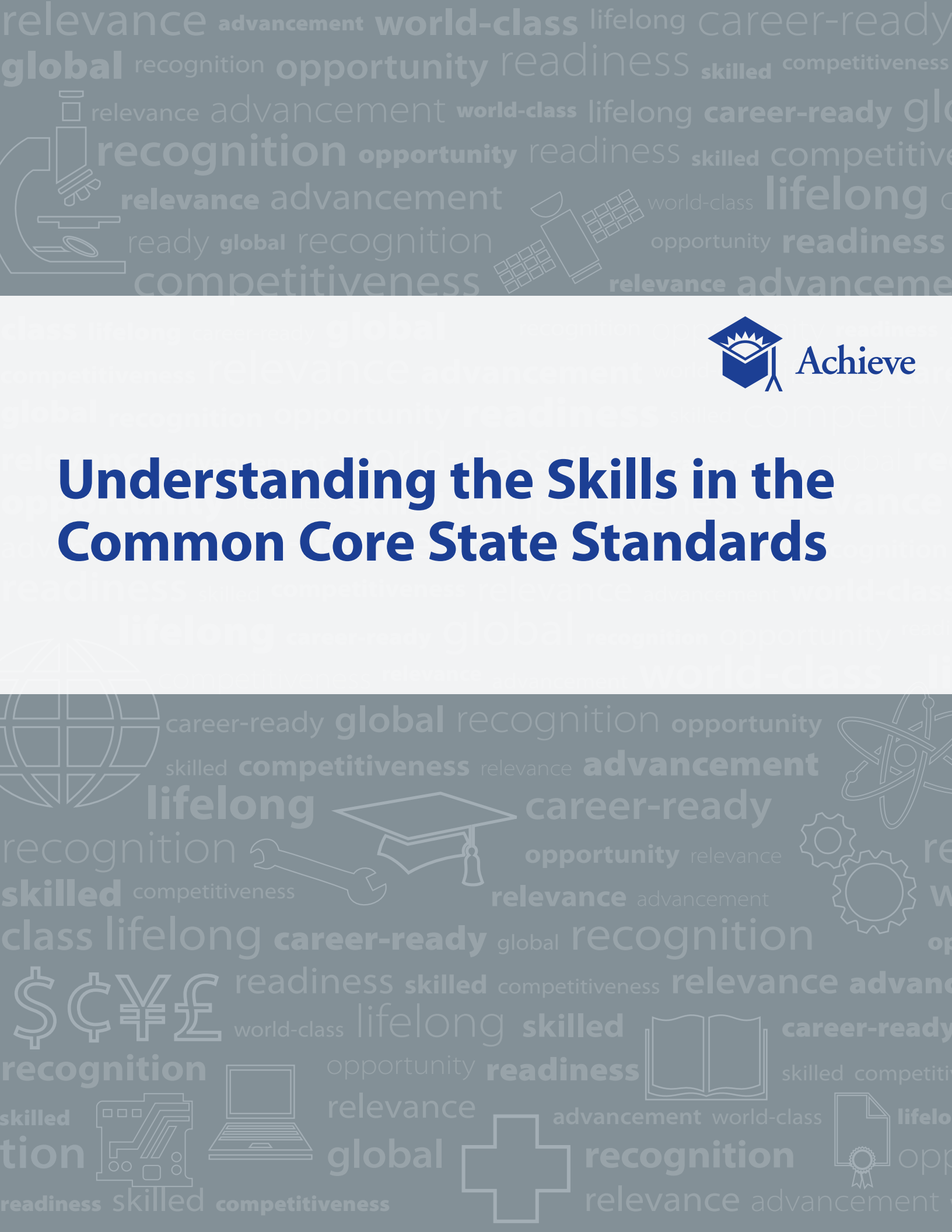


Achieve

Understanding the Skills in the Common Core State Standards

Editorial assistance and design: KSA-Plus Communications, Inc.

Contents

Introduction

As defined on the Common Core State Standards (CCSS) website, "the Common Core State Standards provide a consistent, clear understanding of what students are expected to learn … reflecting the *knowledge* and *skills* that our young people need for success in college and careers."[1] While the *knowledge* defined within the CCSS is apparent — the content itself — the *skills* that are imparted by the standards may be less apparent. What specifically should students be able to *do* as a result of mastering the CCSS in mathematics and English language arts/literacy (ELA/literacy)? Beyond the mastery of concepts and content, with what skills — and even more important, what *transferable* skills — will students leave high school?

