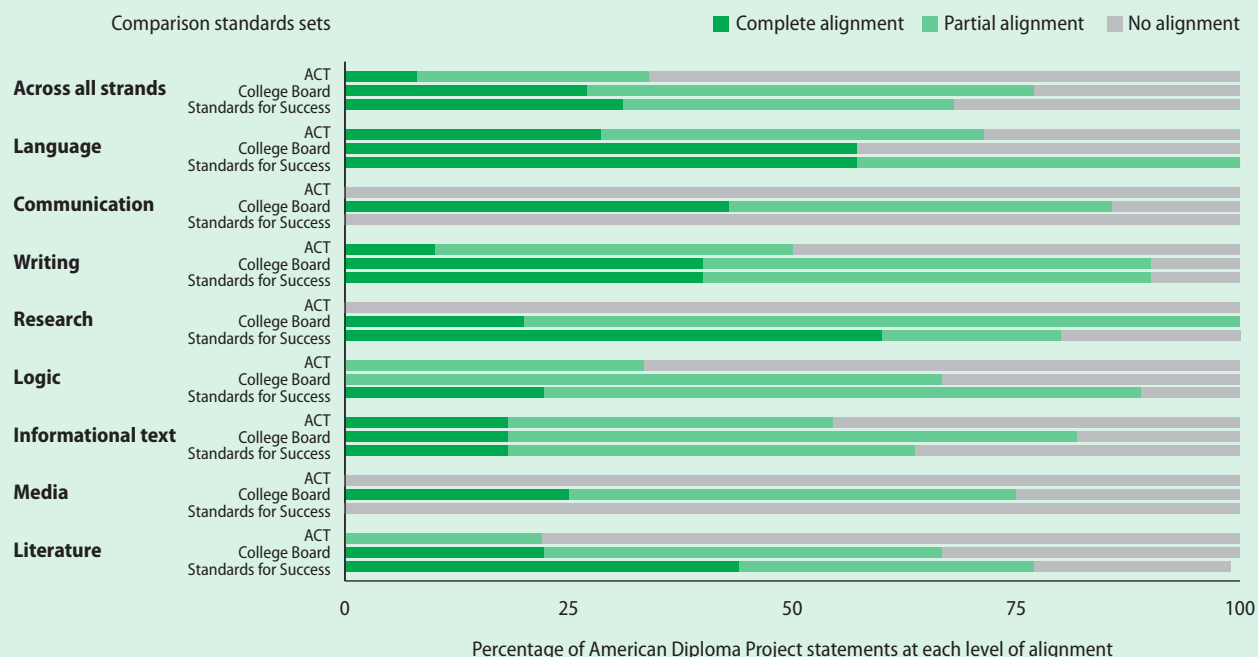
Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); and Conley (2003).

57 percent or greater; the majority of these are partial alignments. For the ADP logic strand all alignments are partial, and for the ADP research strand the College Board standards set completely or partially aligns to 100 percent of the statements. The exception is the ADP language strand, in which the 57 percent of ADP statements that align with College Board statements are all complete alignments.

The entire ADP language strand completely or partially aligns with the S4S standards set, and 64–90 percent of statements in the ADP research, literature, informational text, logic, and writing strands completely or partially align with S4S. However, none of the standards statements in the ADP media and communication strands aligns with any of the S4S statements.

ADP’s media and communication strands merit attention because only the College Board statements align to them completely or partially, but they do so at high levels of 75 percent (media) and 86 percent (communication).

FIGURE 2
Percentage of American Diploma Project statements by strand at each level of alignment with the three comparison sets, 2008



Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); and Conley (2003).

Statements that do not align. For six ADP statements in multiple strands, none of the comparison standards statements aligns (listed in table D1 in appendix D). These statements can be considered unique content statements among the four sets of standards. It is also important to identify which statements from each of the comparison sets could not be aligned to ADP, since they represent English language arts content that ADP has not defined as critical for college and workforce readiness.

The percentage of statements from each comparison set that do not align to an ADP statement was calculated as the number of statements that do not align to ADP divided by the total number of statements in the comparison set (figure 3). Fifty-one percent of ACT statements (97 of 191) could not be aligned to ADP, and these statements are distributed across all ACT strands. Thirty percent of College Board statements (35 of 115) could not be aligned to ADP, and the majority (25) were in the reading and listening strands. Fifteen percent of S4S statements (11 of 73) could not be aligned to ADP, and the majority (6) were in the reading and comprehension strand. (The standards statements that could not be aligned to ADP are listed by comparison standards set in tables D2–D4 in appendix D.)

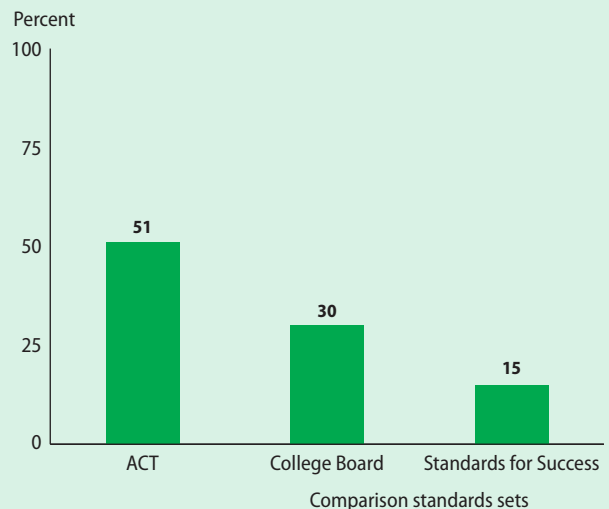
Cognitive complexity findings

To answer the second research question on the distribution of standards statements across cognitive complexity levels within each of the four standards sets, each statement within each college readiness standards sets was rated. There was no benchmark for this evaluation. All statements from all sets were rated using the Webb (2002) DoK scale (see appendix E).

More than half the statements in each standards set were rated level 3–strategic thinking, which emphasizes reasoning, planning, and integration of ideas (figure 4). College Board has the highest proportion of level 3–strategic thinking ratings (68 percent), while ADP has the highest proportion of level 2–skill/concept ratings (31 percent), ACT and S4S have the highest proportion of level 1–recall

FIGURE 3

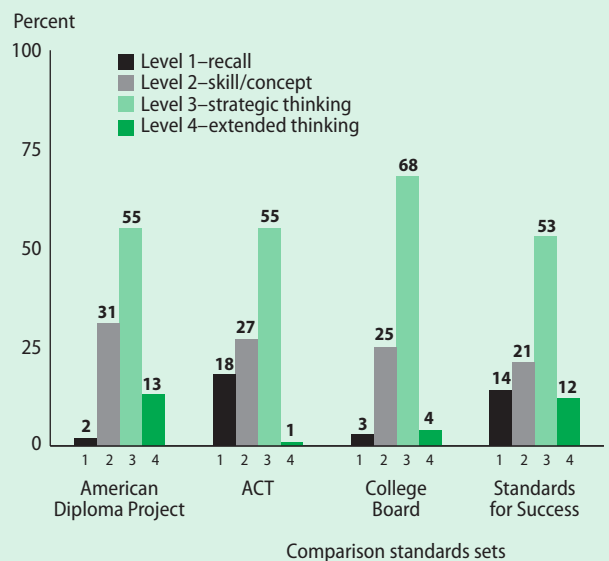
Percentage of standards statements in each comparison set that do not align to American Diploma Project standards statements, 2008



Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); and Conley (2003).

FIGURE 4

Distribution of cognitive complexity level ratings across the four levels of the Webb depth of knowledge scale, by college readiness standards set, 2008 (percent)



Note: Components may not sum to 100 percent because of rounding.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); and Conley (2003) and the depth of knowledge scale from Webb (2002).

ratings (18 percent and 14 percent), and ADP and S4S have the highest proportion of level 4–extended thinking ratings (13 percent and 12 percent). The S4S statements are the most evenly distributed, with at least 12 percent of statements in each level. ACT has the smallest proportion of statements at level 4–extended thinking. Figures F1 and F2 in appendix F summarize the distribution of DoK ratings for each strand for each college readiness standards set. A table with the cognitive complexity ratings for each statement in each set of standards is available on request from REL Southwest. This detailed table is not included with the report for reasons of space, but it may help in understanding the level of demand implied by statements of particular interest to individual readers.

CONCLUSIONS

Several findings emerged from this study. First, agreement (complete or partial alignment) on the content defined as essential for college readiness between ADP and the comparison standards sets varies from 34 percent to 77 percent of ADP’s 62 standards statements—34 percent for ACT, 68 percent for S4S, and 77 percent for College Board. While there is substantial overlap between ADP and each of the three comparison sets using a partial alignment criterion, the definition of college readiness clearly differs.

Second, content identified by all four sets of standards as essential for college readiness is very limited. Only 5 percent of ADP standards statements (3 of 62) completely align with all three comparison sets, and only 27 percent of ADP standards statements (17 of 62) completely or partially align with all three comparison sets. Again, this finding reveals a lack of agreement on definitions of English language arts college readiness among the four standards sets.

Third, each comparison set of standards contains content that does not align to ADP content—51 percent of ACT statements (97 of 191), 30 percent of College Board statements (35 of 115), and 15

percent of S4S statements (11 of 73). Of the comparison sets, S4S has the fewest standards statements that could not be aligned to ADP statements, while more than half of ACT’s statements could not be aligned to ADP benchmark statements. In addition, 10 percent (6 of 62) of ADP’s statements contain content that does not align with any of the three comparison sets of standards.

Fourth, in all four college readiness standards sets, statements were identified at all four levels of cognitive complexity using Webb’s (2002) four-level DoK scale. However, more than half the statements in each set of standards are written at level 3–strategic thinking, which requires students to demonstrate reasoning, planning skills, and the ability to make complex inferences. State standards and assessments requiring lower levels of cognitive complexity may therefore not capture the level of demand intended by many college readiness standards.

This study reveals substantial differences among the four English language arts college readiness definitions reviewed here. For pair-wise comparisons using ADP as the benchmark, there is only partial agreement on the knowledge and skills defined by ADP, ACT, College Board, and S4S as necessary for college readiness in English language arts. While the ADP standards alignment with ACT standards appears to be distinctly different from alignment with the other two standards sets (see figures 1–3 and tables C1–C8 in appendix C), dropping ACT from the comparison sets would raise the proportion of ADP statements in complete alignment with the two remaining standards sets (College Board and S4S) from 5 percent to 13 percent (8 of 62 ADP statements) and complete or partial alignment from 27 percent to 55 percent (34 of 62 ADP statements).

The key finding for policymakers is the variability in how well the three comparison college readiness standards sets align to the ADP standards set. The

While there is substantial overlap between ADP and each of the three comparison sets using a partial alignment criterion, the definition of college readiness clearly differs

empirical research literature has not evaluated sets of college readiness standards and offers no evidence that one set of standards would lead to higher student achievement than another. Thus, it is left to state policymakers and experts to make informed decisions about what content most closely reflects college readiness. Using only one of these four sets to inform the development of state college readiness standards and assessments risks overlooking content that should be considered for inclusion.

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

An important limitation of this study is the use of a single benchmark (ADP) to examine the four sets of standards. That methodology allows observations to be made only through the framework of ADP. Any of the four sets could have been employed as the benchmark, and ADP was selected based on regional factors. While the methodology was appropriate for the purposes of the current study (examining the similarities and differences in the content of the three comparison sets as aligned to ADP content), it does not allow direct analysis of the alignment between the content contained in the comparison standards sets that is not included in the ADP standards (for example, content shared by ACT and College Board that is not in ADP).

Another major limitation resulted from the study methodology that compared the standards only on general content and cognitive complexity. While the findings can be used at a broad level to guide policymakers as they develop strategies for implementing P–16 standards alignment, the findings would not be as informative for state standards writing teams or assessment writing teams developing college readiness standards or test items at a level that includes additional useful content dimensions (for example, breadth, depth, and specificity).

