



Work Readiness Standards and Benchmarks

**The Key to Differentiating
America's Workforce and
Regaining Global
Competitiveness**

ACT[®]



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Executive Summary— Work Readiness Standards and Benchmarks

In this report, ACT presents a definition of “work readiness” along with empirically driven ACT Work Readiness Standards and Benchmarks. The introduction of standards and benchmarks for workplace success provides a more complete picture of the factors that are important in establishing readiness for success throughout a lifetime. While substantial evidence exists about the types and levels of skills that an individual needs to successfully transition from secondary to postsecondary education, less is known about what an individual needs to transition from postsecondary programs to employment and to achieve work readiness.

College readiness standards and benchmarks, which outline the types of skills and achievement levels needed to succeed in first-year credit-bearing courses without remediation, are well established. On the other hand, comparable standards and benchmarks for work readiness—the skills and levels needed to succeed in the workplace—are less documented and not as well understood. In this report, ACT presents a definition of “work readiness” along with empirically driven ACT Work Readiness Standards and Benchmarks.

What Does It Mean to Be Work Ready?

A “work ready” individual possesses the foundational skills needed to be minimally qualified for a specific occupation as determined through a job analysis or occupational profile. The skills needed for work readiness:

1. are both foundational and occupation specific,
2. vary in both importance and level for different occupations, and
3. depend on the critical tasks identified via a job analysis or an occupational profile.

What Skills Are Needed for Work Readiness?

Work readiness skills include both **foundational cognitive skills** such as reading for information, applied mathematics, locating information, problem solving, and critical thinking and **noncognitive skills**, or soft skills, which are defined as personal characteristics and behavioral skills that enhance an individual's interactions, job performance, and career prospects such as adaptability, integrity, cooperation, and workplace discipline.

What Are ACT Work Readiness Standards and Benchmarks?

ACT Work Readiness Standards and Benchmarks are precise descriptions of the knowledge and combination of skills that individuals need to be minimally qualified for a target occupation and are determined by the level of skills profiled for a national representative sample of jobs in a given occupation. While work readiness standards establish the mix of skills and range of levels reported by employers (i.e., minimum and maximum) for specific occupations, work readiness benchmarks are considered to be a target skill level (i.e., median) that an individual should aim for in order to be considered work ready for that occupation.

These standards and benchmarks ensure that current and prospective employees' skills are aligned with employer skill requirements and that individuals develop the foundational and job-specific skills necessary to be successful throughout a lifetime. Measuring individual skill signatures and employer skill requirements using a common language found in the ACT Work Readiness Standards and Benchmarks will help solve the long-standing problem of skill mismatches and gaps by aligning postsecondary curriculum with skills that meet employers' needs.

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Overview

Understanding what individuals need to effectively navigate various transitional points along the K–Career continuum is critical to maintaining the steady talent pipeline that America requires to be competitive in a rapidly changing global economy. While substantial evidence exists about the types and levels of skills that an individual needs to successfully transition from secondary to postsecondary education, less is known about what an individual needs to transition from postsecondary programs to employment and to achieve work readiness.¹

There are many dimensions in preparing an individual for success throughout a lifetime. The path to success becomes more complex as individuals leave formal education systems and enter the workforce, where they must apply their knowledge and skills. College readiness standards and benchmarks, which outline the types of skills and achievement levels needed to succeed in first-year credit-bearing courses without remediation, are well established. On the other hand, comparable standards and benchmarks for work readiness—the skills and levels needed to succeed in the workplace—are less documented and not as well understood.

The K–Career Continuum: Success for a Lifetime



In this report, ACT presents a definition of “work readiness” along with empirically driven ACT Work Readiness Standards and Benchmarks. The introduction of standards and benchmarks for workplace success provides a more complete picture of the factors that are important in establishing readiness for success throughout a lifetime. We outline what individuals must achieve to secure jobs currently in demand and to build the necessary foundation for multiple job transitions throughout a working career. We also provide a framework for aligning education and training programs to current job skill requirements.