To answer these questions, Achieve commissioned an analysis to identify the types and range of skills reflected in the CCSS in mathematics and ELA/literacy, using two sets of skills statements as benchmarks — the Deeper Learning Standards[2] and the Career Cluster Essential Knowledge and Skills Statements.[3] Based on this analysis, Achieve found that:

- **Many skills are reflected throughout the CCSS** in either or both subjects — skills such as communications, teamwork/collaboration, problem solving, critical thinking and research skills.
- **The CCSS articulate a set of skills that require an academic foundation** in ELA/literacy or mathematics **but have technical elements or applications** — such as work-based communications and job-seeking skills — that are **outside the scope of the CCSS.**
- **The CCSS include skills that could be reflected in CCSS-aligned instruction,** such as adaptability and motivation/self-discipline, even though they are not explicitly required or called out in the CCSS.
- Finally, **some skills** — mostly technical or work-based in nature, such as career planning, ethical reasoning and conflict resolution skills — **are simply outside the scope** of the mathematics and ELA/literacy CCSS.

The knowledge and skills needed to excel in academics, technical settings and life overlap significantly, largely because these skills cannot be gained absent content — and content is not very useful without the skills necessary to transfer and use that knowledge.

Simply put, the CCSS are designed to cover most of the skills in greatest demand by employers, postsecondary systems and our society, including the ability of students to communicate effectively in a variety of ways, work collectively, think critically, solve routine and nonroutine problems, and analyze information and data. The knowledge and skills needed to excel in academics, technical settings and life overlap significantly, largely because these skills cannot be gained absent content — and content is not very useful without the skills necessary to transfer and use that knowledge in a range of settings. In other words, the CCSS provide a strong platform for students to apply and master the skills they need, and as students apply those skills, they have more opportunities to fully master the content within the CCSS.

It is also important to note that the CCSS do not cover every skill that a student needs to succeed in life *because they were not designed to do so.* They were designed to provide the core academic knowledge and skills in mathematics and ELA/literacy that prepare students for postsecondary success.

Table 1. **Summary of Skills in the CCSS**

Skills strongly/ largely reflected in the CCSS	Skills requiring an academic foundation articulated by the CCSS with technical elements outside the scope of the CCSS	Skills that could be reflected in CCSS-aligned instruction	Skills not covered by the CCSS
▸ Communications skills ▸ Teamwork/ collaboration skills ▸ Problem-solving skills ▸ Reasoning skills ▸ The application/ extension of core content in various situations ▸ Use of data ▸ Research skills ▸ Time management skills ▸ Use of technology (in ELA/literacy)	▸ External and internal work-based communications skills ▸ Job-seeking skills ▸ The application/ extension of core content in nonroutine ways	▸ Motivation/self-discipline skills ▸ Study skills ▸ Adaptability skills ▸ "Enjoyment" of learning ▸ Recognizing strengths and weaknesses	▸ Conflict resolution skills ▸ Technology-based project management skills ▸ Mentoring skills ▸ Career planning and exploration ▸ Ethical reasoning ▸ Quality control systems and practices ▸ Workplace safety and health ▸ Emergency procedures and response techniques

Background and Methodology

Achieve deliberately selected two diverse sets of skills statements to ensure that the analysis focused on both broad, transferable "habits of mind" skills and skills more aligned with workplace and career readiness. The two skills statements selected from those currently in use across states are fairly representative of the universe of skills most valued by education, business and society.[4]

About the Deeper Learning Standards (DLS)[5]

The DLS were developed with support from the Hewlett Foundation to serve as a set of expectations to ensure that students are prepared to excel as problem solvers and critical thinkers in an increasingly complex and global society. Students who master these fairly broad skills standards will be able to transfer their knowledge in meaningful ways throughout their lives.

The six DLS are:

1. **Master core academic content;**
2. **Engage in expanding the structure of knowledge;**
3. **Think critically and solve complex problems;**
4. **Communicate effectively;**
5. **Work collaboratively; and**
6. **Learn how to learn.**

About the Career Cluster Essential Knowledge and Skills Statements (ESS)

The Career Cluster ESS — most recently released by the National Association of State Directors of Career and Technical Education Consortium (NASDCTEc) in 2008 — are "the knowledge and skills that are essential in any employment situation. … They are the starting point and should be contextualized within any pathway and plan of study." These skills represent the cross-cutting knowledge and skills any student pursuing a career and technical education (CTE) pathway should master through coursework and other CTE-related activities.

The 10 ESS are:

1. **Academic foundations:** Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.

2. **Communications:** Use oral and written communication skills in creating, expressing and interpreting information and ideas including technical terminology and information.

