

ACT National Curriculum Survey[®] 2016

EDUCATION AND WORK
IN A TIME OF CHANGE

ACT is an independent, nonprofit organization that provides assessment, research, information, and program management services in the broad areas of education and workforce development. Each year, we serve millions of people in high schools, colleges, professional associations, businesses, and government agencies, nationally and internationally. Though designed to meet a wide array of needs, all ACT programs and services have one guiding purpose—helping people achieve education and workplace success.

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Table of Contents

Introduction.....	1
The Survey Results	4
Policy-Related Findings	5
Policy Recommendations	17
References	19
Appendix: Description of Survey Sample and Process	21

Introduction

Every few years, ACT conducts its ACT National Curriculum Survey® to ask educators about what they teach (or don't teach) in their courses and how important they feel various topics in their discipline are for students to be successful in these and future courses. The survey also asks educators for their perspectives on educational topics of current interest, such as academic standards, the college readiness of their students, the use of technology in the classroom, barriers to student success, and how best to improve outcomes for underserved students.

Prior ACT National Curriculum Survey respondents have included educators from elementary school through the postsecondary level. For the first time, the ACT National Curriculum Survey 2016 also includes a sampling of workforce supervisors and employees, to give us a snapshot of how well the priorities of educators match with those of the workforce after completion of a high school diploma or college certificate. While ACT knows that early learning is important for later high school performance, we also believe that a deeper understanding of the skills needed to prepare for the workplace is critical if we are to see growth in the US economy. Not only does ACT have the assessment data to support this deeper understanding, but for the first time we now also have survey data that reinforce its importance.

An Integrated Framework for Education and Career Success

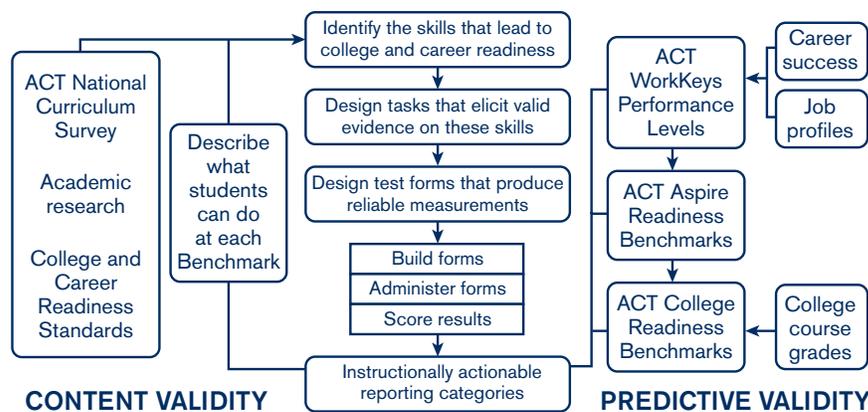
The ACT National Curriculum Survey is an essential tool in ACT's commitment to ensuring not only that our assessments are valid and relevant on a continuing basis, but also that they provide information that enables students and workers to be fully ready to embark successfully on rewarding college and career journeys. Our complete suite of assessments provides a research-based, holistic framework—known as ACT Complete—of cognitive measurements and noncognitive insights spanning the continuum from elementary school through various career stages.

ACT Complete integrates the knowledge and skills that empower people to achieve success in both education and career. The framework consists of four domains: core academic skills, cross-cutting capabilities, behavioral skills, and education and career navigation skills. The first two domains focus on what people need to know to be ready for success, and the second two describe how people can best achieve readiness. Areas of emphasis encompassed by these domains include:

- **Core academic skills:** Knowledge and skills necessary to perform essential tasks in the core content areas of English, reading, mathematics, and science
- **Cross-cutting capabilities:** Technology and information literacy, collaborative problem solving, thinking and metacognition, and studying and learning
- **Behavioral skills:** Interpersonal, self-regulatory, and task-related behaviors important for successful performance in educational and workplace settings
- **Education and career navigation skills:** Success factors that help individuals to navigate their educational and career paths by making informed, personally relevant decisions and developing actionable, achievable plans

The Purpose of the ACT National Curriculum Survey

The ACT National Curriculum Survey is a crucial step in the process used to build and regularly update a valid suite of ACT assessments that is empirically aligned to college readiness standards. The survey directly informs the test blueprint for the assessments (see diagram below). Results from the assessments are used to validate ACT's College and Career Readiness Standards as well as its College Readiness Benchmarks. (The diagram represents only this validation cycle, and does not represent how the Standards and Benchmarks were derived.)



ACT provides multiple sources of validation evidence to support the use of assessment results in determining whether students are on target for college and career readiness. ACT begins with research into content validity, which is designed to answer the first of two critical questions: *Does the test measure what it purports to measure?* This process involves the validation of the ACT College and Career Readiness Standards, which are built on a foundation of years of empirical data and continually validated through the ACT National Curriculum Survey as well as regularly occurring external standards reviews.

Equally as important is predictive validity. Using actual course performance, we answer a second critical question: *Does the test accurately and reliably predict performance?* Constant monitoring allows ACT to ensure that the answer to both questions is “yes.”

Over the past several years, much conversation has taken place about college and career readiness standards. Most of this has emanated from the creation, adoption, and implementation—as well as the politicization—of the Common Core State Standards. ACT was pleased to offer information about readiness to the Common Core development effort, but we should be clear that ACT's college and career readiness assessments have always been based on its own empirical research and longitudinal data.

The ACT College and Career Readiness Standards describe the skills and knowledge that matter most to success beyond high school. Because of ACT's extensive research and validation efforts, its College and Career Readiness Standards capture what is a priority for success in different content areas for college and career. ACT college and career readiness assessments provide reporting categories that align directly with ACT's College and Career Readiness Standards strands to help with score interpretation and to provide actionable insights for improvement.