Ready for College and Ready for Work: Same AND Different?



Efforts to facilitate the transition between secondary and postsecondary education, as well as align postsecondary education to job skill requirements, have gained momentum in recent years with a universal goal of preparing individuals for their unique journey through education and work along a K–Career continuum. In 2006, ACT released *Ready for College and Ready for Work: Same or Different?*, a comparison of student performance on two ACT assessments: ACT WorkKeys®, which measures work readiness, and the ACT® test, which measures college readiness.² The study found that the *levels* of readiness in reading and mathematics needed to succeed in college-level courses without remediation were comparable to those needed to learn job-specific skills in workforce training programs. Within that context, high school students were found to need comparable *levels* of reading and mathematics, regardless of their post–high school plans.³

While helpful, the findings from *Ready for College and Ready for Work*—concluding that the *levels* of reading and mathematics readiness required for college and career are similar—do not address all questions about college and career readiness, or work readiness. The benchmarked academic quantitative goals for college readiness are well-established, valid predictors of post–high school academic demands.⁴ The findings do not address the importance of job-specific skills,

above and beyond foundational skills, that are crucial in matching an individual with a target job. While cognitive skills are of undisputed importance for both college and careers, as well as for success in a specific job, we also know that a lifetime of success depends on other factors, such as behavioral skills and the development of career goals.⁵

Whether it is the first job in high school or the tenth job along a 20-year career, an individual has a range of ways to acquire the knowledge and skills necessary to get a good job. Pathways include a traditional college degree, on-the-job training, work experience, or a certificate program leading to an occupational certification. **These multiple pathways are not considered to be mutually exclusive, and they have one common denominator: individuals need to acquire portable foundational skills to be successful in any job along a career pathway, and they need to acquire specific occupational skills that will allow them to differentiate themselves in a competitive job market.** Without the necessary education and training credentials needed for a career, including academic degrees as well as skill certifications, most job seekers would not be considered for jobs that are in high demand. Instead, they risk following a downward spiral and dropping out of the job market entirely.

A Definition of Work Readiness

A “work ready” individual possesses the foundational skills needed to be minimally qualified for a specific occupation as determined through a job analysis or occupational profile.

The skills needed for work readiness:

1. are both foundational and occupation specific,
2. vary in both importance and level for different occupations, and
3. depend on the critical tasks identified via a job analysis or an occupational profile.

In other words, while a common set of skills are required by a majority of the jobs in the US economy, each job has specific cognitive and behavioral requirements that are unique to that job. These requirements vary in relative importance and level from one occupation to another, creating a unique signature of job-specific skills for each occupation. Specific job skill requirements can be identified through a job analysis or occupational profile that summarizes the competencies, knowledge, skills, abilities, and behaviors directly related to performance on the job. These job skill requirements provide the basis for work readiness standards that can be used to help develop curriculum and training programs for job seekers to meet minimum skill level requirements.

Within the context of college and career readiness, foundational skills are the fundamental, portable skills that are critical to training and workplace success.⁶ These skills are fundamental in that they serve as a basis—the foundation—for supporting more advanced skill development. And they are portable because, rather than being job specific, they can be applied at some level across a wide variety of occupations. Individuals also need to acquire job-specific skills to differentiate themselves in a competitive job market.

What are these job-specific skills? How can job seekers know that they have requisite job-specific skills and that they are work ready? How can employers know that job candidates are work ready and have the skills needed to perform successfully? In this report, ACT defines work readiness and describes how the ACT Work Readiness Standards and Benchmarks are developed. These standards and benchmarks serve as the basis for measuring work readiness in America and ensure that postsecondary curriculum is aligned with the skills that employers demand.

“Specific job skill requirements can be identified through a job analysis or occupational profile that summarizes the competencies, knowledge, skills, abilities, and behaviors directly related to performance on the job.”