3. **Problem solving and critical thinking:** Solve problems using critical thinking skills independently and in teams. Solve problems using creativity and innovation.

4. **Information technology applications:** Use information technology tools specific to the career cluster to access, manage, integrate and create information.

5. **Systems:** Understand roles within teams, work units, departments, organizations, inter-organizational systems and the larger environment. Identify how key organizational systems affect organizational performance and the quality of products and services. Understand global context of industries and careers.

6. **Safety, health and environmental:** Understand the importance of health, safety and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.

7. **Leadership and teamwork:** Use leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

8. **Ethics and legal responsibilities:** Know and understand the importance of professional ethics and legal responsibilities.

9. **Employability and career development:** Know and understand the importance of employability skills. Explore, plan and effectively manage careers. Know and understand the importance of entrepreneurship skills.

10. **Technical skills:** Use of technical knowledge and skills required to pursue careers in all career clusters, including knowledge of design, operation and maintenance of technological systems critical to the career cluster.

CAREER-READY PRACTICES

In June, the National Association of State Directors of Career and Technical Education Consortium (NASDCTEc) released the Common Career Technical Core (CCTC), the result of a state-led initiative to establish a shared set of high-quality career and technical education (CTE) standards. The CCTC includes a set of standards for each of the 16 Career Clusters, as well as this overarching set of Career-Ready Practices:

1. Act as a responsible and contributing citizen and employee.
2. Apply appropriate academic and technical skills.
3. Attend to personal health and financial well-being.
4. Communicate clearly, effectively and with reason.
5. Consider the environmental, social and economic impacts of decisions.
6. Demonstrate creativity and innovation.
7. Employ valid and reliable research strategies.
8. Utilize critical thinking to make sense of problems and persevere in solving them.
9. Model integrity, ethical leadership and effective management.
10. Plan education and career path aligned to personal goals.
11. Use technology to enhance productivity.
12. Work productively in teams while using cultural/global competence.

For more information, see www.careertech.org/career-technical-education/cctc.

Qualitative Judgments

The analysis was a two-step process with content experts in mathematics and ELA/literacy beginning with the DLS and Career Cluster ESS and identifying those individual Common Core content standards that applied or were relevant to each of the individual skills statements.[6] The reviewers included one level of differentiation: Individual CCSS in **black** are very strong matches, while individual CCSS in **blue** are partial matches.[7] After the first round of reviewers finished their analyses, a second set of reviewers read behind them. After reconciling their analyses, the reviewers assigned a qualitative judgment to each individual skill statement based on the selected CCSS.[8]

The full analyses can be viewed in the Appendices available at **www.achieve.org/Skills-CCSS.** For the purposes of this report, Achieve has collapsed the original five qualitative categories into four:

- Skills **strongly/largely** reflected in the CCSS;
- Skills **requiring an academic foundation articulated by the CCSS** with technical elements outside the scope of the CCSS;
- Skills that **could be reflected** in CCSS-aligned instruction; and
- Skills **not covered** by the CCSS in mathematics or ELA/literacy.

Findings

Skills Strongly/Largely Reflected in the CCSS

The CCSS in mathematics and ELA/literacy include many of the skills most demanded by employers, college professors and society, as reflected in the DLS and ESS — namely:

- Communications skills (e.g., speaking, listening, messaging, etc.);
- Teamwork/collaboration skills (e.g., working in groups, goal setting, etc.);
- Problem-solving skills (e.g., analyzing information, evaluating solutions, etc.);
- Reasoning skills (e.g., critical thinking, forming arguments, using logic, etc.);
- The application/extension of core content in various situations (e.g., modeling);
- Use of data (e.g., evaluation, understanding structure, interpretation, etc.);
- Research skills (e.g., gathering and analyzing information and sources, etc.);
- Time management skills (e.g., developing goals, prioritizing tasks, etc.); and
- Use of technology (in ELA/literacy) (e.g., e-mail, Internet, media, etc.).

THE SKILLS GAP

According to employers and college faculty, high school graduates do not have the skills they need to succeed.

- 72 percent of employers rate new entrants with only a high school diploma as "deficient" in writing, 54 percent rate them as "deficient" in mathematics and 38 percent rate them as "deficient" in reading comprehension.
- 70 percent of employer respondents rate new entrants with only a high school diploma as "deficient" in critical thinking/problem solving (skills that 58 percent of employers rate as "very important" to on-the-job success).
- 39 percent of employers are unhappy with recent high school graduates' ability to apply what they learn to solve real-world problems.
- 38 percent of employers believe that the graduates are inadequately prepared for the quality of writing that is expected, and 34 percent are unhappy with graduates' oral communications skills.
- About three-quarters of postsecondary writing, reading, mathematics and science professors say incoming students are "very poorly" or "poorly" prepared for college-level work in their content areas.