As the previous diagram indicates, ACT begins development of its assessments by using the dual validity loop and the ACT National Curriculum Survey to establish its test blueprint. This process ensures that our assessments always measure both what is being taught in schools around the country and what is being shown to matter most for college and career readiness. No other assessment is built with the ability to continually assess what matters most, based on the most up-to-date evidence.

ACT's assessments provide the essential information to help get and keep students on the path toward readiness in the most efficient manner possible. Students in schools that administer our assessments, including the ACT® test and ACT Aspire®, spend fewer than four hours taking our assessments, compared to as many as 7.5 hours for those taking our competitors' tests. In an era where over-testing is a significant concern, that's an important distinction.

The science behind our assessments—the evidence base and ongoing research—is critical to answering the key question of what matters most in college and career readiness. The ACT National Curriculum Survey represents ACT's commitment to:

- use evidence and research to develop and validate our standards, assessments, and benchmarks
- maintain a robust research agenda to report on key educational metrics (*The Condition of College & Career Readiness*, *Enrollment Management Trends Report*, and *The Reality of College Readiness*)
- develop assessments, reports, and interventions that will help individuals navigate their personal path to success along a kindergarten-through-career continuum

Accordingly, the following principles have shaped and will continue to drive our development agenda:

1. Maximize instructional time.
2. Report results in instructionally relevant ways that support clear interpretation within and across content areas.
3. Establish reasonable testing times by assessing what research and evidence show to be the most critical factors for success after high school.
4. Leverage technology to enhance student engagement, produce more meaningful results, and share results in a timely fashion.
5. Increase the emphasis on evidence-centered design, implementing best practices as they mature and improve our capabilities within the highest-quality design and development processes.
6. Include science as a core academic domain in our assessment batteries.

As a nonprofit educational research organization, we will use these principles to drive the development and continuous improvement of ACT's education and workplace solutions, as well as the research agenda associated with them, thereby enabling ACT to fulfill its mission of helping all individuals achieve education and workplace success.

The Survey Results

ACT makes the results of each survey public because ACT data can help education and workforce stakeholders make more informed decisions about the skills needed to be successful in postsecondary education and the workplace. (The complete survey results are provided in *ACT National Curriculum Survey 2016*, available at www.act.org/research.)

This report, *Education and Work in a Time of Change*, highlights findings of the ACT National Curriculum Survey 2016 that are particularly relevant to current education policy issues. The implications of these findings for education policy and practice are as follows:

- The need to prepare students for college and work success is still of paramount necessity in K–12.
- Nonacademic skills are important in college and the workplace.
- Teachers may need to place greater emphasis on students' technology skills, especially in the context of computer-based assessments.
- Over all, K–12 teachers tend not to use large-scale assessment results in the classroom.

The findings leading to these implications are described in detail in the next section. The final section of the report offers policy recommendations suggested by the findings and implications, while the Appendix contains detailed information about the survey sampling process.

Policy-Related Findings

1. Implementing new academic standards

In the current climate in which states have moved or are moving to adopt more rigorous academic standards in K–12 (including but not limited to the Common Core State Standards), high school teachers report a great deal of familiarity with the Common Core as well as a relatively positive and realistic sense of whether the standards serve their intended purpose of helping to prepare students for college.

Three-fourths (76%) of high school teachers reported that their states had adopted the Common Core, and 95% of that subset of high school teachers report being at least slightly familiar with the standards (consistent with the 2012 survey results, in which the corresponding percentage was 94). Among those reporting any degree of familiarity with the Common Core, just over two in five (42%) believe the standards are either “a great deal” or “completely” aligned with college instructors’ expectations regarding college readiness—an accurate estimation, given that 40% of the college instructors who reported any degree of familiarity with the standards reported seeing this level of alignment between the Common Core and their expectations about college readiness.

However, alongside this reported degree of alignment between the Common Core and college instructors’ expectations about college readiness, the percentage of college instructors who reported that their incoming students are well prepared for college-level work in their content area has declined (Figure 1). In 2009 and 2012, the two previous surveys in which we asked this question, 26% of college instructors reported, on a four-point scale, that their students’ level of preparation was in the top half of the scale. This year, the percentage was only 16%.

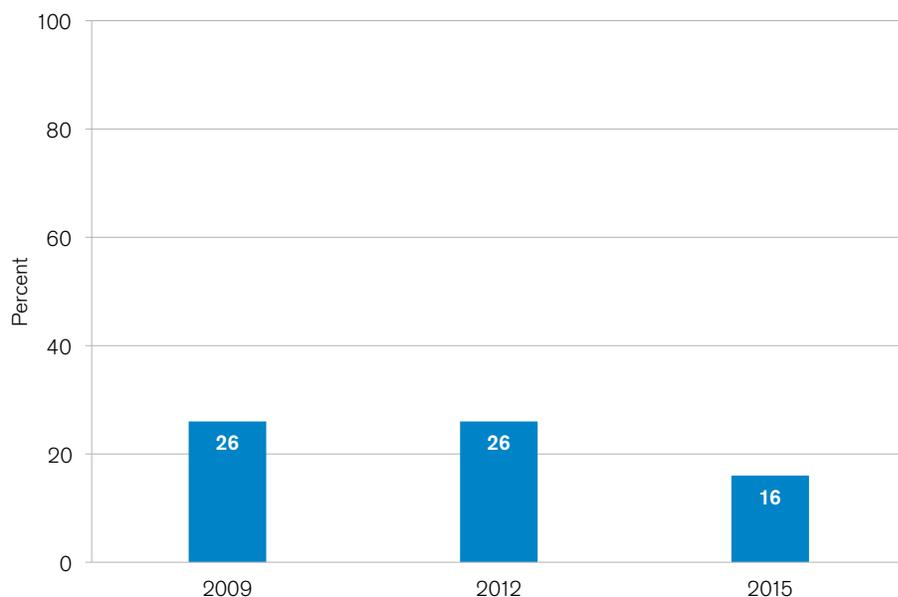


Figure 1. Percentages of college instructors rating their students’ preparation for college-level work in their content area in the top half of the importance scale