The Source of Truth about Job Skill Requirements: Job Analysis and Occupational Profiles

According to the US Office of Personnel Management, job analysis is a systematic procedure for gathering, documenting, and analyzing information about the content, context, and requirements of a job. It demonstrates that there is a clear relationship between the tasks performed on the job and the competencies, knowledge, skills, abilities, and behaviors required to perform the tasks.⁷

Occupational profiles are defined as the end product of a process used to identify the key skill areas and levels of skills required to enter an occupation and successfully perform tasks. Occupational profiles are usually developed via a job analysis or job profile for several jobs with similar occupational titles. The process includes identifying, in detail, the particular job duties and requirements and the relative importance of these duties for a given job. Several sources of occupational profiles are available to the public, including the Occupational Information Network (O*NET), which identifies and describes the key knowledge, skills, and abilities for more than 1,100 occupations, and ACT's occupational profiles database, which contains information compiled from more than 19,000 job profiles.

When cognitive assessments are used for selection purposes, the Uniform Guidelines for Personnel Selection suggest using a local content validation study to ensure that the content of the assessment is relevant to the job. The use of job profiling is considered to be a content validation approach for using ACT WorkKeys assessments for personnel selection. This process was reviewed and confirmed by leading experts in the field of personnel selection.⁸

During the process of job profiling, for the purpose of using ACT WorkKeys assessments, subject matter experts rate the importance of specific job tasks and assign ACT WorkKeys skill levels to each task that is essential to successful job performance. An overall skill level is then computed for the specific ACT WorkKeys tests (e.g., Reading for Information, Applied Mathematics, Locating Information) that are relevant to the job. Under the Uniform Guidelines, content validation is one method for using cognitive assessments for personnel selection to address adverse impact in selection procedures.⁹





What Are the Skills Needed for Work Readiness?

Determining the necessary skills for successful performance of specific job duties is the focus of a large body of research in industrial and organizational psychology. This research targets identifying a combination of factors (skills, abilities, personal characteristics) that best predict an individual's ability to perform successfully on the job. The literature overwhelmingly provides support that measures of foundational cognitive skills, or general cognitive ability, are the best predictors of on-the-job performance.¹⁰ It is also generally accepted that noncognitive behaviors, or soft skills, add accuracy to performance prediction.¹¹ For example, personality measures have been shown to increase the predictive power by 18%, and integrity tests by 27%, over cognitive assessments alone.¹²

Soft skills are defined as personal characteristics and behavioral skills that enhance an individual's interactions, job performance, and career prospects across a broad range of settings. Examples of soft skills include adaptability, communication skills, cooperation, discipline, and integrity. The value of measuring soft skills in determining work readiness has also been addressed via national employer surveys, which reveal that soft skills are highly valued by employers and are often found to be lacking in entry-level workers.¹³

Work Readiness Standards and Benchmarks

Work readiness standards are precise descriptions of the knowledge and combination of skills that individuals need to be minimally qualified for a target occupation and are determined by the level of skills profiled for a national representative sample of jobs in a given occupation. Imagine that skill combinations can be shown by a bar graph that contains different heights for each skill level. If an occupation requires a combination of eight unique skills with varying levels from 1–5 for each skill, that would equal 390,625 different skill signatures.¹⁴ This allows us to more precisely measure skills gaps between individual skill signatures and the skill standards that employers require.

To demonstrate how work readiness standards are derived, we will examine two occupations as identified in O*NET. First, we identify the tasks that are important for an occupation such as an accountant, followed by those that are important for a welder.

*Task List for Accountants: O*NET Occupation Code 13-2011.01*

Prepare, examine, or analyze accounting records, financial statements, or other financial reports to assess accuracy, completeness, and conformance to reporting and procedural standards.

Compute taxes owed and prepare tax returns, ensuring compliance with payment, reporting, or other tax requirements.

Analyze business operations, trends, costs, revenues, financial commitments, and obligations, to project future revenues and expenses or to provide advice.

Report to management regarding the finances of the establishment.

Establish tables of accounts and assign entries to proper accounts.

Develop, maintain, and analyze budgets, preparing periodic reports that compare budgeted costs to actual costs.

Develop, implement, modify, and document record-keeping and accounting systems, making use of current computer technology.