Sources: The Conference Board, Corporate Voices for Working Families, American Society for Training & Development, and Society for Human Resource Management. (2006). *The Ill-Prepared U.S. Workforce: Exploring the Challenges of Employer-Provided Workforce Readiness Training.* www.p21.org/storage/documents/FINAL_REPORT_PDF09-29-06.pdf; Achieve. (2005). *Rising to the Challenge: Are High School Graduates Prepared for College and Work?* www.achieve.org/RisingtotheChallenge; ACT. (2010). National Curriculum Survey, 2009. www.act.org/research/policymakers/pdf/NationalCurriculumSurvey2009.pdf

These skills *explicitly* and *intentionally* were built into the CCSS because of their importance in college, careers and life. The CCSS in **ELA/literacy,** for example, require students to read a mix of literary and informational texts, write arguments using evidence drawn from texts, demonstrate speaking and listening skills (which include collaboration and working in teams), and use different media in building presentations. All of these skills, grounded in rigorous academic content, will help students build skills for success in high school and beyond.

Table 2. **Examples of Skills That Are Strongly/Largely Reflected in the CCSS in ELA/Literacy**

SKILLS STANDARD	SAMPLE RELATED CCSS
DLS-4b Students listen to and incorporate feedback and ideas from others.	**SL.11-12.1** Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on grades 11–12 topics, texts and issues, building on others' ideas and expressing their own clearly and persuasively. c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify or challenge ideas and conclusions; and promote divergent and creative perspectives. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
ESS02.06 Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences: *Align presentation strategies to the intended audience.*	**SL.11-12.5** Make strategic use of digital media (e.g., textual, graphical, audio, visual and interactive elements) in presentations to enhance understanding of findings, reasoning and evidence and to add interest.
ESS02.04 Evaluate and use information resources to accomplish specific occupational tasks: *Evaluate the reliability of information from informational texts, websites, and/or technical materials and resources.*	**RI.9-10.8** Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning. **RI.11-12.7** Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

In **mathematics,** the CCSS include eight Standards for Mathematical Practice, which represent the practices or "habits of mind" of a mathematical thinker, such as the ability to problem solve and persevere, reason abstractly and quantitatively, construct viable arguments, use tools strategically, attend to precision, and look for patterns.

The CCSS also emphasize mathematical modeling, requiring students to use mathematics and statistics to analyze economic, social and everyday situations and make informed decisions, as well as much more explicit standards in data, statistics and probability. The CCSS in mathematics are about not just mastering the content and concepts but also applying those concepts to assess situations and solve problems in a range of settings.

Table 3. **Examples of Skills That Are Strongly/Largely Reflected in the CCSS in Mathematics**

SKILLS STANDARD	SAMPLE RELATED CCSS
DLS-3b Students formulate problems and generate hypotheses.	**SMP.3** Construct viable arguments and critique the reasoning of others. **SMP.4** Model with mathematics. **S-IC** Make inferences and justify conclusions from sample surveys, experiments and observational studies.*
ESS02.09 Develop and interpret tables, charts and figures to support written and oral communications: *Create tables, charts and figures to support written and oral communications.*	**S-ID** Summarize, represent and interpret data on a single count or measurement variable; summarize, represent and interpret data on two categorical and quantitative variables; and interpret linear models.*
ESS03.01 Employ critical thinking skills independently and in teams to solve problems and make decisions (e.g., analyze, synthesize and evaluate): *Analyze elements of a problem to develop creative solutions.*	**SMP.1** Make sense of problems and persevere in solving them.

Note: Modeling standards are embedded throughout the high school mathematics CCSS and are indicated by an asterisk (*).

While the examples in Tables 2 and 3 highlight high school-level standards, many of these skills are reflected in the CCSS in earlier grades. The Speaking and Learning standards for grades 3–8 (SL.3-8.1), for example, expect students to participate in collaborative discussions and to express their own ideas and build on the ideas of others in the elementary grades. Then the standards progress to expect students to pose and respond to questions to elicit elaboration in those collaborative discussions in the middle grades.

In mathematics, the Standards for Mathematical Practice apply to all K–12 grades. Another example of the skills in high school-level standards being reflected in earlier grades is the statistics and probability expectations (e.g., S-ID), which build on measurement and data standards starting in grade 2, when students are first expected to represent and interpret data. Those measurement and data standards eventually progress into statistics and probability standards, beginning in grade 6.