An important limitation of this study is that the use of a single benchmark does not allow direct analysis of the alignment between the content contained in the comparison standards sets that is not included in the ADP standards

A third limitation of this study is that no statement can be made about the superiority of one set of standards over another. Only ACT, Inc. (2007) has provided predictive validity evidence that establishes a clear link between performance on the ACT items that are linked to specific standards and first-year college course performance. This type of link does not exist (at least not in published form) for the other three college readiness standards sets.

The way the three-level content alignment scale (complete alignment, partial alignment, and no alignment) was defined and interpreted is also a limitation. For example, both 90 percent alignment and 10 percent alignment qualified as partial alignment. Modifications to these rating definitions could lead to different results across the standards sets, and the subjectivity inherent in assigning these ratings could affect the levels at which statements align.⁹ Future studies might modify these definitions of the ratings, for example, using a content alignment scale with more than three levels and with multiple partial alignment levels (such as more than half and less than half).

Another logical extension of the study for other audiences would be to use each of the four sets in turn as a benchmark, but it would be difficult to integrate findings across four benchmarks. An alternative approach would use a set of external benchmark statements, as in Kendall et al. (2007), who derived a list of topics from a database of standards statements in a specific content domain. Until such a benchmark set is developed and validated as representative of college readiness content, its use may be just as arbitrary (or more so) as use of any of the four established national college readiness standards sets as benchmarks.

Future studies could also use more than two reviewers. Doing so might increase reliability and generalizability (Webb, Herman, and Webb 2007, p. 25). In the current study the two reviewers were reading specialists; the addition of more reviewers would allow the use of experts with extensive knowledge in other English language arts strands, which could result in more accurate and reliable content matching.

APPENDIX A METHODOLOGY

This appendix describes the methodology and rating scales used to examine content alignment and cognitive complexity. Content alignment is defined as the identification of content in a statement (or statements) from one set of standards (a comparison set of standards) that is the same as content in a statement from another set of standards (the benchmark set of standards). Cognitive complexity is defined as the depth of knowledge required for a student to demonstrate the knowledge and skills represented by a standards statement. The content alignment and cognitive complexity ratings were done independently.

Content alignment methodology

The content alignment methodology used in a previous series of Regional Educational Laboratory (REL) Southwest studies (Timms et al. 2007; Shapley and Brite 2008) was adapted for the current study. The previous studies involved the content alignment of two sets of assessment standards to the National Assessment of Educational Progress (NAEP) assessment standards (the benchmark).¹⁰ The current study uses the same three-level content alignment scale and the same process for reconciling independent ratings. Codes representing higher and lower grade alignment, employed in the NAEP studies, were not used in this study because such codes are not relevant for college readiness standards, which have only one grade level; information represented in codes for more or less detail and implied content was contained in the reviewer notes.

The current study followed the NAEP pair-wise comparison approach but employed four sets of standards. One set—the American Diploma Project (ADP)—was designated as the benchmark set. The standards statements of the three college readiness comparison standards sets—the ACT College Readiness Standards (ACT; ACT, Inc. 2007), College Board College Readiness

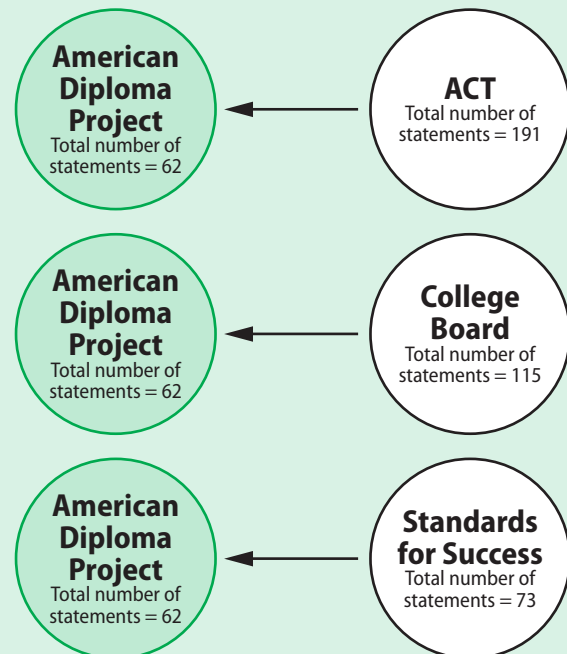
Standards (College Board 2006), and Standards for Success (S4S; Conley 2003)—were individually aligned to the benchmark standards statements (figure A1).

Content alignment scale. Three content alignment tables (later combined into one) were created to conduct the pair-wise comparisons (ADP–ACT, ADP–College Board, ADP–S4S). In each table the leftmost column was populated with ADP standards statements. The content alignment was conducted at the statement level by two independent reviewers using a three-level content alignment scale:

- **Complete alignment.** All the content in the benchmark (ADP) standards statement aligns with content in the comparison standards set (ACT, College Board, or S4S).

FIGURE A1

Pair-wise comparison methodology with the American Diploma Project standards set as the benchmark to which ACT, College Board, and Standards for Success were aligned, 2008



Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); and Conley (2003).

- *Partial alignment.* Some portion (1–99 percent) of the content in the benchmark (ADP) standards statement aligns with some portion of the content in the comparison standards set (ACT, College Board, or S4S).
- *No alignment.* None of the content in the benchmark (ADP) standards statement aligns with any of the content in the comparison standards set (ACT, College Board, or S4S).

Final alignments and ratings were determined during a consensus meeting with the senior reviewer.

Examples of complete and partial statement alignments. Two examples of complete alignment are provided in table A1. In example 1 the

ADP standards statement completely aligns with two S4S statements considered together. In this example, the benchmark statement aligns with the comparison statements even though the wording is not identical. In example 2 the ADP statement completely aligns with the aggregate content of five statements from the College Board comparison set. In both cases the reviewer notes explain the reasons for the rating of complete alignment.

Two examples of partial alignment are provided in table A2. In example 1 the ADP statement partially aligns with three ACT statements. In example 2 the ADP statement partially aligns with only one statement from the College Board comparison standards set. In both examples the reviewer notes explain the reason for the rating of partial alignment.

TABLE A1

Examples of complete alignment of the content of the American Diploma Program benchmark college readiness standards statements with the content of comparison standards sets, 2008

	Benchmark strand and statement	Statements with complete alignment to the benchmark statement	Reviewer notes
Example 1	Language A6. Recognize nuances in the meanings of words; choose words precisely to enhance communication.	<p>S4S I.B.3. Understand vocabulary and content, including subject-area terminology; connotative and denotative meanings; and idiomatic meanings.</p> <p>S4S II.D.5. Use words correctly; use words that mean what the writer intends to say; and use a varied vocabulary.</p>	Connotative/denotative suggests recognizing nuances in words. This pushed the rating to complete alignment.
Example 2	Literature H4. Analyze the setting, plot, theme, characterization and narration of classic and contemporary short stories and novels.	<p>CB R1.2.1 Uses understanding of setting and its connections to other narrative elements to guide comprehension of literary texts.</p> <p>CB R1.2.2 Uses understanding of plot and its connections to other narrative elements to guide comprehension of literary texts.</p> <p>CB R1.2.3 Uses understanding of characterization and its connections to other narrative elements to guide comprehension of literary texts.</p> <p>CB R1.2.4 Uses understanding of theme and its connections to other narrative elements to guide comprehension of literary texts.</p> <p>CB R1.2.5 Uses understanding of narrative perspective and its connections to other narrative elements to guide comprehension of literary texts.</p>	In aggregate, these [College Board] statements provide a complete alignment to the ADP statement.

Note: Statement identifier codes, such as A6, were used in the study to identify specific standard statements. The codes used to identify standards statements generally followed the prescribed coding format of each college readiness standards set, with some modifications.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); and Conley (2003).

TABLE A2

Examples of partial alignment of the content of the American Diploma Program benchmark college readiness standards statements with the content of comparison standards sets, 2008

	Benchmark strand and statement	Statements with partial alignment to the benchmark statement	Reviewer notes
Example 1	Writing C2. Select and use formal, informal, literary or technical language appropriate for the purpose, audience and context of the communication.	<p>ACT E-3 24-27-3 Word Choice in Terms of Style, Tone, Clarity, and Economy: Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p> <p>ACT W-5 11-12-1-b Using Language: Show effective use of language to clearly communicate ideas by using precise and varied vocabulary</p> <p>ACT W-5 09-10-1-b Using Language: Show competent use of language to communicate ideas by using some precise and varied vocabulary</p>	Use of technical language is not specifically mentioned in ACT.
Example 2	Logic E5. Recognize common logical fallacies, such as the appeal to pity (<i>argumentum ad misericordiam</i>), the personal attack (<i>argumentum ad hominem</i>), the appeal to common opinion (<i>argumentum ad populum</i>) and the false dilemma (assuming only two options when there are more options available); understand why these fallacies do not prove the point being argued.	CB R3.1.2 Analyzes how an author creates an authorial persona, uses reasoning and evidence, and appeals to audience's emotions, interests, values, and beliefs to achieve specific purposes.	The [College Board] statement does not address all of the specific elements of logical fallacies described in the ADP statement.

Note: Statement identifier codes, such as C2, were used in the study to identify specific standard statements. The codes used to identify standards statements generally followed the prescribed coding format of each college readiness standards set, with some modifications.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); and Conley (2003).

Structure of content alignment tables. An example of how each content alignment table was structured and populated is provided in figure A2.

This study can be seen as three separate content alignment studies, using a methodology (pair-wise comparison of three sets to a single benchmark set) that is consistent with the parameters of the initial work conducted for the Commission for a College Ready Texas (comparison of the ACT, College Board, and S4S standards sets to ADP as the benchmark). Although the research team independently aligned the three comparison sets of standards in the present study to the ADP benchmark, all results from the three pair-wise comparisons using ADP standards set as the benchmark are represented in a single alignment table (available on request and

not reproduced here because of space limitations) instead of as separate results for each pair. The findings are also presented by strand in appendix C. The benchmark comparison methodology enables readers to see simultaneously which statements from the three comparison sets align to each ADP statement. Statements from ACT, College Board, and S4S that could not be aligned to any of the ADP statements are not presented in the alignment table but are provided in appendix D.

Cognitive complexity rating methodology

Cognitive complexity was assessed by comparing the distribution of standards statements from each set of standards across four levels of cognitive complexity (Webb 2002). Cognitive complexity

FIGURE A2

Example of the structure of the full alignment table for the American Diploma Project benchmark standards set and the ACT comparison standards set, 2008

American Diploma Project (ADP) Standard Statement	American Diploma Project strand	ACT Standard Statement E =English; W=Writing; R=Reading		Content rating (ACT to ADP)	Reviewer notes on alignment
A. Language					
A5. Identify the meaning of common idioms, as well as literary, classical and biblical allusions; use them in oral and written communication.	R-4 28-32-1 Meanings of Words: Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts	R-4 33-36-1 Meanings of Words: Determine, even when the language is richly figurative and the vocabulary is difficult, the appropriate meaning of context-dependent words, phrases, or statements in virtually any passage	E-5 20-23-1 Conventions of Usage: Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., long for, appeal to)	Partial Alignment	ACT does not refer to allusions in any standard. ACT does not address oral communication. Different levels within the same ACT strand indicate that the standard can be performed at various levels of competence.
	E-5 33-36-1 Conventions of Usage: Provide idiomatically and contextually appropriate prepositions following verbs in situations involving sophisticated language or ideas	ACT statement(s) that show some alignment to the American Diploma Project strand		Content rating as determined by expert reviewers	
A6. Recognize nuances in the meanings of words; choose words precisely to enhance communication.	R-4 33-36-1 Meanings of Words: Determine, even when the language is richly figurative and the vocabulary is difficult, the appropriate meaning of context-dependent words, phrases, or statements in virtually any passage	E-3 24-27-3 Word Choice in Terms of Style, Tone, Clarity, and Economy: Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay	W-5 11-12-1-b Using Language: Show effective use of language to clearly communicate ideas by using precise and varied vocabulary	Complete Alignment	These alignments dealt with revision, while E3 addressed the production of text.
American Diploma Project statement				Expert reviewer comments	

Note: Statement identifier codes, such as Language A5, were used in the study to identify specific standard statements. The codes used to identify ADP statements followed ADP's prescribed coding format; for example, "A" indicates a statement in the language strand and "5" indicates the fifth standard statement in that strand. The codes used to identify ACT statements were modified to ease their use in this study. The coding scheme included a number-letter combination that conveyed the score range and location of the standard statement in the ACT standards document.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); and Conley (2003).

ratings were assigned to each statement by two independent reviewers. Individual reviewers worked independently using Webb's depth of knowledge (DoK) scale (2002) to rate the level of cognitive complexity of each statement:

- *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 more detailed description of the Webb DoK scale, including examples, is provided in appendix E.