Prepare forms and manuals for accounting and bookkeeping personnel, and direct their work activities.

Survey operations to ascertain accounting needs and to recommend, develop, or maintain solutions to business and financial problems.

Serve as bankruptcy trustees or business valuers.

Advise management about issues such as resource utilization, tax strategies, and the assumptions underlying budget forecasts.

Provide internal and external auditing services for businesses or individuals.

Advise clients in areas such as compensation, employee health care benefits, the design of accounting or data processing systems, or long-range tax or estate plans.

Investigate bankruptcies and other complex financial transactions and prepare reports summarizing the findings.

Represent clients before taxing authorities and provide support during litigation involving financial issues.

Appraise, evaluate, and inventory real property and equipment, recording information such as the description, value, and location of property.

Maintain or examine the records of government agencies.

*Task List for Welders: O*NET Occupation Code 51-4121.06*

Weld components in flat, vertical, or overhead positions.

Operate safety equipment and use safe work habits.

Lay out, position, align, and secure parts and assemblies prior to assembly, using straightedges, combination squares, calipers, and rulers.

Examine workpieces for defects and measure workpieces with straightedges or templates to ensure conformance with specifications.

Recognize, set up, and operate hand and power tools common to the welding trade, such as shielded metal arc and gas metal arc welding equipment.

Weld separately or in combination, using aluminum, stainless steel, cast iron, and other alloys.

Clamp, hold, tack-weld, heat-bend, grind, or bolt component parts to obtain required configurations and positions for welding.

Select and install torches, torch tips, filler rods, and flux, according to welding chart specifications or types and thicknesses of metals.

Ignite torches or start power supplies and strike arcs by touching electrodes to metals being welded, completing electrical circuits.

Connect and turn regulator valves to activate and adjust gas flow and pressure so that desired flames are obtained.

Via ACT's job profiling process, subject matter experts link specific tasks to skills required for each task and determine the level of skill needed for each task.¹⁵ Tasks requiring similar skills are grouped together, resulting in a range of skill levels needed for the target occupation. The work readiness standards for an accountant and a welder are summarized in the following tables.

**Table 1. Work Readiness Standard—Accountant
(O*NET Occupation Code 13-2011.01)**

Skill Required	Minimum Skill Level	Median Skill Level	Maximum Skill Level
Applied Mathematics	5	5	6
Reading for Information	4	5	5
Locating Information	4	5	5
Writing	2	3	3
Teamwork	3	3	4
Observation	3	4	4
Business Writing	3	4	4

**Table 2. Work Readiness Standard—Welder
(O*NET Occupation Code 51-4121.06)**

Skill Required	Minimum Skill Level	Median Skill Level	Maximum Skill Level
Applied Mathematics	3	3	5
Reading for Information	3	3	5
Locating Information	3	4	5
Applied Technology	3	3	5
Writing	3	3	3
Teamwork	3	3	5
Observation	3	4	5

The work readiness standard for a welder includes an additional skill, Applied Technology, which measures problem-solving skills in four areas: electricity, mechanics, fluid dynamics, and thermodynamics. Meanwhile, accountants require Business Writing skills, which are not required of welders. Skill levels required for welders also differ from those required for accountants. For example, accountants and welders require similar levels of Teamwork skills, but accountants require a higher level of Reading for Information, Applied Mathematics, and Locating Information skills because of the nature of the tasks identified by employers as important for the job.

Table 3. Work Readiness Standard Comparison by Occupation

Skill Required	Accountants: O*NET Code 13-2011.01 Median Skill Level	Welder, Cutters, and Welder Fitters: O*NET Code 51-4121.06 Median Skill Level
Applied Mathematics	5	3
Reading for Information	5	3
Locating Information	5	4
Applied Technology	N/A	3
Writing	3	3
Teamwork	3	3
Observation	4	4
Business Writing	4	N/A

While work readiness standards establish the mix of skills and range of levels reported by employers (i.e., minimum and maximum) for specific occupations, work readiness benchmarks are considered to be a target skill level (i.e., median) that an individual should aim for in order to be considered work ready for that occupation. Work readiness standards and benchmarks for approximately 1,100 specific occupations can be found at: http://profiles.keytrain.com/profile_search/.