Skills Requiring an Academic Foundation Articulated by the CCSS with Technical Elements outside the Scope of the CCSS

The CCSS in ELA/literacy and mathematics also cover a set of skills that require an academic foundation but have an element that is outside the scope of the academically focused CCSS. These skills include:

- External and internal work-based communications skills (e.g., client-based communications, cross-organizational, etc.);
- Job-seeking skills (e.g., research, applying, interviewing, maintaining a career portfolio, etc.); and
- The application/extension of core content in nonroutine ways (e.g., transfer of knowledge).

As the CCSS were designed to represent the core, foundational academic knowledge and skills in mathematics and ELA/literacy, it is not surprising that they provide a foundation for a number of skills not explicitly called out in the standards. Many skills require an academic foundation or a full grasp of academic content before they can be mastered — and therefore can actually reinforce the content and skills in the CCSS and provide students with opportunities to transfer their knowledge in relevant ways. One example is the set of **ELA/literacy** skills needed to search for and obtain a job, which is outside the scope of the CCSS but clearly requires students to be strong researchers and communicators.

Another way of looking at these skills is that they may rarely be applied or taught within a traditional mathematics or English classroom but require fluency or mastery in those foundational content areas. For example, students have opportunities to tap into, apply and extend core content in nonroutine ways in CTE courses that require students to model and solve real-world, work-based challenges, which can be anything but routine.

Table 4. **Examples of Skills Requiring an Academic Foundation Articulated by the CCSS with Technical Elements outside the Scope of the CCSS in ELA/Literacy**

SKILLS STANDARD	SAMPLE RELATED CCSS
DLS-3a Students are familiar with and able to use effectively the tools and techniques specific to a content area.	**RST.11-12.3** Follow precisely a complex, multistep procedure when carrying out experiments, taking measurements or performing technical tasks; analyze the specific results based on explanations in the text.
ESS02.02 Demonstrate use of the concepts, strategies and systems for obtaining and conveying ideas and information to enhance communication in the workplace: *Write internal and external business correspondence that conveys and/or obtains information effectively.*	**L.11-12.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. **W/WHST.9-10.2a-e** Write informative/explanatory texts (including the narration of historical events, scientific procedures/experiments or technical processes) to examine and convey complex ideas, concepts and information clearly and accurately through the effective selection, organization and analysis of content.
ESS07.05 Conduct and participate in meetings to accomplish work tasks: *Develop meeting goals, objectives and agenda.*	**SL.11-12.1** Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on grades 11–12 topics, texts and issues, building on others' ideas and expressing their own clearly and persuasively. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.
ESS09.03 Demonstrate skills related to seeking and applying for employment to find and obtain a desired job: *Use multiple resources to locate job opportunities.*	**W/WHST.9-10.7** Conduct short, as well as more sustained, research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

The skills that require a foundation set by the CCSS in **mathematics** but are outside the scope of that content area largely relate to broader problem-solving and critical thinking skills developed through mathematics instruction and even more specifically relate to students' ability to analyze (and communicate) information and data to make informed decisions.

Table 5. **Examples of Skills Requiring an Academic Foundation Articulated by the CCSS with Technical Elements outside the Scope of the CCSS in Mathematics**

SKILLS STANDARD	SAMPLE RELATED CCSS
DLS-2d Students enjoy and are able to rise to challenges requiring them to apply knowledge in non-routine ways.	**SMP.1** Make sense of problems and persevere in solving them. **SMP.4** Model with mathematics. **SMP.7** Look for and make use of structure.
ESS02.02 Demonstrate use of the concepts, strategies and systems for obtaining and conveying ideas and information to enhance communication in the workplace*: Write internal and external business correspondence that conveys and/or obtains information effectively.*	**SMP.3** Construct viable arguments and critique the reasoning of others. **SMP.5** Use appropriate tools strategically. **SMP.6** Attend to precision.
ESS03.04 Conduct technical research to gather information necessary for decision making: *Analyze information and data for value to the research objectives.*	**SMP.1** Make sense of problems and persevere in solving them. **S-IC** Make inferences and justify conclusions from sample surveys, experiments and observational studies.*

Note: Modeling standards are embedded throughout the high school mathematics CCSS and are indicated by an asterisk (*).