The cognitive complexity ratings of the two independent reviewers were discussed during consensus meetings held under the supervision of a senior reviewer, with final ratings determined by consensus at the meetings.

A two-column cognitive complexity rating table was created for each standards set, with standards statements in the first column and the corresponding cognitive complexity level noted in the second column. An example of how each cognitive complexity rating table was structured and populated is provided in figure A3.

Review process

Throughout the review process, weekly progress meetings were held between the team managing the overall study—including the study design, implementation, analysis, and reporting (research team)—and the team conducting the content alignment and cognitive complexity ratings (review team). Also during these meetings, the review team provided any completed data tables to the research team for review.

Step 1—selecting reviewers. The methodology of this study required ratings from two independent reviewers and a senior reviewer to supervise consensus discussions. English language arts teachers with experience in alignment studies

were recruited as primary reviewers, and an experienced researcher was selected as the supervising senior reviewer. More information about reviewer qualifications is provided in appendix B.

Step 2—training reviewers. Before training, the two primary reviewers were provided with copies of the four sets of standards and asked to review the structure, organization, and content of each. Then the senior reviewer conducted a three-hour training session for the two primary reviewers, reviewing in detail the three-level content alignment rating scale and the Webb (2002) cognitive complexity rating scale. The primary reviewers then independently practiced aligning and rating a small number of ADP statements with statements from ACT, College Board, and S4S. To conclude the training session, the primary reviewers and senior reviewer reconvened to discuss ratings and discrepancies related to the rating scales.

Step 3—rating ADP cognitive complexity levels. As the first activity subsequent to training, reviewers individually rated each ADP statement on the cognitive complexity scale using the Webb DoK level descriptions (see appendix E). Making cognitive complexity rating the first activity ensured that reviewers carefully read and engaged with each statement before content alignment began.

Step 4—achieving consensus on ADP cognitive complexity levels. After individually assigning cognitive complexity ratings to all ADP 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. Consensus meetings typically lasted about two hours. Once the cognitive complexity ratings were finalized, 5 percent of the statements that the reviewers had rated independently were reviewed for rater drift (the tendency for reviewers or assessors to unintentionally redefine criteria over time). The check was conducted by having the reviewers independently rate the selected statements again and compare the results with their original ratings.¹¹

FIGURE A3

Example of the structure of the cognitive complexity rating table for American Diploma Project college readiness standards statements, 2008

American Diploma Project standards	American Diploma Project strand	Cognitive complexity rating ^a	Reviewer comments
A. Language			
A1. Demonstrate control of standard English through the use of grammar, punctuation, capitalization and spelling.		1	The emphasis is on standard English
A2. Use general and specialized dictionaries, thesauruses and glossaries (print and electronic) to determine the definition, pronunciation, etymology, spelling and usage of words.		2	Cognitive complexity rating as determined by expert reviewers
A3. Use roots, affixes and cognates to determine the meaning of unfamiliar words.		2	
A4. Use context to determine the meaning of unfamiliar words.		2	
A5. Identify the meaning of common idioms, as well as literary, classical and biblical allusions; use them in oral and written communication.		3	"Identify meaning" is at the level of skill/concept while "use them" (in oral and written form) gets closer to the application described in strategic thinking
A6. Recognize nuances in the meaning of words precisely to enhance communication.	American Diploma Project statement		Expert reviewer comments
A7. Comprehend and communicate quantitative, technical and mathematical information.		2	It is possible that Webb's cognitive complexity rating scale does not address this area; "comprehend" could indicate skill/concept

Note: Statement identifier codes, such as language A1, were used in the study to identify specific standard statements. The codes used to identify ADP statements followed ADP's prescribed coding format; for example, "A" indicates a statement in the Language strand and "1" indicates the first standard statement in that strand.

a. Rating is based on Webb's (2002) cognitive complexity scale of 1 to 4 where 1 represents recall, 2 represents skill/concept, 3 represents strategic thinking, and 4 represents extended thinking.

Source: Cognitive complexity summary reports from expert content reviewers (July 2008) drawing on college readiness standards statements in Achieve, Inc. (2004).

Step 5—rating and achieving consensus on comparison sets' cognitive complexity levels. Reviewers individually rated each ACT statement using the cognitive complexity scale and then met with the senior reviewer to compare ratings and achieve consensus where ratings differed. After consensus was established, 5 percent of the statements that the reviewers had rated independently were reviewed for rater drift. This process was repeated first with College Board and then with S4S. The cognitive complexity ratings were conducted independent of the content alignment of the statements and rating of the level of content alignment.

Step 6—comparison and alignment of ADP–ACT content. Using the ADP–ACT content alignment table and beginning with the first ADP statement in the first ADP strand, each reviewer independently and systematically searched all ACT statements for those containing content aligned to the ADP benchmark statement. This was an exhaustive search: all ACT statements with aligning content were included. Once all completely and partially aligned ACT statements were identified, the reviewer assigned a content alignment rating to the ADP standard based on the cumulative content of all the aligned ACT statements (complete alignment, partial alignment, or no alignment).

Consensus meetings between the independent reviewers and the senior reviewer were held after completion of every two ADP strands until all ADP statements were aligned and the content alignment levels were rated. Consensus meetings were held approximately every two weeks during this time. Once the ADP–ACT content alignment was completed and the content alignment levels

were rated, 5 percent of the ADP statements were reviewed to check for rater drift.

Steps 7 and 8—comparison and alignment of ADP–College Board and ADP–S4S content. The ADP–College Board and ADP–S4S content alignments were conducted in the same manner as the ADP–ACT alignment.

APPENDIX B

REVIEWER QUALIFICATIONS AND ROLES AND INTERRATER RELIABILITY

This appendix provides more detail on interrater reliability, including information on reviewer qualifications.

Reviewer qualifications and roles

The review team consisted of a senior reviewer and two primary independent reviewers. The senior reviewer has a doctorate in English education and several years of experience designing and teaching English language arts courses for grades 9–12, 13 years of experience teaching English language arts in the university setting, and several years of experience working with state education agencies. The two primary reviewers were secondary and postsecondary English language arts teachers who had previously participated in an English language arts alignment project using similar rating scales to align state high school standards to ACT and American Diploma Project (ADP) standards, using both as the benchmarks. The secondary school teacher was a reading specialist with a doctorate in reading education who has worked at the state and university levels in reading education. The postsecondary teacher holds a doctorate with a focus on reading education and has experience in developing reading assessments.

The senior reviewer conducted initial training, monitored the progress of ratings, conducted consensus meetings, and served as the final arbiter if consensus on ratings could not be reached. The other two reviewers conducted the alignment and assigned the ratings.

Interrater reliability: content alignment

Standards alignment research is, by nature, a subjective process. Use of expert judgment is a critical element of that process. 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 reviewers does not provide an advantage if there is little agreement. Low levels of reviewer agreement may indicate problems with the rating scales, qualifications of the reviewers, training, or other methodological decisions. Therefore, 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 independent reviewers. Typically, the higher the level of agreement, the more confident one can be 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, a comparison of these independent ratings can provide information on initial consensus of the reviewers. However, since the final ratings were determined using a consensus methodology, the initial agreement or disagreement is not critical to the validity of the final consensus ratings and alignment.

Two approaches to summarizing interrater agreement are reported here: percent agreement and the intraclass correlation (table B1). Percent agreement is useful because it is simply the proportion of identical ratings assigned by the two reviewers. However, this approach does not account for the possibility of agreement by chance, or ratings that are close but not an exact match. Therefore, a second method is also reported here, the intraclass correlation (Shrout and Fleiss 1979), which assumes that each reviewer brings measurement error into the rating process. The intraclass correlation also accounts for small discrepancies, such as when reviewer 1 rates a complete alignment and reviewer 2 rates a partial alignment.

Interrater reliability: cognitive complexity

Interrater reliability for cognitive complexity is reported in the same manner as for content alignment, with two exceptions. The table of summary

TABLE B1

Content alignment interrater agreement prior to consensus meeting, 2008

Comparison standards set	Percent agreement ^a	Intraclass correlation ^b
ACT	73	0.78
College Board	48	0.69
Standards for Success	69	0.57

a. Overall percent agreement in independent alignment ratings prior to the consensus meeting for the 62 American Diploma Project 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 the two raters are drawn from a population of raters. This is also equivalent to an absolute G (phi) coefficient (Mushquash and O'Connor 2006, p. 543).

Source: Expert reviewer activities (April–September 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); Conley (2003).

statistics (table B2) contains all four standards sets. Cognitive complexity ratings were made for every statement within each set, regardless of whether statements aligned to any statements from the benchmark set. Note the relatively high agreement for ADP (75 percent), and the corresponding intraclass correlation.

TABLE B2

Cognitive complexity interrater agreement prior to consensus meeting, 2008

Standards set	Number of statements ^a	Percent agreement ^b	Intraclass correlation ^c
American Diploma Project	59 ^d	75 ^d	0.77 ^d
ACT	191	46	0.67
College Board	115/91 ^e	54 ^e	0.50 ^e
Standards for Success	73	53	0.62

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

b. This value represents a perfect match based on the four-point Webb (2002) depth of knowledge (DoK) scale and would therefore (other things being equal) tend to appear lower than in the three-level content alignment scale.

c. 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. This is also equivalent to an absolute G (phi) coefficient (Mushquash and O'Connor 2006, p. 543).

d. Statistics are based on paired ratings for 59 of 62 statements. Reviewer 1 did not assign ratings to 3 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 reached as with all other ratings. It cannot be known how the lack of three initial ratings might have affected final consensus ratings or agreement rates.

e. Statistics for College Board are based on paired ratings for 91 of 115 statements. Reviewer 2 did not assign ratings to 24 statements prior to the consensus meeting. This reviewer was uncertain about how to apply the Webb DoK scale to College Board standards focused on oral communication and analysis of media. These statements were discussed and consensus reached as with all other ratings. It cannot be known how the lack of 24 initial ratings might have affected final consensus ratings or agreement rates.

Source: Expert reviewer activities (April–September 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); Conley (2003).

APPENDIX C

CONTENT ALIGNMENT BY AMERICAN DIPLOMA PROJECT STRAND

The results of all three independent alignments are represented, in detail, by the full alignment table. This information was abstracted into the eight summary tables—one for each of the eight American Diploma Project (ADP) strands provided here.

Language

The ADP language strand contains seven statements. ACT has complete alignment to two statements in the ADP language strand, College Board has complete alignment to four statements, and Standards for Success (S4S) has complete alignment to four statements. ACT has partial alignment to three statements, and S4S has partial alignment to three statements. Finally, ACT has no alignment to two statements and College Board has no alignment to three statements (table C1).

TABLE C1

Alignment of American Diploma Project language strand statements with ACT, College Board, and Standards for Success statements, 2008

American Diploma Project strand and statements	Number and level of alignment of standards statements		
	ACT	College Board	Standards for Success
Language			
A1. Demonstrate control of standard English through the use of grammar, punctuation, capitalization, and spelling.	28	2	10
A2. Use general and specialized dictionaries, thesauruses, and glossaries (print and electronic) to determine the definition, pronunciation, etymology, spelling, and usage of words.	0	0	1
A3. Use roots, affixes, and cognates to determine the meaning of unfamiliar words.	0	0	2
A4. Use context to determine the meaning of unfamiliar words.	1	1	2
A5. Identify the meaning of common idioms, as well as literary, classical, and biblical allusions; use them in oral and written communication.	4	3	2
A6. Recognize nuances in the meanings of words; choose words precisely to enhance communication.	3	5	2
A7. Comprehend and communicate quantitative, technical and mathematical information.	2	0	4

Note: The darker shade represents complete alignment to the ADP statement, the lighter shade represents partial alignment, and no shade represents no alignment. Statement identifier codes, such as “A1,” were used in the study to identify specific standard statements. The codes used to identify ADP statements followed ADP’s prescribed coding format; for example, “A” indicates a statement in the language strand and “1” indicates the first standard statement in that strand.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); Conley (2003).