The Role of Foundational Skills for Work Readiness

Transferable Skills Needed Across Occupations

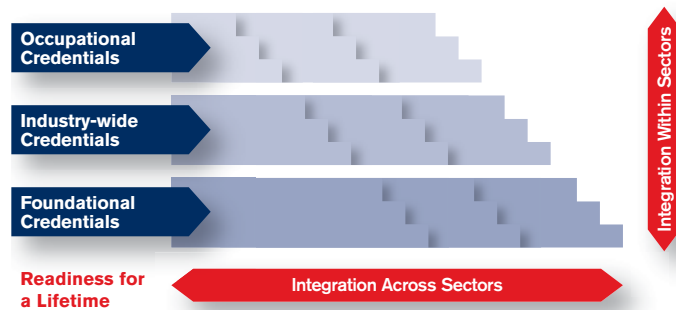
The role of foundational skills within a career pathway can be seen in the context of the Industry Competency Models, which were developed by the US Department of Labor (USDOL) to establish the skills, knowledge, and abilities required for growing industry sectors.¹⁶ The competency models help individuals obtain the training and certification needed for various career paths in a specific industry, and they identify skills that are transferable across and within industries.

Each USDOL industry competency model is built on a series of tiers. At the base, Tiers 1–3 represent the foundational skills. Mastery of these core foundational skills empowers an individual to rise to the next tier—to advance toward success in a chosen occupation. Foundational skills, as the term implies, are competencies that form the very foundation for success—in educational and training programs, as well as in the workplace. Foundational skills include workplace skills that are portable across all occupations, such as reading for information, applied mathematics, problem solving, critical thinking, and communication. Foundational skills are the fundamental, portable skills that are necessary for conveying and receiving information critical to training and workplace success.

The Role of a National Skills Credentialing System to Support Work Readiness

An example of a national layered credential system is the Manufacturing Skills Certification System, endorsed by the National Association of Manufacturers. This system of using industry-recognized credentials to certify skills begins with the ACT National Career Readiness Certificate™ at the foundation, followed by increasingly targeted occupation- and job-specific skills credentials.¹⁷ Certification of foundational skills enables an individual to advance to the next tier. A national skills credentialing system should be integrated *horizontally* to maximize job mobility from one sector to another and *vertically* (from foundational, to industry-wide, to occupational competencies) to create multiple avenues for individuals to advance along a career pathway.

Horizontal and Vertical Skills Credential Integration



Conclusion—Readiness for a Lifetime

Work readiness helps individuals prepare for the next job within a career pathway. **Establishing standards for work readiness will ensure that current and prospective employees' skills are aligned with employer skill requirements and that individuals develop the foundational and job-specific skills necessary to be successful throughout a lifetime. Furthermore, measuring individual skill signatures and employer skill requirements using a common language found in ACT's work readiness standards will help solve the long-standing problem of skill mismatches and gaps by aligning postsecondary curricula with skills that meet employers' needs.**

To achieve readiness for a lifetime, individuals must be equipped to continually upgrade their skills to meet the evolving requirements for jobs in demand. Both foundational and occupation-specific skills are important for work readiness. Although job skills can be acquired through a variety of avenues and formats, one factor is consistent: individuals must be able to demonstrate or certify to employers that they have the necessary skills—for a specific job and throughout their career. The ACT Work Readiness Standards and Benchmarks provide an empirical framework for preparing America's workforce for jobs now and in the future.

Definition of Terms

Foundational skills—The fundamental, portable skills that are critical to training and workplace success. These skills are fundamental in that they serve as a basis—the foundation—for supporting more advanced skill development. And they are portable because, rather than being job specific, they can be applied at some level across a wide variety of occupations.