Skills That Could Be Reflected in CCSS-Aligned Instruction

Many of the life or employability skills that are often identified by employers and college faculty as being deficient among high school graduates are not addressed explicitly in the CCSS but can be embedded in the instruction of the standards through strong pedagogy, the use of effective instructional materials, and authentic and relevant student tasks and assignments. In other words, the CCSS provide a platform for teaching such skills, which include:

- Study skills (e.g., reading strategies);
- Motivation/self-discipline skills (e.g., meeting goals and objectives);
- Adaptability skills (e.g., adapting communications to meet group dynamics, as part of the problem-solving process, etc.);
- "Enjoyment" of learning; and
- Recognizing strengths and weaknesses.

Table 6. **Examples of Skills That Could Be Reflected in CCSS-Aligned Instruction in Either Subject**

SKILLS STANDARD
DLS-2c Students are motivated to put in the time and effort needed to build a solid knowledge base.
DLS-6a Students know and can apply a variety of study skills and strategies.
DLS-6e Students recognize their weaknesses and anticipate needing to work harder in those areas.
DLS-6h Students understand and are prepared to meet changing expectations in a variety of academic, professional and social environments.
DLS-6g Students enjoy and seek out learning on their own.
ESS02.01.03 Select the reading strategy or strategies needed to fully comprehend the content within a written document (i.e., skimming, reading for detail, reading for meaning or critical analysis).
ESS03.03 Identify, write and monitor workplace performance goals to guide progress in assigned areas of responsibility and accountability.
ESS07.03 Employ teamwork skills to achieve collective goals and use team members' talents effectively: *Adapt effectively to changes in projects and work activities.*
ESS09.01.01 Demonstrate self-discipline, self-worth, positive attitude and integrity in a work situation.

Importantly, a number of skills that exist explicitly within the ELA/literacy standards could be extended within mathematics instruction. For example, while the CCSS in mathematics do not call for students to engage in collaborative group work like the ELA/literacy standards do, mathematics teachers could build opportunities for practicing teamwork skills into their instruction. And even though there is a Standard for Mathematical Practice that requires students to "construct viable arguments and critique the reasoning of others," it does not specify whether students should construct and critique arguments through verbal or written communications, although teachers could certainly require their students to communicate the information in multiple ways.

Skills Not Covered by the CCSS in Mathematics or ELA/Literacy

Finally, there are a number of skills that simply are outside the scope of the CCSS. These skills include:

- Conflict resolution skills;
- Mentoring skills;
- Technology-based project management skills (e.g., using technology for information sharing, intra-office communications, etc.);
- Career planning and exploration (e.g., identifying opportunities, certifications, internships, etc.);
- Ethical reasoning (e.g., understanding legal implications, instituting organizational policies, etc.);
- Quality control systems and practices (e.g., understanding intra-office function and interactions, etc.);
- Workplace safety and health (e.g., understanding regulatory compliance, assessing workplace conditions and precautions, etc.); and
- Emergency procedures and response techniques (e.g., First Aid, use of safety equipment, etc.).

Given that the CCSS define the *academic* knowledge and skills students need to be prepared for careers and college, it should come as no great surprise that a number of technical, workplace-focused skills are not covered in the CCSS. This is not to say that these skills cannot be imparted in students' K–12 experience, but it is unlikely to occur in traditional English and mathematics courses.

Conclusion

The CCSS cover many college-ready, career-ready AND life-ready skills. The claim that the CCSS define both the core academic knowledge and skills students need for success in college and careers is accurate. The skills most demanded by employers, postsecondary systems and our society are well represented in the CCSS by design — the ability of students to communicate effectively (both verbally and in written communications), to solve problems, to think critically and develop informed arguments, and to analyze information and data. The ELA/literacy CCSS are particularly strong when it comes to providing regular opportunities for students to work collaboratively, present information, communicate in a variety of ways and use research to make informed judgments. Of course, the CCSS only identify those skills — it is up to teachers and their use of pedagogy and instruction to help students master the content and skills called for in the CCSS.

The lines between academic skills, technical skills and life/employability skills are blurred. Often the discussion about skills, or even more generally about college and career readiness, describes "academic," "technical" and "life/employability" skills as if they are three separate and distinct types of skills. This analysis demonstrates that there is a significant overlap between the knowledge and skills needed to excel in academics, technical settings and life, largely because one cannot teach skills absent content. Content knowledge is foundational in the development of skills, and the application of skills provides students the opportunity to extend content knowledge in relevant and meaningful ways. Part of this "blurring" also has to do with the fact that workplaces are demanding more knowledge and skills than before, pushing the education system to provide more opportunities for students to integrate academic and technical knowledge and skills, as is done on the job.