Communication

The ADP communication strand contains seven statements. College Board has complete alignment to three statements and partial alignment to three statements. ACT and S4S have no alignment to any statements, and College Board has no alignment to one statement (table C2).

TABLE C2

Alignment of American Diploma Project communication strand statements with ACT, College Board, and Standards for Success statements, 2008

American Diploma Project strand and statements	Number and level of alignment of standards statements		
	ACT	College Board	Standards for Success
Communication			
B1. Give and follow spoken instructions to perform specific tasks, to answer questions, or to solve problems.	0	0	0
B2. Summarize information presented orally by others.	0	2	0
B3. Paraphrase information presented orally by others.	0	2	0
B4. Identify the thesis of a speech and determine the essential elements that elaborate it.	0	3	0
B5. Analyze the ways in which the style and structure of a speech support or confound its meaning or purpose.	0	10	0
B6. Make oral presentations that exhibit a logical structure appropriate to the audience, context and purpose; group related ideas and maintain a consistent focus; include smooth transitions; support judgments with sound evidence and well-chosen details; make skillful use of rhetorical devices; employ proper eye contact, speaking rate, volume, enunciation, inflection, and gestures to communicate ideas effectively.	0	14	0
B7. Participate productively in self-directed work teams for a particular purpose (for example, to interpret literature, write or critique a proposal, solve a problem, make a decision), including posing relevant questions; listening with civility to the ideas of others; extracting essential information from others' input; building on the ideas of others and contributing relevant information or ideas in group discussions; consulting texts as a source of ideas; gaining the floor in respectful ways; defining individuals' roles and responsibilities and setting clear goals; acknowledging the ideas and contributions of individuals in the group; understanding the purpose of the team project and the ground rules for decision-making; maintaining independence of judgment, offering dissent courteously, ensuring a hearing for the range of positions on an issue, and avoiding premature consensus; tolerating ambiguity and a lack of consensus; and selecting leader/spokesperson when necessary.	0	14	0

Note: The darker shade represents complete alignment to the ADP statement, the lighter shade represents partial alignment, and no shade represents no alignment. 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 prescribed coding format; for example, "B" indicates a statement in the communication strand and "1" indicates the first standard statement in that strand.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); Conley (2003).

Writing

The ADP writing strand contains 10 statements. ACT has complete alignment to one statement, while College Board and S4S each has complete alignment

to four statements. ACT has partial alignment to four statements, while College Board and S4S each has partial alignment to five statements. ACT has no alignment to five statements, while College Board and S4S each has no alignment to one statement (table C3).

TABLE C3

Alignment of American Diploma Project writing strand statements with ACT, College Board, and Standards for Success statements, 2008

American Diploma Project strand and statements	Number and level of alignment of standards statements		
	ACT	College Board	Standards for Success
Writing			
C1. Plan writing by taking notes, writing informal outlines, and researching.	0	6	3
C2. Select and use formal, informal, literary, or technical language appropriate for the purpose, audience and context of the communication.	3	3	6
C3. Organize ideas in writing with a thesis statement in the introduction, well constructed paragraphs, a conclusion, and transition sentences that connect paragraphs into a coherent whole.	11	6	3
C4. Drawing on readers' comments on working drafts, revise documents to develop or support ideas more clearly, address potential objections, ensure effective transitions between paragraphs, and correct errors in logic.	20	2	3
C5. Edit both one's own and others' work for grammar, style, and tone appropriate to audience, purpose and context.	33	4	2
C6. Cite print or electronic sources properly when paraphrasing or summarizing information, quoting, or using graphics.	0	1	1
C7. Determine how, when, and whether to employ technologies (such as computer software, photographs, and video) in lieu of, or in addition to, written communication.	0	3	2
C8. Present written material using basic software programs (such as Word, Excel, and PowerPoint) and graphics (such as charts, ratios, and tables) to present information and ideas best understood visually.	0	0	0
C9. Write an academic essay (for example, a summary, an explanation, a description, a literary analysis essay) that develops a thesis; creates an organizing structure appropriate to purpose, audience, and context; includes relevant information and excludes extraneous information; makes valid inferences; supports judgments with relevant and substantial evidence and well-chosen details; and provides a coherent conclusion.	15	22	7
C10. Produce work-related texts (for example, memos, e-mails, correspondence, project plans, work orders, proposals, bios) that address audience needs, stated purpose, and context; translate technical language into nontechnical English; include relevant information and exclude extraneous information; use appropriate strategies, such as providing facts and details, describing or analyzing the subject, explaining benefits or limitations, comparing or contrasting, and providing a scenario to illustrate; anticipate potential problems, mistakes, and misunderstandings that might arise for the reader; create predictable structures through the use of headings, white space, and graphics, as appropriate; and adopt a customary format, including proper salutation, closing, and signature, when appropriate.	0	22	5

Note: The darker shade represents complete alignment to the ADP statement, the lighter shade represents partial alignment, and no shade represents no alignment. Statement identifier codes, such as "C1," were used in the study to identify specific standard statements. The codes used to identify ADP statements followed ADP's prescribed coding format; for example, "C" indicates a statement in the writing strand and "1" indicates the first standard statement in that strand.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); Conley (2003).

Research

The ADP research strand contains five statements. College Board has complete alignment to one statement, and S4S has complete alignment

to three statements. College Board has partial alignment to four statements, and S4S has partial alignment to one statement. ACT has no alignment to any of the five statements, and S4S has no alignment to one statement (table C4).

TABLE C4

Alignment of American Diploma Project research strand statements with ACT, College Board, and Standards for Success statements, 2008

American Diploma Project strand and statements	Number and level of alignment of standards statements		
	ACT	College Board	Standards for Success
Research			
D1. Define and narrow a problem or research topic.	0	2	1
D2. Gather relevant information from a variety of print and electronic sources, as well as from direct observation, interviews, and surveys.	0	3	4
D3. Make distinctions about the credibility, reliability, consistency, strengths, and limitations of resources, including information gathered from Web sites.	0	2	3
D4. Report findings within prescribed time and/or length requirements, as appropriate.	0	1	0
D5. Write an extended research essay (approximately 6 to 10 pages), building on primary and secondary sources, that marshals evidence in support of a clear thesis statement and related claims; paraphrases and summarizes with accuracy and fidelity the range of arguments and evidence supporting or refuting the thesis, as appropriate; and cites sources correctly and documents quotations, paraphrases, and other information using a standard format.	0	7	11

Note: The darker shade represents complete alignment to the ADP statement, the lighter shade represents partial alignment, and no shade represents no alignment. Statement identifier codes, such as “D1,” were used in the study to identify specific standard statements. The codes used to identify ADP statements followed ADP’s prescribed coding format; for example, “D” indicates a statement in the research strand and “1” indicates the first standard statement in that strand.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); Conley (2003).

Logic

The ADP logic strand contains nine statements. S4S has complete alignment to two statements, while College Board and S4S do not have complete alignment to any statements. ACT has partial

alignment to three statements, while College Board and S4S each have partial alignment to six statements. ACT has no alignment to six statements, College Board has no alignment to three statements, and S4S has no alignment to one statement (table C5).

TABLE C5

Alignment of American Diploma Project logic strand statements with ACT, College Board, and Standards for Success statements, 2008

American Diploma Project strand and statements	Number and level of alignment of standards statements		
	ACT	College Board	Standards for Success
Logic			
E1. Distinguish among facts and opinions, evidence, and inferences.	5	0	1
E2. Identify false premises in an argument.	0	3	2
E3. Describe the structure of a given argument; identify its claims and evidence; and evaluate connections among evidence, inferences, and claims.	0	5	2
E4. Evaluate the range and quality of evidence used to support or oppose an argument.	10	3	5
E5. Recognize common logical fallacies, such as the appeal to pity (<i>argumentum ad misericordiam</i>), the personal attack (<i>argumentum ad hominem</i>), the appeal to common opinion (<i>argumentum ad populum</i>) and the false dilemma (assuming only two options when there are more options available); understand why these fallacies do not prove the point being argued.	0	1	7
E6. Analyze written or oral communications for false assumptions, errors, loaded terms, caricature, sarcasm, leading questions, and faulty reasoning.	0	10	4
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).	0	0	1
E8. Analyze two or more texts addressing the same topic to determine how authors reach similar or different conclusions.	0	0	0
E9. Construct arguments (both orally and in writing) that develop a thesis that demonstrates clear and knowledgeable judgment; structure ideas in a sustained and logical fashion; use a range of strategies to elaborate and persuade, such as descriptions, anecdotes, case studies, analogies, and illustrations; clarify and defend positions with precise and relevant evidence, including facts, expert opinions, quotations, and/or expressions of commonly accepted beliefs and logical reasoning; anticipate and address the reader's concerns and counterclaims; and provide clear and effective conclusions.	5	38	9

Note: The darker shade represents complete alignment to the ADP statement, the lighter shade represents partial alignment, and no shade represents no alignment. Statement identifier codes, such as "E1," were used in the study to identify specific standard statements. The codes used to identify ADP statements followed ADP's prescribed coding format; for example, "E" indicates a statement in the logic strand and "1" indicates the first standard statement in that strand.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); Conley (2003).

Informational text

The ADP informational text strand contains 11 statements. ACT, College Board, and Standards for Success (S4S) each have complete alignment to two statements. ACT has partial alignment to four

statements, College Board has partial alignment to seven statements, and S4S has partial alignment to five statements. ACT has no alignment to five statements, College Board has no alignment to two statements, and S4S has no alignment to four statements (table C6).

TABLE C6

Alignment of American Diploma Project informational text strand statements with ACT, College Board, and Standards for Success statements, 2008

American Diploma Project strand and statements	Number and level of alignment of standards statements		
	ACT	College Board	Standards for Success
Informational text			
F1. Follow instructions in informational or technical texts to perform specific tasks, answer questions, or solve problems.	0	0	1
F2. Identify the main ideas of informational text and determine the essential elements that elaborate them.	5	1	0
F3. Summarize informational and technical texts and explain the visual components that support them.	1	6	2
F4. Distinguish between a summary and a critique.	1	0	1
F5. Interpret and use information in maps, charts, graphs, time lines, tables and diagrams.	0	2	1
F6. Identify interrelationships between and among ideas and concepts within a text, such as cause-and-effect relationships.	17	2	2
F7. Synthesize information from multiple informational and technical sources.	0	1	0
F8. Draw conclusions based on evidence from informational and technical texts.	4	1	1
F9. Analyze the ways in which a text's organizational structure supports or confounds its meaning or purpose.	3	1	4
F10. Recognize the use or abuse of ambiguity, contradiction, paradox, irony, incongruities, overstatement, and understatement in text and explain their effect on the reader.	0	1	0
F11. Evaluate informational and technical texts for their clarity, simplicity, and coherence and for the appropriateness of their graphics and visual appeal.	0	3	0

Note: The darker shade represents complete alignment to the ADP statement, the lighter shade represents partial alignment, and no shade represents no alignment. Statement identifier codes, such as "F1," were used in the study to identify specific standard statements. The codes used to identify ADP statements followed ADP's prescribed coding format; for example, "F" indicates a statement in the informational text strand and "1" indicates the first standard statement in that strand.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); Conley (2003).

Media

The ADP media strand contains four statements. College Board has complete alignment to one statement and partial alignment to two

statements. ACT and S4S have no alignment to any statements, and College Board has no alignment to one statement (table C7).