2. Skills and personal characteristics important to education and workplace success

According to ACT research, readiness for education and workplace success is not limited to academic achievement alone: Other dimensions, including behavioral skills (interpersonal, self-regulatory, and task-related behaviors important for successful performance in educational and workplace settings), education and career navigation skills (the personal characteristics, processes, and knowledge that influence individuals as they navigate their educational and career paths), and cross-cutting capabilities such as technology and information literacy, collaborative problem solving, thinking and metacognition, and studying and learning, are just as important (Camara et al., 2015).

As part of the 2016 survey, we asked respondents to rate the importance of a selection of nonacademic characteristics as preparation for success in education or the workforce. Over all, the characteristics rated as most important were both behavioral skills: “Acting honestly,” exemplified by acting sincerely and genuinely and treating others fairly; and “Sustaining effort,” exemplified by staying focused, persisting through challenges, and completing work.

In the middle range of importance, we observed some differences with respect to educational levels, or between education and workforce. Some examples:

- “Getting along with others” (e.g., cooperating with other students, working effectively in groups) was rated as somewhat more important by elementary and middle school teachers and workforce respondents (both employees and supervisors) than by high school teachers and college instructors.
- “Keeping an open mind” (e.g., curiosity toward a variety of ideas and experiences, being creative) was rated as more important by educators than by workforce respondents.
- “Maintaining composure” (e.g., remaining calm, keeping emotions under control) was rated as slightly more important by workforce respondents than by educators.

We also asked respondents to rank a set of ten skill areas, from greatest to least, according to the relative likelihood that weakness in each area—either academic or nonacademic—would contribute to a poor outcome for a student or an employee: for example, failing to progress along an educational path (elementary school); failing to complete the course or earning a failing grade (middle school, high school, college); voluntary or involuntary turnover or failing to be promoted (workforce). Several skill areas appeared consistently in the top half of each group's averaged rankings (see Table 1).

Table 1. Percentages of ACT National Curriculum Survey 2016 Respondents (by Educational Level or Workforce Role) Reporting that Weakness in a Given Area Is Most Likely to Contribute to a Poor Outcome for a Student or Employee

Early Elementary		Late Elementary		Middle School		High School		College		Supervisors		Employees	
Area	%												
Content Knowledge	27	Content Knowledge	29	Content Knowledge	28	Critical Thinking	23	Study Skills	25	Content Knowledge	22	Content Knowledge	21
Critical Thinking	20	Critical Thinking	22	Critical Thinking	21	Content Knowledge	22	Conscientiousness	20	Conscientiousness	13	Conscientiousness	18
Speaking and Listening	11	Study Skills	13	Study Skills	15	Study Skills	16	Content Knowledge	19	Problem Solving	12	Technology	16
Conscientiousness	11	Problem Solving	13	Conscientiousness	15	Conscientiousness	15	Critical Thinking	19	Speaking and Listening	10	Speaking and Listening	13
Study Skills	10	Conscientiousness	13	Problem Solving	8	Writing	8	Writing	10	Collaboration with Peers	10	Critical Thinking	10
Problem Solving	8	Educational Plan	6	Writing	6	Problem Solving	8	Problem Solving	7	Technology	9	Educational Plan	6
Educational Plan	7	Writing	6	Educational Plan	5	Educational Plan	4	Educational Plan	2	Critical Thinking	8	Collaboration with Peers	6
Writing	5	Speaking and Listening	5	Technology	4	Speaking and Listening	3	Speaking and Listening	1	Educational Plan	7	Problem Solving	5
Technology	4	Technology	5	Speaking and Listening	4	Technology	3	Technology	1	Writing	4	Writing	3
Collaboration with Peers	3	Collaboration with Peers	3	Collaboration with Peers	2	Collaboration with Peers	2	Collaboration with Peers	1	Study Skills	3	Study Skills	1

Note: Percentages have been rounded to the nearest whole number; skill areas with identical percentages in a column were ranked according to their non-rounded values. Colors identify the nine unique skill areas appearing in the top halves of the rankings.

Specifically, two areas ranked in the top half among all groups:

- Content knowledge
- Conscientiousness (e.g., attention to detail, completing work)

A third area, critical thinking (e.g., interpretation, analysis, inference, evaluation, explanation), ranked in the top half among all groups except workforce supervisors; a fourth area, study skills, appeared from early elementary through college. Speaking and listening ranked in the top half among early elementary school and both groups of workforce respondents; problem solving (i.e., finding solutions to difficult or complex issues) ranked in the top half among late elementary school teachers, middle school teachers, and workforce supervisors. Interestingly, two areas ranked in the top half only among workforce respondents: for employees, technology (e.g., effective use of computer hardware and software, internet navigation), and for supervisors, collaboration with peers.

In sum, then, after content knowledge (which arguably involves a broad array of skills necessary to perform essential tasks in the core content areas of English, reading, mathematics, and science), the skill area rated next most likely to contribute to a poor education or work outcome was conscientiousness—a behavioral skill. And virtually all of the other skill areas in the top half of the rankings were to be found in cross-cutting capabilities or behavioral skills.