Job profile—A systematic procedure for gathering, documenting, and analyzing information about the content, context, and requirements of a job. It demonstrates that there is a clear relationship between the tasks performed on the job and the competencies, knowledge, skills, abilities, and behaviors required to perform the tasks.

Occupational profile—The end product of a process used to identify the key skill areas and levels of skills required to enter an occupation and successfully perform tasks. Occupational profiles are usually developed via a job analysis or job profile for several jobs with similar occupational titles.

Skills gap—A gap between the skills needed for a job requiring a given level of education versus those skills possessed by workers for a similar level of education.

Work readiness—A “work ready” individual possesses the foundational skills needed to be minimally qualified for a specific occupation as determined through a job analysis or occupational profile.

Work readiness benchmarks—The median skill level for all job profiles within a given occupation.

Work readiness standards—Precise descriptions of the knowledge and combination of skills that individuals need to be minimally qualified for a target occupation and are determined by the level of skills profiled for a national representative sample of jobs in a given occupation.

References

¹ See the ACT report *Reading Between the Lines: What the ACT Reveals About College Readiness in Reading* (2006), for an early definition of college readiness. This definition is also used by the Common Core State Standards Initiative, a state-led effort coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO). Go to www.corestandards.org

² See the ACT report *Ready for College and Ready for Work: Same or Different?* (2006).

³ The report cautioned, however, that while the *levels* of reading and math skills were comparable, the purposes of and measures used within the different assessments were different, so scores on either test cannot be substituted for the other.

⁴ See the ACT reports *College Readiness System: Meeting the Challenge of a Changing World* (2008), *ACT's College Readiness Standards for EXPLORE, PLAN, and the ACT* (2011), and *Using ACT Assessment Scores to Set Benchmarks for College Readiness* (2005).

⁵ See the ACT report *Impact of Cognitive, Psychosocial, and Career Factors on Educational and Workplace Success* (2007) and the analysis by Robbins, et al., published by *Psychological Bulletin* (2004), *Do Psychological and Study Skill Factors Predict College Outcomes? A Meta-Analysis*.

⁶ Analysis in the report *Pathways to Prosperity* in 2011, published by the Harvard Graduate School of Education, highlighted the fact that focusing on college readiness alone has not equipped today's entering workforce with all of the skills and abilities they will need in the workplace.

⁷ Go to www.opm.gov/hiringtoolkit/docs/jobanalysis.pdf

⁸ Go to www.act.org/workkeys/validity.html

⁹ Go to www.uniformguidelines.com/testassess.pdf

¹⁰ Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, 124, 262–274; Schmidt, F. L., Shaffer, J. A., & Oh, I. (2008). Increased accuracy for range restriction corrections: Implications for the role of personality and general mental ability in job and training performance. *Personnel Psychology*, 61, 827–868; Hunter, J. E. & Hunter, R. F. (1984). Validity and utility of alternative predictors of job performance. *Psychological Bulletin*, 96, 72–98.

¹¹ Tell, R. P., Jackson, D.N., & Rothstein, M. (1991). Personality measures as predictors of job performance: A meta-analytic review. *Personnel Psychology*, 44, 703–741; Hurtz, G. M. & Donovan, J. J. (2000). Personality and job performance: The big five revisited. *Journal of Applied Psychology*, 85, 869–879; Barrick, M. R. & Mount, M. K. (1991). The big five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1–26.

¹² Schmidt, F. L. and Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, 124, 262–274.

¹³ Life in the 21st Century Workforce: A National Perspective. Go to cdn.assets-phoenix.net/content/dam/altcloud/doc/campaigns/Education-Nation-National-Executive-Summary.pdf

¹⁴ If an occupation requires a set of eight unique skills containing five levels each, that equals 5^8 , or 5 to the eighth power.

¹⁵ For more information on ACT's job profiling process, go to www.act.org/solutions/career-success/job-analysis

¹⁶ Go to www.careeronestop.org/CompetencyModel

¹⁷ For more information on the National Association of Manufacturer's Skills Certification System, go to www.themanufacturinginstitute.org/Skills-Certification/Skills-Certification.aspx

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