TABLE C7

Alignment of American Diploma Project media strand statements with ACT, College Board, and Standards for Success statements, 2008

American Diploma Project strand and statements	Number and level of alignment of standards statements		
	ACT	College Board	Standards for Success
Media			
G1. Evaluate the aural, visual, and written images and other special effects used in television, radio, film, and the Internet for their ability to inform, persuade, and entertain (for example, anecdote, expert witness, vivid detail, tearful testimony, and humor).	0	2	0
G2. Examine the intersections and conflicts between the visual (such as media images, painting, film, and graphic arts) and the verbal.	0	0	0
G3. Recognize how visual and sound techniques or design (such as special effects, camera angles, and music) carry or influence messages in various media.	0	2	0
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).	0	6	0

Note: The darker shade represents complete alignment to the ADP statement, the lighter shade represents partial alignment, and no shade represents no alignment. Statement identifier codes, such as “G1,” were used in the study to identify specific standard statements. The codes used to identify ADP statements followed ADP’s prescribed coding format; for example, “G” indicates a statement in the media strand and “1” indicates the first standard statement in that strand.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); Conley (2003).

Literature

The ADP literature strand contains nine statements. College Board has complete alignment to two statements, S4S has complete alignment to four statements, and ACT has no complete alignments.

ACT has partial alignment to two statements, College Board has partial alignment to four statements, and S4S has partial alignment to three statements. ACT has no alignment to seven statements, College Board has no alignment to three statements, and S4S has no alignment to two statements (table C8).

TABLE C8

Alignment of American Diploma Project literature strand statements with ACT, College Board, and Standards for Success statements, 2008

American Diploma Project strand and statements	Number and level of alignment of standards statements		
	ACT	College Board	Standards for Success
Literature			
H1. Demonstrate knowledge of 18th and 19th century foundational works of American literature.	0	0	2
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").	0	2	1
H3. Interpret significant works from various forms of literature: poetry, novel, biography, short story, essay, and dramatic literature; use understanding of genre characteristics to make deeper and subtler interpretations of the meaning of the text.	0	6	3
H4. Analyze the setting, plot, theme, characterization, and narration of classic and contemporary short stories and novels.	7	5	4
H5. Demonstrate knowledge of metrics, rhyme scheme, rhythm, alliteration, and other conventions of verse in poetry.	0	0	0
H6. Identify how elements of dramatic literature (for example, dramatic irony, soliloquy, stage direction, and dialogue) articulate a playwright's vision.	0	0	0
H7. Analyze works of literature for what they suggest about the historical period in which they were written.	0	2	3
H8. Analyze the moral dilemmas in works of literature, as revealed by characters' motivation and behavior.	6	1	1
H9. Identify and explain the themes found in a single literary work; analyze the ways in which similar themes and ideas are developed in more than one literary work.	0	2	2

Note: The darker shade represents complete alignment to the ADP statement, the lighter shade represents partial alignment, and no shade represents no alignment. Statement identifier codes, such as "H1," were used in the study to identify specific standard statements. The codes used to identify ADP statements followed ADP's prescribed coding format; for example, "H" indicates a statement in the literature strand and "1" indicates the first standard statement in that strand.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004); ACT, Inc. (2007); College Board (2006); Conley (2003).

APPENDIX D

UNALIGNED STANDARDS

STATEMENTS FROM BENCHMARK AND COMPARISON STANDARDS SETS

This appendix contains tables showing American Diploma Project (ADP) standards statements that

did not align with statements in any of the comparison standards sets (table D1) and statements from each of the comparison standards sets—the ACT College Readiness Standards (ACT), College Board College Readiness Standards, and Standards for Success (S4S)—that do not align to ADP (tables D2–D4).

TABLE D1

American Diploma Project unique statements, by strand, 2008

Strand and statements
B. Communication
B1. Give and follow spoken instructions to perform specific tasks, to answer questions, or to solve problems.
C. Writing
C8. Present written material using basic software programs (such as Word, Excel, and PowerPoint) and graphics (such as charts, ratios, and tables) to present information and ideas best understood visually.
E. Logic
E8. Analyze two or more texts addressing the same topic to determine how authors reach similar or different conclusions.
G. Media
G2. Examine the intersections and conflicts between the visual (such as media images, painting, film, and graphic arts) and the verbal.
H. Literature
H5. Demonstrate knowledge of metrics, rhyme scheme, rhythm, alliteration, and other conventions of verse in poetry.
H6. Identify how elements of dramatic literature (for example, dramatic irony, soliloquy, stage direction, and dialogue) articulate a playwright's vision.

Note: Statement identifier codes, such as "B1," were used in the study to identify specific standard statements. The codes used to identify American Diploma Project (ADP) statements followed ADP's prescribed coding format; for example, "B" indicates a statement in the communication strand and "1" indicates the first standard statement in that strand.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004).

TABLE D2

ACT statements that did not align to American Diploma Project statements, by strand, 2008

Strand and statements
Reading
R-1 Main ideas and author's approach
13-15-1 Recognize a clear intent of an author or narrator in uncomplicated literary narratives.
16-19-1 Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives.
20-23-1 Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives.
20-23-2 Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages.
24-27-1 Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages.
24-27-2 Infer the main idea or purpose of straightforward paragraphs in more challenging passages.
24-27-3 Summarize basic events and ideas in more challenging passages.

(CONTINUED)

TABLE D2 (CONTINUED)

ACT statements that did not align to American Diploma Project statements, by strand, 2008

Strand and statements	
24-27-4	Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages.
R-2 Supporting details	
13-15-1	Locate basic facts (e.g., names, dates, events) clearly stated in a passage.
16-19-1	Locate simple details at the sentence and paragraph level in uncomplicated passages.
16-19-2	Recognize a clear function of a part of an uncomplicated passage.
20-23-1	Locate important details in uncomplicated passages.
20-23-2	Make simple inferences about how details are used in passages.
24-27-1	Locate important details in more challenging passages.
24-27-2	Locate and interpret minor or subtly stated details in uncomplicated passages.
28-32-1	Locate and interpret minor or subtly stated details in more challenging passages.
R-3 Sequential, comparative, and cause-and-effect relationships	
13-15-1	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages.
13-15-2	Recognize clear cause-effect relationships described within a single sentence in a passage.
16-19-1	Identify relationships between main characters in uncomplicated literary narratives.
16-19-2	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives.
20-23-1	Order simple sequences of events in uncomplicated literary narratives.
20-23-2	Identify clear relationships between people, ideas, and so on in uncomplicated passages.
20-23-3	Identify clear cause-effect relationships in uncomplicated passages.
24-27-1	Order sequences of events in uncomplicated passages.
24-27-2	Understand relationships between people, ideas, and so on in uncomplicated passages.
24-27-3	Identify clear relationships between characters, ideas, and so on in more challenging literary narratives.
24-27-4	Understand implied or subtly stated cause-effect relationships in uncomplicated passages.
28-32 -1	Order sequences of events in more challenging passages.
R-4 Meanings of words	
13-15-1	Understand the implication of a familiar word or phrase and of simple descriptive language.
16-19-1	Use context to understand basic figurative language.
20-23-1	Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages.
24-27-1	Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages.
24-27-2	Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages.
R-5 Generalizations and conclusions	
13-15-1	Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives.
16-19-1	Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages.
20-23-1	Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages.
20-23-2	Draw simple generalizations and conclusions using details that support the main points of more challenging passages.
24-27-1	Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives.

(CONTINUED)

TABLE D2 (CONTINUED)

ACT statements that did not align to American Diploma Project statements, by strand, 2008

Strand and statements	
<i>English</i>	
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.
16-19-2	Delete a clause or sentence because it is obviously irrelevant to the essay.
20-23-1	Identify the central idea or main topic of a straightforward piece of writing.
24-27-1	Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal.
24-27-2	Delete material primarily because it disturbs the flow and development of the paragraph.
24-27-3	Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement.
E-2 Organization, unity and coherence	
13-15-1	Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>).
16-19-1	Select the most logical place to add a sentence in a paragraph.
20-23-1	Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>).
20-23-3	Add a sentence that introduces a simple paragraph.
24-27-3	Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward.
E-3 Word choice in terms of style, tone, clarity, and economy	
20-23-1	Delete redundant material when information is repeated in different parts of speech (e.g., “alarmingly startled”).
20-23-3	Determine the clearest and most logical conjunction to link clauses.
24-27-2	Identify and correct ambiguous pronoun references.
28-32 -1	Correct redundant material that involves sophisticated vocabulary and sounds acceptable as conversational English (e.g., “an aesthetic viewpoint” versus “the outlook of an aesthetic viewpoint”).
E-4 Sentence structure and formation	
16-19-1	Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences.
24-27-2	Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence.
28-32 -2	Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole.
<i>Writing</i>	
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.
05-6-1	Show a basic understanding of the persuasive purpose of the task by taking a position on the issue in the prompt but may not maintain that position.
05-6-2	Show a little recognition of the complexity of the issue in the prompt by acknowledging, but only briefly describing, a counterargument to the writer’s position.
07-8-1	Show understanding of the persuasive purpose of the task by taking a position on the issue in the prompt.
07-8-2-a	Show some recognition of the complexity of the issue in the prompt by acknowledging counterarguments to the writer’s position.
07-8-2-b	Show some recognition of the complexity of the issue in the prompt by providing some response to counterarguments to the writer’s position.

(CONTINUED)

TABLE D2 (CONTINUED)

ACT statements that did not align to American Diploma Project statements, by strand, 2008

Strand and statements	
09-10-2-a	Show recognition of the complexity of the issue in the prompt by partially evaluating implications and/or complications of the issue.
09-10-2-b	Show recognition of the complexity of the issue in the prompt by posing and partially responding to counterarguments to the writer's position.
W-2 Focusing on the topic	
03-4-1	Maintain a focus on the general topic in the prompt through most of the essay.
05-6-1	Maintain a focus on the general topic in the prompt throughout the essay.
07-8-1	Maintain a focus on the general topic in the prompt throughout the essay and attempt a focus on the specific 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.
07-8-1	Develop ideas by using some specific reasons, details, and examples.
07-8-2	Show some movement between general and specific ideas or examples.
W-4 Organizing ideas	
03-4-1	Provide a discernible organization with some logical grouping of ideas in parts of the essay.
03-4-2	Use a few simple and obvious transitions.
03-4-3	Present a discernible, though minimally developed, introduction and conclusion.
05-6-1	Provide a simple organization with logical grouping of ideas in parts of the essay.
05-6-2	Use some simple and obvious transitional words, though they may at times be inappropriate or misleading.
05-6-3	Present a discernible, though underdeveloped, introduction and conclusion.
07-8-1	Provide an adequate but simple organization with logical grouping of ideas in parts of the essay but with little evidence of logical progression of ideas.
07-8-2	Use some simple and obvious, but appropriate, transitional words and phrases.
07-8-3	Present a discernible introduction and conclusion with a little development.
09-10-1	Provide unity and coherence throughout the essay, sometimes with a logical progression of ideas.
09-10-2	Use relevant, though at times simple and obvious, transitional words and phrases to convey logical relationships between ideas.
09-10-3	Present a somewhat developed introduction and conclusion.
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.
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.
05-6-1-c	Show a basic control of language by using a little sentence variety, though most sentences are simple in structure.

(CONTINUED)

TABLE D2 (CONTINUED)

ACT statements that did not align to American Diploma Project statements, by strand, 2008

Strand and statements
07-8-1-a Show adequate use of language to communicate by correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding.
07-8-1-b Show adequate use of language to communicate by using appropriate vocabulary.
07-8-1-c Show adequate use of language to communicate by using some varied kinds of sentence structures to vary pace.
09-10-1-a Show competent use of language to communicate ideas by correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding.
09-10-1-c Show competent use of language to communicate ideas by using several kinds of sentence structures to vary pace and to support meaning.

Note: The codes used to identify ACT statements followed ACT's prescribed coding format but were modified to ease their use in this study. The coding scheme included a number-letter combination that conveyed the score range and location of the standard statement in the ACT standards document.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in ACT, Inc. (2007).

TABLE D3

College Board statements that did not align to American Diploma Standards statements, by strand, 2008

Strand and statements

Speaking

1: Understanding the communication process objective

- S1.1 Student understands the transactional nature of the communication process.
 - S1.1.1 Understands the transactional nature and components of the communication process, including speaker, listener, message, channel, feedback, and noise.
 - S1.1.2 Understands how speaker's and listener's internal variables affect communication.
 - S1.1.3 Understands how contextual variables affect communication.