3. The importance of technology in education and work

The availability, sophistication, utility, and potential of computer technology, both in the classroom and on the job, make it increasingly incumbent upon the education system to teach the skills necessary for students to interact effectively with technology and to understand the ethics attached to its use.

In particular, because technology use has expanded well beyond the purposes of specialists and into everyday life and work, its important role in acquiring and applying information generally (and not solely, say, as a means of performing complex mathematical calculations) means that computer skills need to be part of the broader K–12 curriculum, not limited to mathematics courses. Therefore, because we were interested in gauging the spread of computer instruction beyond its more technical applications, we excluded mathematics educators from this portion of the ACT National Curriculum Survey 2016.

As part of the survey, then, we asked a subset of K–12 teachers about whether they taught a number of technology and/or computer skills. For purposes of comparison, we asked a subset of college instructors for their opinions about the importance of many of these skills in their courses. We also asked workforce supervisors to rate the importance on the job of various kinds of technology, and of a slightly different (but overlapping) set of skills than those presented to the educators. Finally, we asked the employees to estimate how frequently they use those technologies and skills at work.

We found that computer and technology skills are taught with different emphases throughout K–12 (Figure 2) and are valued by college instructors (Figure 3) and, to a somewhat lesser degree, by supervisors (Figure 4). In general, the importance ascribed by employees to a particular type of technology corresponded to a very large extent with their estimation of its frequency of use on the job (Figure 5).

Education: K–12

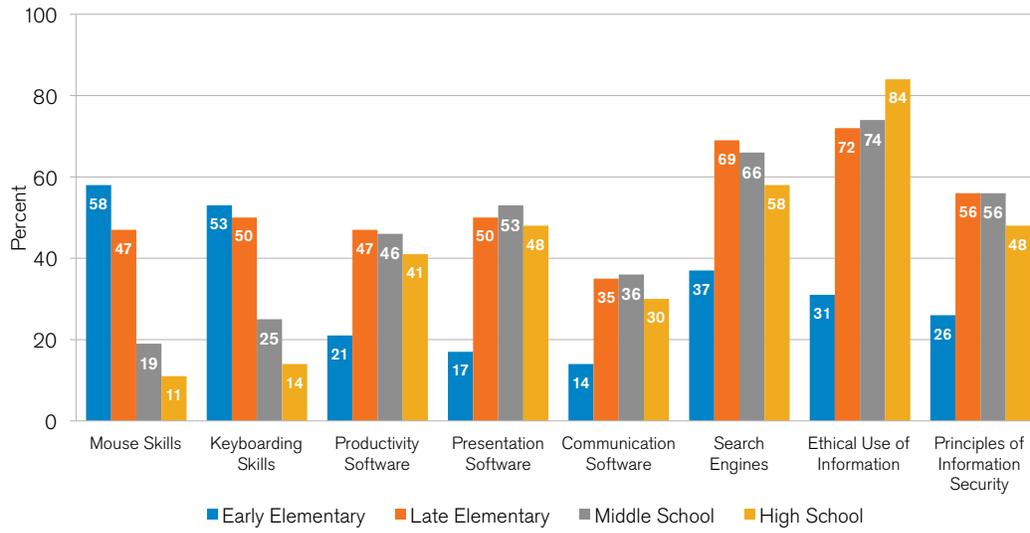


Figure 2. Percentages of K–12 teachers reporting that they teach various technology practices

- Perhaps not surprisingly, mouse and keyboarding skills appear to be taught more often in early and late elementary school (roughly 50–60% of respondents) than at the other levels.
- Ethical use of information (i.e., adhering to proper rules regarding copyright, attribution, plagiarism, or piracy; roughly 70–80% of respondents) and search engines (roughly 60–70% of respondents) appear to be taught more often in late elementary school, middle school, and high school than in early elementary school, as do, to lesser degrees, productivity software (e.g., word processing, spreadsheet), presentation software, and principles of information security (all roughly 40–60% of respondents), and communication software (e.g., email, instant messaging, social media; roughly 30–35% of respondents).