The CCSS can effectively help students develop a range of critical skills, but they do not cover every skill standard because they were designed specifically to cover academic knowledge and skills in math and ELA. Without question, the CCSS represent an advance over what most states require now in regards to their attention to skill development and the application and transfer of knowledge and skills to real-world situations. However, they do not cover every skill that a student may need for success in life because they were not designed to do so. They were designed to cover the foundational knowledge and skills in mathematics and ELA/literacy needed for postsecondary success.

Importantly, all of the DLS are reflected in the CCSS or are part of CCSS-aligned instruction. All of the skills identified as being outside the scope of the CCSS in both content areas were Career Cluster ESS, which is to be expected, given the ESS' focus on career and workplace readiness.

The bottom line is all students need a well-rounded K–12 experience. The CCSS go a long way in broadening opportunities for students to master and apply knowledge and skills, but attention must be paid to ensuring that teachers have the professional development and instructional materials they need to address the full range of the CCSS, as well as to those valuable (and in-demand) skills and areas of knowledge that fall outside of the CCSS.

Endnotes

1 From the CCSS website, www.corestandards.org.

2 For more on the DLS, see www.hewlett.org/programs/education-program/deeper-learning.

3 For more on the Career Cluster ESS, see www.careertech.org/career-clusters/ccresources/knowledge-skills.html.

4 For a more in-depth analysis of skills, see "Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century" by the National Research Council, www7.national-academies.org/bota/Deeper_Learning_Report_Homepage2.html.

5 For an analysis of how the strategies embedded within the DLS relate to and enhance the learning of the CCSS, see http://epiconline.org/publications/document-detail.dot?id=103dec1f-d75e-4b01-812c-12a635ca9c2f.

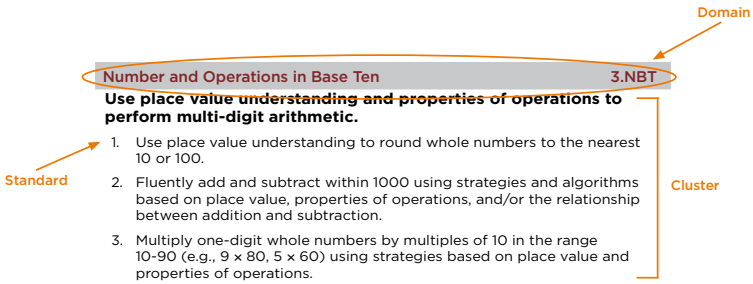
6 The reviewers were Fabio Milner and Lynn Raith in mathematics and Sue Pimentel and Judson Odell in ELA/literacy.

7 The color coding of the individual standards mainly had an impact on whether skills were found to be "strongly" or "largely" reflected in the CCSS.

8 The differences that needed to be reconciled were limited to a handful of skills statements and typically revolved around which CCSS were appropriate to include and whether an individual content standard was a strong or partial match.

Appendix A: Standards and Skills Statements Coding

Mathematics



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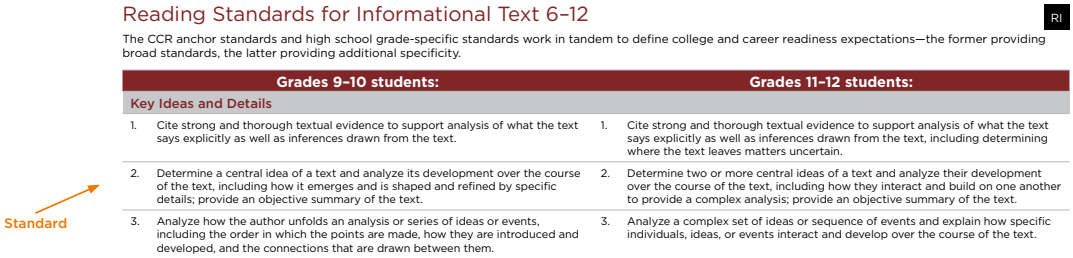

Skills Statements Coding

DLS

DLS-1	Master core academic content
DLS-1a	*Students learn, remember, and recall facts relevant to a content area.*
DLS-1b	*Students extend core knowledge to novel tasks and situations in a variety of Academic subjects.*

Career Cluster ESS

ESS01	Academic Foundations: Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.	Essential Skills Topic
ESS01.01	*Complete required training, education and certification to prepare for employment in a particular career field.*	*Knowledge & Skill Standard*
ESS01.01.01	*Identify training, education and certification requirements for occupational choice.*	*Performance Element*
ESS01.01.02	*Participate in career-related training and/or degree programs.*	*Performance Element*