3: Preparing and Delivering Presentations Objectives

- S3.4 Student presents, monitors audience engagement, and adapts delivery.
 - S3.4.2 Monitors audience feedback; makes inferences about audience engagement, understanding, and agreement; and adjusts delivery and content to achieve purposes and goals.

Reading

1: Comprehension of words, sentences, and components of texts objectives

- R1.1 Student comprehends the meaning of words and sentences.
 - R1.1.1 Uses the origins, history, and evolution of words and concepts to enhance understanding.
 - R1.1.3 Integrates word meaning, grammar, syntax, and context to construct a coherent understanding of sections of text.

2: Using prior knowledge, context, and understanding of language to comprehend and elaborate the meaning of texts objectives

- R2.1 Student uses prior knowledge to comprehend and elaborate the meaning of texts.
 - R2.1.2 Uses prior knowledge and experiences to extend and elaborate the meaning of texts.
- R2.3 Student uses knowledge of the evolution, diversity, and effects of language to comprehend and elaborate the meaning of texts.
 - R2.3.1 Uses knowledge of the evolution and diversity of language to guide comprehension of texts.

4: Using strategies to comprehend texts objectives

- R4.1 Student uses strategies to prepare to read.

(CONTINUED)

TABLE D3 (CONTINUED)

College Board statements that did not align to American Diploma Standards statements, by strand, 2008

Strand and statements	
R4.1.1	Identifies purposes and goals for reading to guide the reading process.
R4.1.2	Uses pre-reading strategies to develop expectations about the text and to guide the reading process.
R4.2	Student uses strategies to interpret the meaning of words, sentences, and ideas in texts.
R4.2.1	Uses text-focused strategies (e.g., re-reading, paraphrasing, chunking, close reading) to better understand texts, improve global understanding, and infer implied meanings of the text.
R4.2.2	Marks and annotates texts and takes notes during or after reading to identify and elaborate key ideas.
R4.2.3	Makes intentional bridging inferences and connections back to previous sentences and ideas across larger sections of text to resolve problems in comprehension.
R4.2.4	Uses text structures to make connections among ideas and improve comprehension.
R4.3	Student uses strategies to go beyond the text.
R4.3.1	Uses questions of self, author, text, and context to clarify and extend comprehension of texts.
R4.3.2	Uses think-aloud and self-explanation to extend and elaborate the meaning of the text.
R4.3.3	Uses visualization to represent and make connections among objects, setting, characters, events, processes, and concepts in texts.
R4.3.4	Uses a variety of primary and secondary sources to expand and deepen the understanding of texts.
R4.5	Student monitors comprehension and reading strategies throughout the reading process.
R4.5.1	Monitors comprehension while reading by generating questions to determine level of understanding, by participating in discussions about the text, by noting points of misunderstanding, and by trying to establish connections among ideas in the text and to prior knowledge. Adjusts reading strategies to improve comprehension.
R4.5.2	Assesses post-reading comprehension, memory, and learning and adjusts reading strategies to improve comprehension.
Listening	
1: Understanding the communication process objective	
L1.1	Student understands the transactional nature of the communication process.
L1.1.1	Understands the transactional nature and components of the communication process, including speaker, listener, message, channel, feedback, and noise.
L1.1.2	Understands how speaker's and listener's internal variables affect communication.
L1.1.3	Understands how contextual variables affect communication.
2: Managing barriers to listening objective	
L2.1	Student manages barriers to listening.
L2.1.1	Recognizes his or her own internal variables that can pose barriers to effective listening and uses a variety of strategies to manage them.
L2.1.2	Understands that language represents and constructs how listeners perceive events, people, groups, and ideas and that it has both positive and negative implications that can affect listeners in different ways.
L2.1.3	Recognizes that external variables can pose barriers to effective listening and uses a variety of strategies to prevent or overcome them.
3: Listening for diverse purposes objectives	
L3.1	Student listens to comprehend.
L3.1.4	Uses a variety of response strategies to clarify explicit and implicit meanings of messages.
L3.3	Student listens empathically.

(CONTINUED)

TABLE D3 (CONTINUED)

College Board statements that did not align to American Diploma Standards statements, by strand, 2008

Strand and statements	
L3.3.1	Uses a variety of mental and physical strategies to focus attention on the speaker, the speaker's message, and the speaker's emotions in order to listen empathically.
L3.3.4	Uses a variety of verbal and nonverbal strategies to respond to the speaker's message in order to indicate support, keep the speaker talking, and build understanding and empathy.
Media literacy	
1: Understanding the nature of media objective	
M1.1	Student understands the nature of media communication.
M1.1.2	Understands how media producers capture, measure, and interpret responses to media messages as indicators of the messages' effectiveness and how media producers use this feedback to modify media messages.
2: Understanding, interpreting, analyzing, and evaluating media communication objective	
M2.1	Student understands, interprets, analyzes, and evaluates media communication.
M2.1.1	Analyzes how media producers use conventional production elements to achieve specific effects.
M2.1.2	Analyzes how media producers use production elements and techniques to establish narrative elements (e.g., setting, mood, tone, character, plot) and create specific effects.
M2.1.3	Analyzes how the media channel and production elements affect the targeted audience, achieve the purpose, and convey the media producer's point of view.
M2.1.4	Recognizes how his or her prior knowledge, experiences, attitudes, beliefs, and demographic characteristics, as well as the context, affect the interpretation of a media message.
3: Composing and producing media communication objectives	
M3.3	Student evaluates and revises a media communication.
M3.3.2	Recognizes the power of media communication and the importance of using media ethically. Explains the role of legal regulations and fair use policies when setting purposes and goals, developing content, and publishing a media communication.

Note: The codes used to identify College Board statements followed College Board's prescribed coding format of standard, standard number, objective, and performance expectation number. For example, S1.1.1 indicates speaking standard 3, objective 1, and performance expectation 1.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in College Board (2006).

TABLE D4

Standards for Success statements that did not align to American Diploma Program statements, by strand, 2008

Strand and statements	
I. Reading and comprehension	
I.A.	Successful students employ reading skills and strategies to understand literature. They:
I.A.7.	* recognize and comprehend narrative terminology and techniques, such as author versus narrator, stated versus implied author and historical versus present-day reader.
I.B.	Successful students use reading skills and strategies to understand informational texts. They:
I.B.2.	use monitoring and self correction, as well as reading aloud, as means to ensure comprehension.
I.C.	Successful students are able to understand the defining characteristics of texts and to recognize a variety of literary forms and genres. They:
I.C.2.	understand the formal constraints of different types of texts and can distinguish between, for example, a Shakespearean sonnet and a poem written in free verse.

(CONTINUED)

TABLE D4 (CONTINUED)

Standards for Success statements that did not align to American Diploma Program statements, by strand, 2008

Strand and statements	
I.C.6.	use aesthetic qualities of style, such as diction or mood, as a basis to evaluate literature that contains ambiguities, subtleties or contradictions.
I.D.	Successful students are familiar with a range of world literature. They:
I.D.2.	demonstrate familiarity with authors from literary traditions beyond the English speaking world.
I.E.	Successful students are able to discuss with understanding the relationships between literature and its historical and social contexts. They:
I.E.4.	are able to discuss with understanding the relationships between literature and politics, including the political assumptions underlying an author's work and the impact of literature on political movements and events.
II. Writing	
II.D.	Successful students use writing conventions to write clearly and coherently. They:
II.D.6.	*demonstrate development of a controlled yet unique style and voice in writing where appropriate.
II.E.	Successful students use writing to communicate ideas, concepts, emotions and descriptions to the reader. They:
II.E.1.	know the difference between a topic and a thesis.
IV. Critical thinking skills	
IV. A.	Successful students demonstrate connective intelligence. They:
IV. A.1.	are able to discuss with understanding how personal experiences and values affect reading comprehension and interpretation.
IV. A.2.	* demonstrate an ability to make connections between the component parts of a text and the larger theoretical structures, including presupposition, audience, purpose, writer's credibility or ethos, types of evidence or material being used and style.
IV. B.	Successful students demonstrate the ability to think independently. They:
IV. B.1.	are comfortable formulating and expressing their own ideas.

* Denote items expected of students who plan to major in these fields of study (Conley 2003, p. 11).

Note: The codes used to identify Standards for Success (S4S) statements followed S4S's prescribed coding format of pattern of knowledge foundation, skill, and skill number. For example, I.A.7 indicates knowledge foundation reading and comprehension, Successful students employ reading skills and strategies to understand literature, and skill 7.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Conley (2003).

APPENDIX E

WEBB'S COGNITIVE COMPLEXITY LEVEL DESCRIPTIONS

The following cognitive complexity level descriptions for reading and writing were taken verbatim from Webb's *Cognitive Complexity Criteria: Language Arts Levels for Depth of Knowledge* (2002, pp. 1–3) and used for initial training of reviewers. Both the reading and writing scales are based on the four levels described earlier in this report: level 1–recall, level 2–skill/concept, level 3–strategic thinking, and level 4–extended thinking. Reviewers in the current study used the appropriate scale based on the statement content. Subsequent consensus meetings among review team members 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 Webb depth of knowledge (DoK) scale level are provided in tables E1–E4.

Level 1 (Webb 2002, pp. 1 and 2)

Reading. Level 1 (*Recall*) requires students to receive 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 is included. Items require only a shallow understanding of text presented 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. 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 (table E1):

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

Level 2 (Webb 2002, pp. 1 and 2–3)

Reading. Level 2 (*Skill/Concept*) includes the engagement of some mental processing beyond recalling or reproducing a response; it requires both comprehension and subsequent processing

TABLE E1

Examples of standards statements rated at cognitive complexity level 1

Standards set	Statement identifier	Statement
American Diploma Project	A1	Demonstrate control of standard English through the use of grammar, punctuation, capitalization and spelling
ACT	R-2 13-15-1	Supporting Details: Locate basic facts (e.g., names, dates, events) clearly stated in a passage
College Board	W5.1	Edits for conventions of standard written English and usage
Standards for Success	I.F.1.	Identify the primary elements of the types of charts, graphs and visual media that occur most commonly in texts

Source: Achieve, Inc. 2004; ACT, Inc. 2007; College Board 2006; Conley 2003.

of text or portions of text. Intersentence 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 determine whether fact or 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. Level 2 (*Skill/Concept*) requires some mental processing. At this level students are engaged in first draft writing or brief extemporaneous speaking for a limited number of 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

web site. Some examples that represent but do not constitute all of level 2 performance follow (table E2):

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

Level 3 (Webb 2002, pp. 1–3)

Reading. 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 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.

TABLE E2

Examples of standards statements rated at cognitive complexity level 2

Standards set	Statement identifier	Statement
American Diploma Project	A3	Use roots, affixes and cognates to determine the meaning of unfamiliar words
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
College Board	R4.1.2	Uses pre-reading strategies to develop expectations about the text and to guide the reading process
Standards for Success	I.A.2.	Make supported inferences and draw conclusions based on textual features, seeking such evidence in text, format, language use, expository structures and arguments used

Source: Achieve, Inc. 2004; ACT, Inc. 2007; College Board 2006; Conley 2003.

- Summarize information from multiple sources to address a specific topic.
- Analyze and describe the characteristics of various types of literature.

Writing. 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 sentence structure 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 (table E3):

- 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 (Webb 2002, pp. 2 and 3)

Reading. 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.

Writing. 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

TABLE E3

Examples of standards statements rated at cognitive complexity level 3

Standards set	Statement identifier	Statement
American Diploma Project	D3	Make distinctions about the credibility, reliability, consistency, strengths and limitations of resources, including information gathered from Web sites
ACT	W-4 03-4-1	Organizing Ideas: Provide a discernible organization with some logical grouping of ideas in parts of the essay
College Board	R4.3.1	Uses questions of self, author, text, and context to clarify and extend comprehension of texts
Standards for Success	I.E.3.	Demonstrate familiarity with the concept of the relativity of all historical perspectives, including their own

Source: Achieve, Inc. 2004; ACT, Inc. 2007; College Board 2006; Conley 2003.

or themes. There is evidence of 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 (table E4):

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

TABLE E4

Examples of standards statements rated at cognitive complexity level 4

Standards set	Statement identifier	Statement
American Diploma Project	E8	Analyze two or more texts addressing the same topic to determine how authors reach similar or different conclusions
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
College Board	W3.1.3	Uses rhetorical appeals and organizational structures to establish a credible voice
Standards for Success	III.A.3.	Identify claims in their writing that require outside support or verification

Source: Achieve, Inc. 2004; ACT, Inc. 2007; College Board 2006; Conley 2003.