Education: College

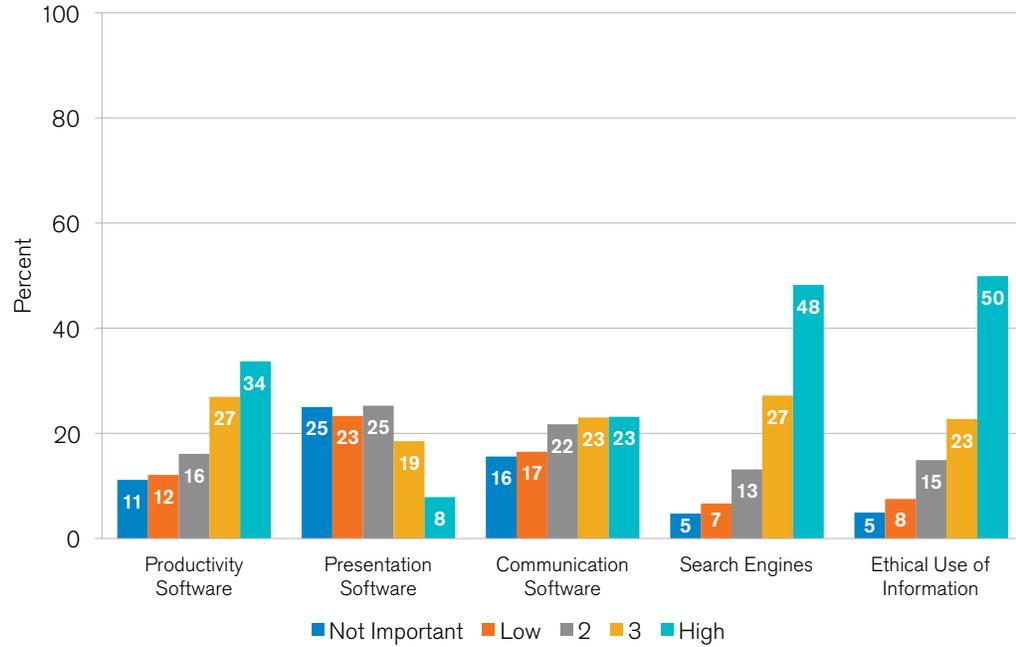


Figure 3: College instructors' ratings of the importance of various technology practices to success in their courses (percentages of all respondents)

- The skills that at least 50% of college instructors rated in the top half of the importance scale (rating of 3 or 4) were search engines (75% of respondents), ethical use of information (73%), and productivity software (61%).

Workforce: Supervisors

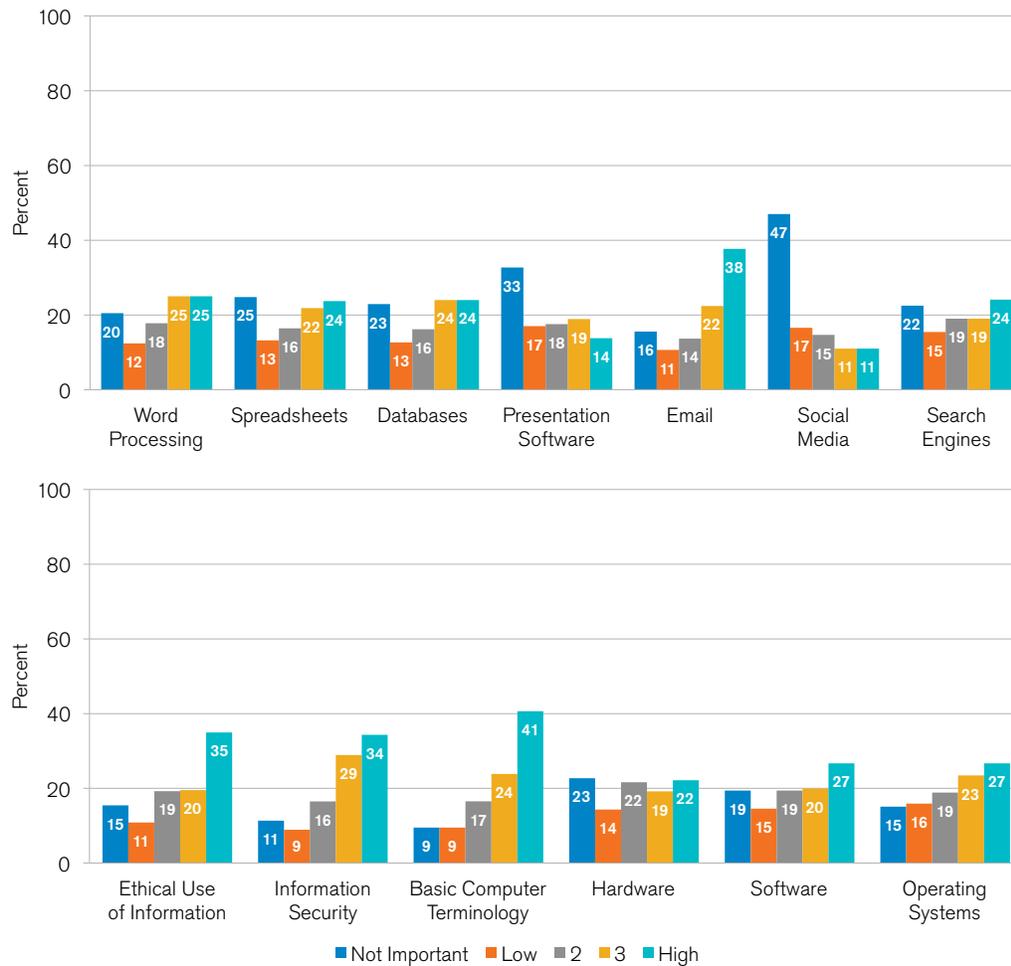


Figure 4. Supervisors' ratings of the importance of various technology practices as prerequisites for success in the workplace (percentages of all respondents)

- The skills that at least 50% of supervisors rated in the top half of the importance scale were basic computer terminology (64% of respondents), information security (63%), email (60%), ethical use of information (54%), and operating systems (50%).

Workforce: Employees

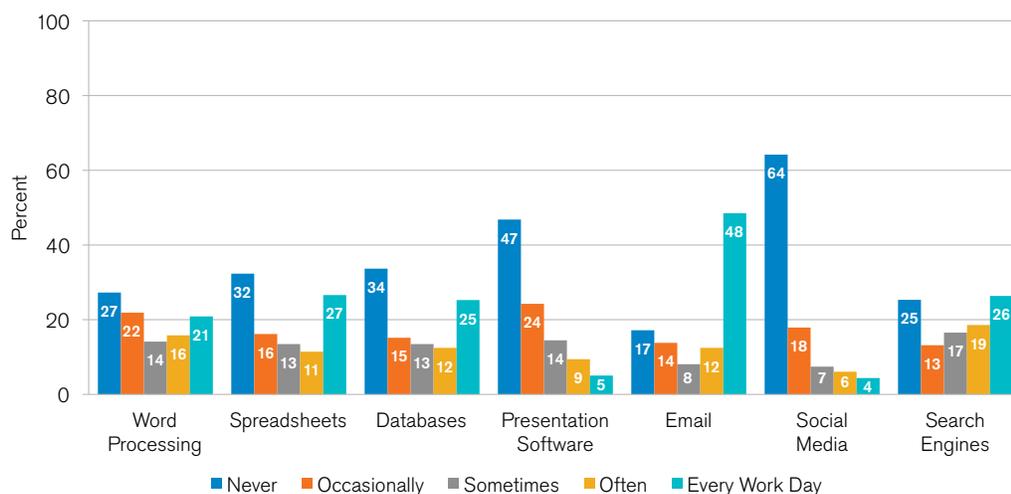


Figure 5. Employees' estimations of how often employees in their organization use various technologies (percentages of all respondents)