Appendix B: Commonly Identified CCSS

In both content areas, a number of core standards appear often (at least a dozen times) in the skills analysis. Focusing just on the high school level, in ELA/literacy these standards include:

- **SL.11-12.1a-d** Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on *grades 11–12 topics*, *texts and issues*, building on others' ideas and expressing their own clearly and persuasively.
- **SL.11-12.2** Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
- **SL.11-12.3** Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis and tone used.
- **SL.11-12.4** Present information, findings and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance and style are appropriate to purpose, audience and a range of formal and informal tasks.
- **SL.11-12.5** Make strategic use of digital media (e.g., textual, graphical, audio, visual and interactive elements) in presentations to enhance understanding of findings, reasoning and evidence and to add interest.
- **RH.9-10.6** Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.
- **RH.11-12.1** Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
- **RI/RH/RST.11-12.7** Integrate and evaluate multiple sources of information presented in different media or formats as well as in words in order to address a question or solve a problem.
- **RH.11-12.9** Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.
- **RST.9-10.8** Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
- **RST.9-10.9** Compare and contrast the information gained from experiments, simulations, video or multimedia sources with that gained from reading a text on the same topic.
- **RST.11-12.9** Compare and contrast findings presented in a text to those from other sources

(including their own experiments), noting when the findings support or contradict previous explanations or accounts.

- **W/WHST.9-10.6** Use technology, including the Internet, to produce, publish and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
- **W/WHST.9-12.1a-e** Write arguments focused on discipline-specific content.
- **W/WHST.9-12.2a-e** Write informative/explanatory texts (including the narration of historical events, scientific procedures/experiments or technical processes) to examine and convey complex ideas, concepts and information clearly and accurately through the effective selection, organization and analysis of content.
- **W/WHST.11-12.7** Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- **W/WHST.11-12.8** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

In mathematics these standards include:

- **SMP.1** Make sense of problems and persevere in solving them.
- **SMP.2** Reason abstractly and quantitatively.
- **SMP.3** Construct viable arguments and critique the reasoning of others**.**
- **SMP.4** Model with mathematics.
- **SMP.5** Use appropriate tools strategically.
- **SMP.6** Attend to precision.
- **SMP.7** Look for and make use of structure.
- **SMP.8** Look for and express regularity in repeated reasoning.
- **F-BF** *Build a function that models a relationship between two quantities.*
- **G-MG** *Apply geometric concepts in modeling situations.*
- **S-CP** *Understand independence and conditional probability and use them to interpret data.**
- **S-IC** *Understand and evaluate random processes underlying statistical experiments.**

- **S-IC** *Make inferences and justify conclusions from sample surveys, experiments and observational studies.**
- **S-ID** *Summarize, represent and interpret data on a single count or measurement variable.**
- **S-ID** *Summarize, represent and interpret data on two categorical and quantitative variables.**
- **S-ID** *Interpret linear models.**
- **S-MD** *Use probability to evaluate outcomes of decisions.**

Note: Modeling standards are embedded throughout the high school mathematics CCSS and are indicated by an asterisk (*).

Appendix C, which includes the skills analysis tables in ELA/literacy ("Deeper Learning Standards and Essential Knowledge and Skills Statements — English Language Arts/Literacy"), and ***Appendix D,*** which includes the skills analysis tables in mathematics ("Deeper Learning Standards and Essential Knowledge and Skills Statements — Mathematics"), are available online at www.achieve.org/CCSS-Skills.

Understanding the Skills in the Common Core State Standards was the result of many months of hard work. Achieve would like to thank those individuals whose efforts made it possible:

We would first like to thank our reviewers, Sue Pimentel, Judson Odell, Fabio Milner and Lynn Raith, for their expertise and guidance.

We would also like to thank Kimberly Green and Dean Folkers from the National Association of State Directors of Career Technical Education Consortium; Seth Derner from Vivayic Solutions; and Barbara Chow, Chris Shearer and Denis Udall from the William & Flora Hewlett Foundation for their feedback and support.

A number of Achieve staff played a role in the development and release of this report. Kate Blosveren (associate director) conducted the analysis and writing of the report, and Sandy Boyd (senior vice president of strategic initiatives) provided overall leadership and guidance. Additional thanks to Jason Weedon, Chad Colby and Rebecca Wittenstein for their contributions.

Achieve would like to thank Kathy Ames, Ken Moore and the team at KSA-Plus Communications, Inc., for their editorial and design contributions.

Finally, Achieve thanks the Bill & Melinda Gates Foundation and GE Foundation for their support of the analysis and report.

Michael Cohen
President
Achieve


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