APPENDIX F
COGNITIVE COMPLEXITY BY STRAND FOR ALL
FOUR COLLEGE READINESS STANDARDS SETS

This appendix discusses cognitive complexity ratings by strand for the four college readiness standards sets.

American Diploma Project cognitive complexity

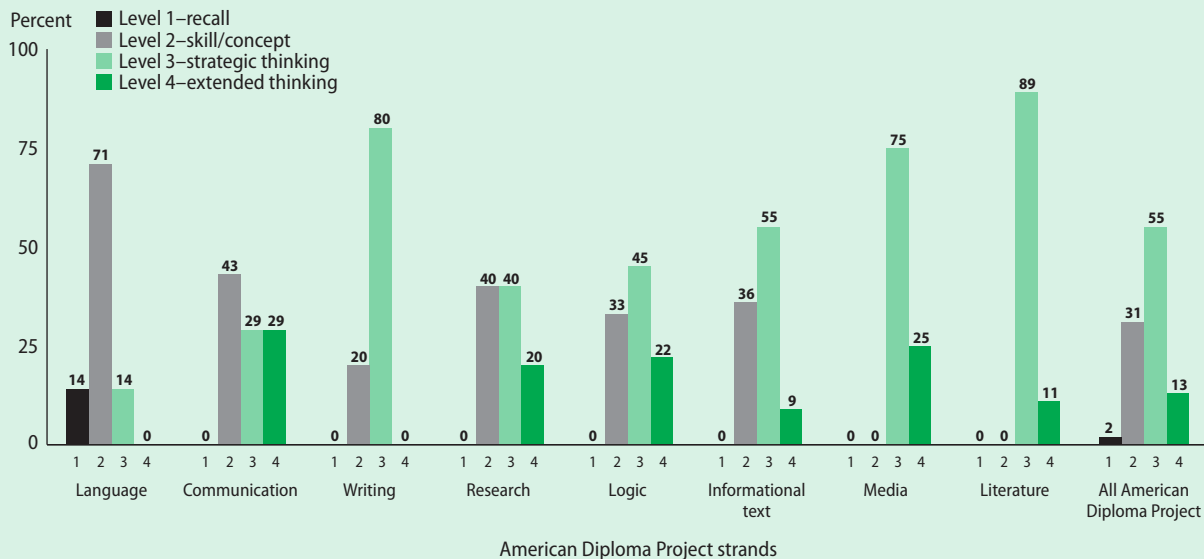
Variability in cognitive complexity was observed across the eight American Diploma Project (ADP) strands (figure F1). Overall, more than a quarter of the content in seven of the eight strands (language was the exception) was rated at cognitive complexity level 3–strategic thinking. However, the strands vary greatly in representations of the other three complexity levels. For example, level 1–recall is represented only in the language strand (14 percent). Level 2–skill/concept is not represented by either media or literature strands but has 71 percent representation in language. Finally, the highest level of cognitive complexity is missing from both the

language and writing strands, with the greatest representations of level 4–extended thinking displayed in communication (29 percent) and media (25 percent).

ACT cognitive complexity

Level 3–strategic thinking is also well represented in ACT, with the highest representation in English and writing, while the majority of the reading strand is represented by level 2–skill/concept (figure F2). Compared with the other standards sets, ACT strands display the highest percentage of level 1–recall, and also the lowest percentage of level 4–extended thinking. One reason may be that wording in the ACT strands is very detailed to facilitate ACT test item development. This fact may make it difficult to assess some of the more abstract constructs described under level 4–extending thinking, which results in the lowest percentage of level 4 cognitive complexity ratings on the Webb (2002) depth of knowledge (DoK) scale among the four standards sets.

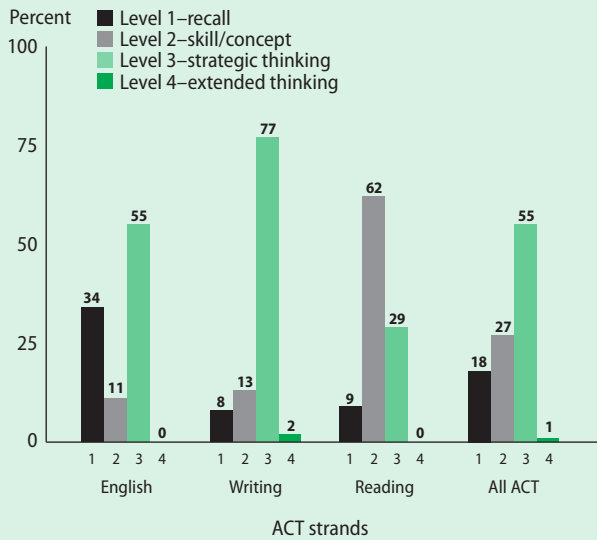
FIGURE F1
Percentage of American Diploma Project standards statements at each level of cognitive complexity, by strand, 2008



Note: Some components do not sum to 100 percent because of rounding.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Achieve, Inc. (2004).

FIGURE F2
Percentage of ACT standards statements at each level of cognitive complexity, by strand, 2008



Note: Some components do not sum to 100 percent because of rounding.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in ACT, Inc. (2007).

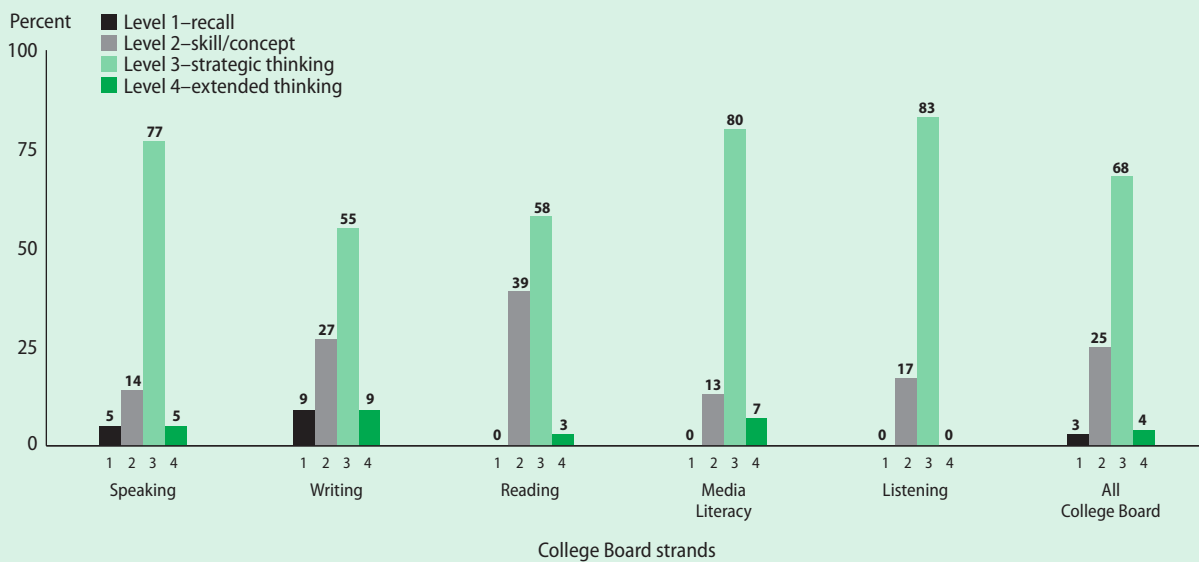
College Board cognitive complexity

The majority of all five strands within the College Board standards set are represented by level 3-strategic thinking (figure F3). In contrast, however, four of the strands represent level 4-extended thinking, though each at less than 10 percent. Also, only two of the strands represent level 1-recall complexity. Level 2-skill/concept is represented by each of the five strands, with a range of 13 percent (media literacy) to 39 percent (reading).

Standards for Success cognitive complexity

Standards for Success (S4S) displays the most even distribution of cognitive complexity across strands (figure F4). For example, S4S is the only set of standards that does not display strand averages above 70 percent for any one cognitive complexity level. It is also the only set of standards that displays a greater than 30 percent representation from level 4-extended thinking in

FIGURE F3
Percentage of College Board standards statements at each level of cognitive complexity, by strand, 2008

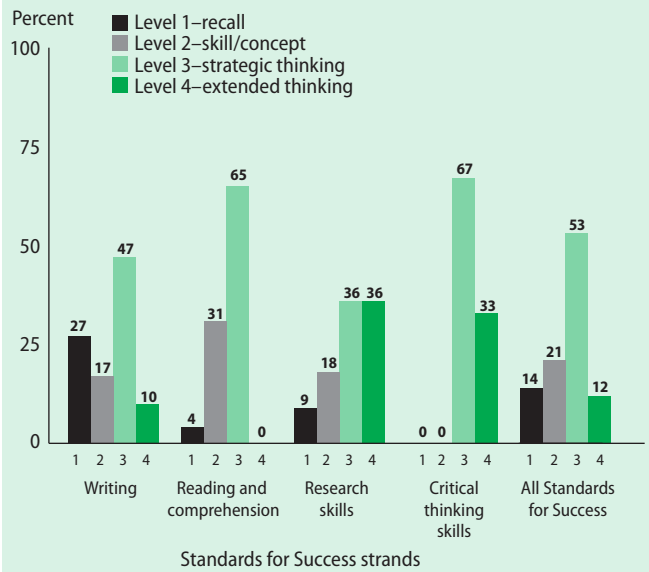


Note: Some components do not sum to 100 percent because of rounding.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in College Board (2006).

any strand. Although the S4S standards statements were the most evenly distributed across the four levels, the distributions within each S4S strand vary. For example, more than 30 percent of two strands that might be expected to show higher cognitive complexity levels (research skills and critical thinking skills) are at level 4—extended thinking. However, more than 25 percent of the writing strand statements are at level 1—recall, and more than 30 percent of the reading and comprehension statements are at level 2—skill/concept.

FIGURE F4
Percentage of Standards for Success standards statements at each level of cognitive complexity, by strand, 2008



Note: Some components do not sum to 100 percent because of rounding.

Source: Alignment summary ratings from expert content reviewers (July 2008) drawing on standards statements in Conley (2003).

APPENDIX G

ALTERNATE CONTENT ALIGNMENT METHODOLOGIES

Standards alignment research is typically conducted to evaluate the alignment between test items and assessment or curriculum standards (for example, Webb, Herman, and Webb 2007). In such studies assessment items are first matched to the relevant standards statements, and then judgments are made about how appropriately the test items measure the knowledge and skills intended by the standard. For alignment studies in general, one document serves as the benchmark against which other documents are aligned and evaluated.

Less common in the alignment literature are comparisons between sets of standards, but several such studies have been conducted. A recent series of studies aligned the math and science assessment standards of states in the Southwest Region to the most recent National Assessment of Educational Progress (NAEP) assessment standards (Shapley and Brite 2008; Timms et al. 2007). These studies used the NAEP assessment standards as benchmarks to which state assessment standards were aligned. The level of alignment was then rated. These studies, as in nearly all alignment studies, compared only two documents (a pair-wise comparison).

The research questions in the current study required comparing four sets of college readiness standards. The technical assistance research that was the genesis of the current study also compared four sets of college readiness standards and provided results in a single content alignment table. The single content alignment table enabled readers to determine at a glance the benchmark content that appears in most or all of the comparison standards sets as well as content unique to the benchmark standards set. As a result, the ability to provide results in a single table was a priority when evaluating possible methodologies for the current study.