- The only skill that at least 50% of employees reported using either “often” or “every work day” was email (61% of respondents); employees reported use of search engines as the second-highest skill (45%).

4. Assessments

A. Proportions of selected question types used on classroom tests

Along with new academic standards come new assessments to measure and monitor students' progress toward meeting those standards. Among the goals for assessment of more rigorous standards are increasing the amount of writing elicited (to reflect an increased emphasis on writing in the classroom), as well as the somewhat overlapping emphasis on having assessments require “authentic” performance tasks that match up more clearly with learning activities students undertake while in school. In addition, some new assessments include (or plan to include) interactive, technology-enabled tasks, both as a means of gathering more nuanced data about student achievement and to take advantage of the more prominent position of technology use in an increasing number of classrooms.

With these goals in mind, we asked K–12 teachers to estimate the proportions of a selection of four question types included in their assessments:

- Selected response (e.g., multiple choice)
- Constructed response (e.g., short answer, essay)
- Technology enhanced (e.g., interactive tasks on a computer or tablet)
- Performance based (e.g., lab practicum)

For purposes of comparison, we also asked college instructors to estimate how much their assessments contain the same types of questions.

In general, K–12 assessments elicit steadily more writing from early elementary through high school, but do not require many technology-enhanced or performance-based tasks. At the same time, these trends tend to match up fairly well with the kinds of assessments given in college (Figure 6).

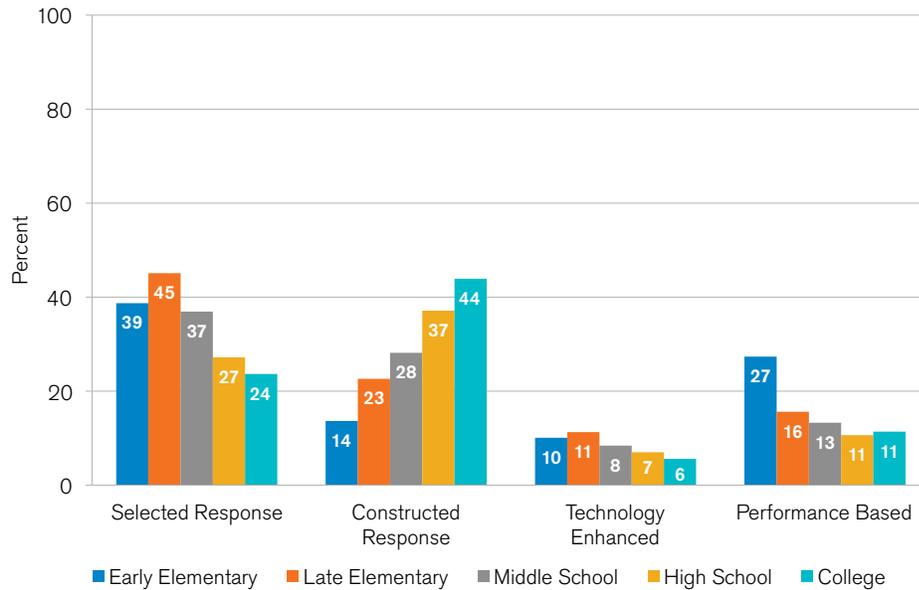


Figure 6. Percentages of educators reporting that more than half of their testing includes each response type

While the frequency of use of the other listed question types roughly decreases from early elementary school through college, the percentage of educators indicating that constructed-response questions comprise more than half of the content of their assessments steadily increases across educational levels.

Technology-enhanced questions are used much less frequently at all educational levels than any other listed question type. Performance-based questions are used somewhat more frequently—especially in early elementary school—but still not as much as selected- or constructed-response questions (the former despite a steady decrease in the prominence of selected-response questions across educational levels).¹

¹ One possible reason for the gradual decline in the use of selected-response questions during K–12 may be mistaken belief that such questions can only measure recall and not higher-order thinking skills (Croft, Guffy, & Vitale, 2015).

B. Use of large-scale assessment results

School, district, or state accountability continues to be a priority in the recently reauthorized Elementary and Secondary Education Act, as it was in the previous reauthorization. Therefore, another potential consequence of rigorous standards is the need to assess large numbers of students using comparable assessments so that meaningful conclusions can be drawn about which schools or regions are in need of greater assistance than others.

Despite occasional opposition from parents or teachers (Croft, 2015), one efficient method of accomplishing this is to administer large-scale statewide assessments. These assessments are typically state developed, either individually or through one of the state assessment consortia—PARCC or Smarter Balanced—that have created assessments designed for use by all their member states. (A third option, use of a nationally recognized high school academic assessment such as the ACT, was recently reinforced by its inclusion in the Every Student Succeeds Act.)