The following four methodological approaches were considered:

1. Perform a pair-wise comparison of all possible pairs of standards, requiring either 6 or 12 separate alignment pairings (depending on whether the direction of alignment is a concern).
2. Use an external benchmark, such as a list of standards statements from another source.
3. Allow the standards to form a content alignment table inductively. In other words, there would be no single benchmark; a row would be formed whenever distinctly new content appeared in any of the standards. Content common to all standards would appear as a full row, while content unique to one set of standards would appear in a row with only a single cell filled. Raters would derive their own row and cell structure, which would then be resolved across raters.¹²
4. Adapt the alignment methodology (a pair-wise comparison) described in the NAEP science series (Timms et al. 2007) to compare a benchmark set of college readiness standards with three comparison sets of standards.

Approach 1 (a pair-wise comparison of all possible pairs of standards), while possibly the most rigorous, would produce 6 or 12 pair-wise comparisons; these results could not be represented in a single content alignment table. While policymakers would have been interested in a simultaneous comparison of all four sets of college readiness standards, the usefulness of the final results was a more important consideration. In addition, a second expert judgment process would be needed to summarize and categorize the findings because of the lack of common content categories across all four sets.

Approach 2 (use of an external benchmark) introduces another set of statements, requiring a more universal and validated set of college readiness

content statements; no such framework currently exists for college readiness, and creating one was well beyond the scope of this study.

Approach 3 (allowing the statements to form a content alignment table inductively), while intriguing, introduces another layer of subjectivity. The inductively determined content benchmarks would need to be agreed on prior to alignment and would be less likely to be replicable.

Approach 4 (pair-wise comparison to a single benchmark) was chosen for this study to take advantage of an alignment methodology already approved by the Institute for Education Sciences (Timms et al. 2007). This method, with adaptations, is described in detail in the body of this report and allows the results of the three pair-wise comparisons using American Diploma Project as the benchmark to be represented in a single alignment table for ease of use.

NOTES

1. A literature search was conducted to verify that no other sets of college readiness standards, intended as national standards, were available. All permutations of two or more of the terms *college*, *readiness*, and *standards* were used to search databases (ERIC, EBSCO, and PSYCH-INFO), publications (*Education Week* and *Chronicle of Higher Education*), and state education web sites (through Google searches). In addition, interviews were conducted with the experts who provided testimony to the CCRT and a representative from the Fordham Foundation, which is well known for its standards work (S. Stotsky, Representative, Fordham Foundation—personal communication, August 16, 2008). College readiness standards developed for use in a single state (for example, in Washington; Transition Mathematics Project 2006), postsecondary standards not primarily intended for college readiness (for example, Partnership for 21st Century Schools n.d.), and national standards primarily designed as K–12 standards (for example, National Assessment of Educational Progress; National Assessment Governing Board 2007; and National Council of Teachers of Mathematics 2000) were excluded from the study. No additional national college readiness standards were identified.
2. Texas adopted new English language arts college readiness standards in April 2008 (Texas Higher Education Coordinating Board 2008), and while the CCRT has been dissolved, college readiness standards remain a focus for the postsecondary and K–12 education commissioners.
3. At the time this study was initiated, Texas was focused on revising its English language arts standards, so this study continued that focus.
4. Rothman (2004) provides a thorough review of the dimensions that researchers have used over the past 10 years to evaluate content.
5. The use of multiple raters is common practice to improve the reliability and validity of subjective ratings (for example, Donner and Eliasziw 1987; Saito et al. 2006; Tinsley and Weiss 1975).
6. See appendix G for a description of the other methodological approaches considered for this study.
7. The literature search conducted as part of the initial study was replicated and confirmed that no other college readiness standards had been developed for national use between the initial and current studies.
8. How each standards set categorizes and labels content differs; for this study the term *strand* is used to refer to a category, and the terms *standards statements* and *statements* are used interchangeably to denote the specific knowledge and skills in a category.
9. The degree to which rater subjectivity may have affected the results of this study is no greater than for any other alignment study.
10. The Timms et al. (2007) studies aligned the science domains of the 2009 NAEP assessment standards and state K–12 assessment standards; the Shapley and Brite studies (2008) aligned the mathematics domains of these same sets of standards.
11. *Rater drift* is the tendency for raters or assessors to unintentionally redefine criteria over time. Rater drift checks were conducted several times during the review process to verify that there were no such shifts in criteria. Because drift occurred so infrequently (zero to one occurrence per check), instances were not formally recorded. In the current study the consensus meetings served to continually recalibrate the reviewers' understanding of the rating scales to the original definition. Therefore, the minimal rater drift that occurred did not influence

the final consensus ratings for either content alignment or cognitive complexity ratings.

12. There is precedent for this approach. Washington State developed a similar English language arts matrix when developing its

college readiness standards (Washington Higher Education Coordinating Board 2007). However no final report, alignment ratings, or notes were documented, and no description of the research methodology (including number of raters) was reported.

REFERENCES

- Achieve, Inc. (2004). *Ready or not: creating a high school diploma that counts*. American Diploma Project. Washington, DC: Achieve, Inc. Retrieved February 11, 2008, from www.achieve.org/files/ADPreport_7.pdf.
- Achieve, Inc. (2008). *Closing the expectations gap: an annual 50-state progress report on the alignment of high school policies with the demands of college and careers*. American Diploma Project. Washington, DC: Achieve, Inc. Retrieved February 11, 2008, from www.achieve.org/node/990.
- Achieve, Inc. (2009). *ADP Network*. Washington, DC: Achieve, Inc. Retrieved September 30, 2009, from www.achieve.org/ADPNetwork.
- 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.
- ACT, Inc. (2008a). *ACT's college readiness system: meeting the challenge of a changing world*. Iowa City, IA: ACT, Inc. Retrieved April 8, 2009, from www.act.org/research/policymakers/pdf/crs.pdf.
- ACT, Inc. (2008b). *ACT's standards used in three states, in three ways*. Retrieved December 20, 2008, from www.act.org/standard/action/index.html.
- College Board. (2005). *Report for the state of Texas on the alignment of the SAT and PSAT/NMSQT to the Texas Essential Knowledge and Skills*. New York, NY: College Board.
- College Board. (2006). *College Board College Readiness Standards for College Success™: English Language Arts*. New York, NY: College Board.
- College Board. (2008). *RediStep™ developed for 8th graders to gauge proficiencies in reading, writing, and math*. New York, NY: College Board. Retrieved December 21, 2008, from www.collegeboard.com/press/releases/201100.html.
- Commission for a College Ready Texas. (2007). *The Report of the Commission for a College Ready Texas*. Austin, TX: Commission for a College Ready Texas.
- 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 www.s4s.org/3_UUS_English.pdf.
- Conley, D.T. (2005). *College knowledge: what it really takes for students to succeed and what we can do to get them ready*. San Francisco, CA: Jossey-Bass.
- Conley, D. (2007). The challenge of college readiness. *Educational Leadership*, 64(7), 23–29. Retrieved December 20, 2008, from www.s4s.org/upload/_The_Challenge_of_College_Readiness.pdf.
- Donner, A., and Eliasziw, M. (1987). Sample size requirements for reliability studies. *Statistics in Medicine*, 6(4), 441–48.
- Improving America's Schools Act of 1994. (1995). Public Law 103–382.
- Kendall, J., Pollack, C., Schwols, A., and Snyder, C. (2007). *High school standards and expectations for college and the workplace* (Issues & Answers Report, REL 2007–No. 001). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central. Retrieved December 20, 2008, from http://ies.ed.gov/ncee/edlabs/regions/central/pdf/REL_2007001.pdf.
- La Marca, M. (2001). Alignment of standards and assessments as an accountability criterion. *Practical Assessment, Research & Evaluation*, 7(21). Retrieved September 16, 2009, from <http://PAREonline.net/getvn.asp?v=7&n=21>.
- Mushquash, C., and O'Connor, B.P. (2006). SPSS and SAS programs for generalizability theory analyses. *Behavior Research Methods*, 38(3), 542–47.
- 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), 667–90. Retrieved June 29, 2009, from www.investigacion-psicopedagogica.org/revista/articulos/16/english/Art_16_216.pdf.

- National Assessment Governing Board. (2007). *Mathematics framework for 2009 National Assessment of Educational Progress, pre-publication edition*. U.S. Department of Education. Retrieved March 1, 2008, from www.nagb.org/publications/frameworks/math-framework09.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 Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: National Council of Teachers of Mathematics.
- No Child Left Behind Act of 2001. (2002). Pub. L. No. 107–110, 115 Stat. 1425.
- Partnership for 21st Century Schools. (n.d.). *The road to 21st century learning: a policymaker's guide to 21st century skills*. Retrieved March 12, 2008, from www.21stcenturyskills.org/images/stories/otherdocs/p21up_Policy_Paper.pdf.
- Porter, A.C., Polikoff, M.S., Zeidner, T., and Smithson, J. (2008). The quality of content analyses of state student achievement tests and content standards. *Educational Measurement Issues and Practices*, 27(4), 2–14.
- Rothman, R. (2004). *Imperfect matches: the alignment of standards and tests*. Washington, DC: National Academy of Sciences.
- Saito, Y., Sozu, T., Hamada, C., and Yoshimura, I. (2006). Effective number of subjects and raters for interrater reliability studies. *Statistics in Medicine*, 25(9), 1547–60.
- Shapley, K., and Brite, J. (2008). *Aligning mathematics assessment standards: Texas and the 2009 National Assessment of Educational Progress (NAEP)*. (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 December 20, 2008, from http://ies.ed.gov/ncee/edlabs/regions/southwest/pdf/techbrief/tr_00708.pdf.
- Shrout, P.E., and Fleiss, J. L. (1979). Intraclass correlations: uses in assessing rater reliability. *Psychological Bulletin*, 86(2), 420–28.
- SPSS, Inc. (2007). *SPSS for Windows, Rel. 16.1*. Chicago, IL: SPSS, Inc.
- Texas Higher Education Coordinating Board. (2008). *Texas College Readiness Standards*. Austin, Texas: Texas Higher Education Coordinating Board. Retrieved June 26, 2009, from www.thecb.state.tx.us/index.cfm?objectid=EADF962E-0E3E-DA80-BAAD2496062F3CD8.
- Texas House Bill 1. (2006). Texas 79th Legislature, 3rd Congressional Session, Section 5.01 (enacted).
- Timms, M., Schneider, S., Lee, C., and Rolfhus, E. (2007). *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 from <http://ies.ed.gov/ncee/edlabs>.
- Tinsley, H., and Weiss, D. (1975). Interrater reliability and agreement of subjective judgments. *Journal of Counseling Psychology*, 22(4), 358–76.
- Transition Mathematics Project. (2006). *College readiness mathematics standards*. Olympia, WA: Washington State Board for Community and Technical Colleges. Retrieved March 12, 2008, from www.transitionmathproject.org/standards/doc/crs_march23_2006.pdf.
- 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 program executive summary*. Washington, DC: U.S. Department of Education. Retrieved November 12, 2009, from www.ed.gov/news/

pressreleases/2009/04/04012009.htmlwww.ed.gov/
programs/racetothetop/executive-summary.pdf.

Washington Higher Education Coordinating Board. (2007). *Comparative analysis of English college/workplace readiness*. Olympia, WA: Washington Higher Education Coordinating Board. Retrieved December 20, 2008, from www.learningconnections.org/clc/hecb/resources.htm.

Webb, N.L. (1997). *Determining alignment of expectations and assessments in mathematics and science education* (NISE Brief 1, 2). Madison, WI: University of Wisconsin-Madison, National Institute for Science Education.

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). *Depth-of-knowledge levels for four content areas*. Retrieved December 20, 2008, from www.prc.k12.ms.us/docs/curriculum/webbs_dok.pdf.

Webb, N.L., Horton, M., and O'Neal, S. (2002). *An analysis of the alignment between language arts standards and assessments in four-states*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Webb, N.M., Herman, J., and Webb, N.L. (2007). Alignment of mathematics state-level standards and assessments: the role of reviewer agreement. *Educational Measurement: Issues and Practice*, 26(2), 17–29.

Wixson, K.K., Fisk, M.C., Dutro, E., and McDaniel, J. (2002). *The alignment of state standards and assessments in elementary reading* (CIERA Report No. 3-024). Ann Arbor, MI: University of Michigan School of Education, Center for the Improvement of Early Reading Achievement.