As one indicator of the possible benefit of large-scale assessments in the classroom, we surveyed K–12 teachers about the extent to which they make use of the results generated by such assessments. Across K–12, the proportions of teachers who report using large-scale assessment results never exceeds about 42% (Figure 7):

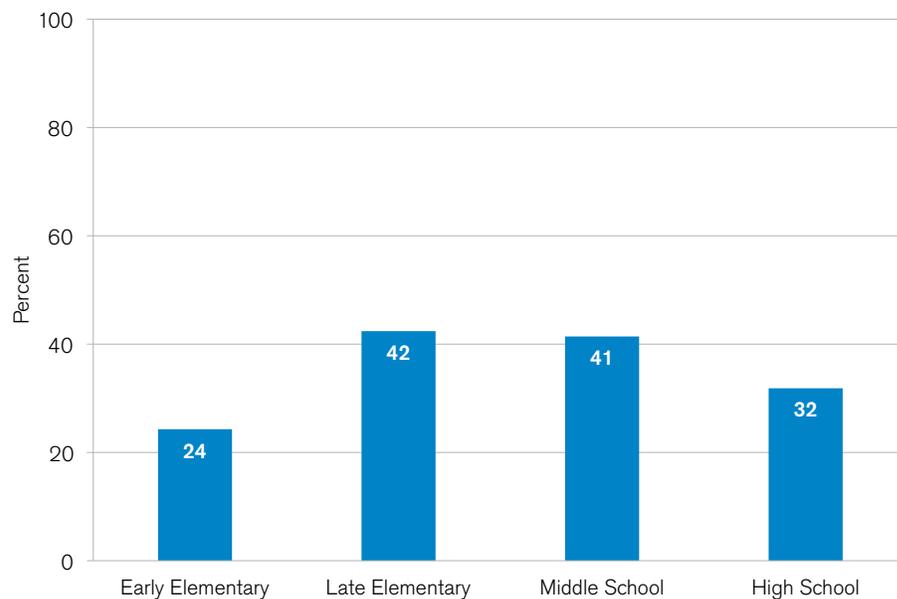


Figure 7. Percentages of K–12 teachers reporting that they use large-scale assessment results

The percentage of high school teachers who report using results from large-scale assessments is higher than that of early elementary school teachers (most likely given the small number of states with early elementary assessments), but lower than those of teachers in late elementary or middle school. Further, among those who reported using such results, high school teachers—followed closely by middle school teachers—are the least likely to report using them “often” or “to a great extent” (Figure 8).

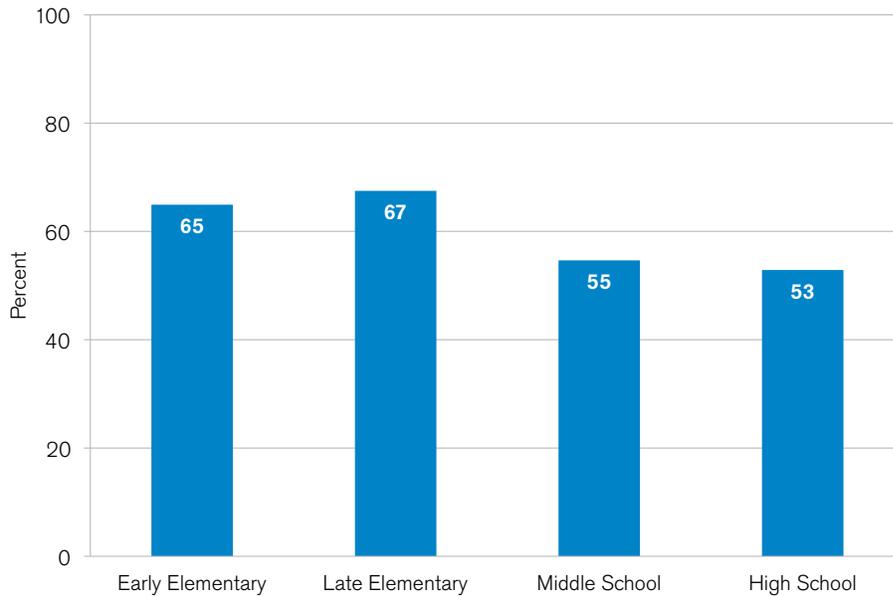


Figure 8. Percentages of K–12 teachers using large-scale assessment results who report using them “often” or “to a great extent”

Roughly two-thirds of elementary school teachers reported this frequency of use, while among middle and high school teachers the proportions were just over one-half (55 and 53%, respectively).

Policy Recommendations

We find ourselves in a time of transition necessitated by social change (for example, the increasing role of technology in schools and workplaces) and legislative change (the recent reauthorization of the Elementary and Secondary Education Act). The results of the ACT National Curriculum Survey 2016 indicate that teachers are grappling well with many of the challenges they and their students face: Teachers are adapting to these changes and ensuring that students are prepared to succeed after graduation from high school, college, or targeted workforce training.

Nevertheless, the survey results also point out several areas in which more work needs to be done to meet these challenges. In addition, the results indicate the continuing importance of educating all students to college- and career-ready standards so they have the skills they need to thrive in new environments throughout their education and working lives.

In recognition of these realities, ACT offers the following recommendations to help states in the pursuit of college or workforce success for all students:

1. States should maintain their commitments to implementing challenging academic standards in the classroom by ensuring through statute or regulations that all schools in a state adhere to the same set of standards with the goal of preparing all students for college and career.

Although 40% of high school teachers report that the Common Core State Standards reflect postsecondary expectations about college readiness, and 40% of college instructors concur, far too few college instructors—a substantially lower percentage than in past surveys—report that their incoming students are well prepared for college-level work. It therefore remains crucial that the standards taught in K–12 represent the knowledge and skills necessary for college and career readiness.

The recently reauthorized Elementary and Secondary Act requires states to implement “challenging academic standards”; however, the Act gives each state the latitude to define that term for itself. ACT strongly believes that rigorous college and career readiness standards will give students the best chance of graduating ready to succeed in higher education or career and that such standards should be mandated in state law.

2. States and/or local educational agencies should develop ways to measure and track the progress of students' development of nonacademic skills, and support schools integrating the teaching of these skills into their instruction.

Core academic skills, cross-cutting capabilities, behavioral skills, and education and career navigation skills not only constitute functionally distinct elements of education and work readiness, but also have the potential to reinforce one another: Competence along one dimension often correlates with competence in one or more of the others (Camara et al., 2015). In addition, extensive research by ACT and others (e.g., ACT, n.d.) demonstrates that certain academically related behaviors can contribute to school and work success.

Given the importance ascribed by educators and workforce supervisors to a range of nonacademic student characteristics in influencing the likelihood of success in school or work, states should make the acquisition of such characteristics a part of the K–12 curriculum.

3. States and districts should invest resources into technology-use training so that teachers can better prepare students to use technology, especially in the context of new assessments.

Although the survey results suggest that teachers in K–12 offer their students instruction in many aspects of computer use or technology, they also show that relatively lower percentages of these teachers include technology-enhanced questions in their assessments compared to other question types. This finding may be of concern given that many of the new assessments designed to test mastery of rigorous academic standards are, at a minimum, designed to be administered on computer, and may also rely on students' facility with technology as a means to testing certain skills via innovative question types.

But evidence is growing that some students may underperform on computer-based tests not because they lack the knowledge or skill being tested, but because they lack familiarity with the technology itself (Herold, 2016). While computer-based testing is certainly not always available for classroom assessments, states and districts should allot resources that will enable teachers to expose their students to computers and technology as much as possible.

4. States and local educational agencies should use funds allotted under the Every Student Succeeds Act to provide professional development for teachers on ways to make effective use of the results of large-scale assessments.

Due in part to the requirements of the Every Student Succeeds Act, large-scale assessments are bound to remain a large source of potentially actionable data about student performance and progress. The survey shows that as of now, no more than about 40% of K–12 teachers make use of large-scale assessment results, and no more than about 60% of those teachers use them with high frequency. Assuming that the assessment results can be made available in a timely manner, teachers stand to gain a great deal of helpful information about their students if they are trained to use large-scale assessment results as an additional means of guiding their instruction. The Every Student Succeeds Act makes substantial resources available to states and local educational agencies to provide professional development for teachers.

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Appendix: Description of Survey Sample and Process

The ACT National Curriculum Survey is a one-of-a-kind nationwide survey of educational practices and college and career readiness expectations conducted by ACT every few years. ACT surveys thousands of K–12 teachers and college instructors in English/writing, mathematics, reading, and science—and, for the first time in 2016, a national cross-section of workforce supervisors and employees—for the purpose of determining which skills and knowledge in English/writing, mathematics, reading, and science are currently being taught at each grade level and which skills and knowledge are currently considered essential for college and career readiness. The survey also asks educators for their opinions on educational topics of current interest.

Also for the first time in 2016, we included questions about which skills from ACT Complete—a research-based framework that integrates the knowledge and skills that empower people to achieve education and career success—are most integral to college and career success. These included behavioral skills, education and career navigation skills, and dimensions such as core academic skills and cross-cutting capabilities.² We also asked these groups for their opinions on many of the same topics of current interest that were presented to the educators.

For the 2016 ACT National Curriculum Survey, we made online survey instruments available via various print and electronic methods (e.g., advertisements, email, social media) and invited participation from educators at the early elementary school, late elementary school, middle school, high school, and college levels who teach courses in English/writing, mathematics, reading (including English language arts and social studies), and science (including biology, chemistry, physics, and earth/space science) in public and private institutions across the United States. We also invited participation from supervisors and employees at a large variety of businesses. Table 2 gives the numbers of survey respondents in each area.

Table 2. ACT National Curriculum Survey 2016 Respondents

Area	Number of Respondents
Early Elementary School	1,076
Late Elementary School	1,222
Middle School	1,331
High School	2,717
College	2,252
Supervisors	371
Employees	297
TOTAL	9,266

² For more information about ACT Complete, see Camara et al. (2015).

ACT uses the results from the main body of the ACT National Curriculum Survey to guide the test development of ACT assessment solutions, including the ACT test, ACT Aspire, and ACT WorkKeys®. ACT conducts this portion of the survey to ensure that its assessments are measuring the current knowledge and skills that instructors of credit-bearing first-year college courses identify as important for success in each content area or that workforce supervisors identify as important for readiness for targeted workforce training and for success on the job.

Education participants were asked to rate discrete content knowledge and skills with respect to how important each is to student success in the content area. (Specifically, K–12 teachers were asked to rate the importance of each knowledge level or skill in a given class they teach, while college instructors were asked to rate the importance of each knowledge level or skill as a prerequisite to success in a given class they teach.) We also asked the K–12 teachers to indicate whether or not they teach a particular content or skill and, if so, whether they teach it as a standard part of their course or as part of a review of material that should have been learned earlier.

Workforce participants were asked to rate discrete skills with respect to how important each is to entry-level success in the workplace.

Finally, we asked all participants a number of questions about current education policy (e.g., assessments, technology, standards, student characteristics, and obstacles to success).

Because some content areas were surveyed in larger numbers than others, the values displayed in educational-level totals were averaged across English language arts, mathematics, and science. This ensured that, in these results, no one content area would have more influence than another.

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