

Building Competencies for Careers

Linking O*NET's
Occupational
Elements
with Deeper
Learning
Competencies



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In recent years, the idea that K-12 education should focus on preparing students for college *and* careers has gained wide acceptance among educators and policymakers. Consistent with this idea, the Hewlett Foundation developed its Deeper Learning initiative to “support setting new standards for equity and excellence in U.S. public education.”¹ Deeper learning focuses on the six key competencies students would need to reflect the “higher-order skills and academic knowledge that are the surest path to postsecondary education and that students will need to succeed in twenty-first century work and civic life.”² (**Box A** lists the deeper learning competencies.)

Despite widespread agreement that students need both college preparation and career readiness, boundaries between these goals still exist among educators, policymakers, and the public, and views differ about how to best balance academic preparation with the kind of experiences that build career skills and abilities. For example, some see academic preparation as the more important endeavor and view career preparation as less valuable to an individual's long-term success. Deeper learning aims to give students both, emphasizing the need for students to gain knowledge and understanding but also the ability to apply that knowledge broadly and effectively. The six deeper learning competencies articulate that vision, identifying a broad range of knowledge, skills, and abilities that students will need to be successful in college, career, and civic life.

To determine the extent to which deeper learning competencies apply to the workplace, the Center on Education Policy (CEP) conducted an analysis using occupations drawn from the Occupational Information Network (O*NET) database. O*NET, sponsored by the U.S. Department of Labor and continually updated, contains a vast array of data collected from surveys of job holders and occupational experts on the characteristics of more than 900 jobs and careers. The occupations in O*NET are grouped within five job “zones” and range from relatively low-skill jobs requiring little experience (Zones 1-2) to more sophisticated jobs requiring a more specific set of knowledge and experience (Zones 3-4-5). O*NET data includes (but is not limited to) the knowledge, skills, abilities, and work styles (KSAWs) identified by O*NET surveys as “important” for each occupational area.³ CEP reviewed these KSAWs to determine the extent to which the deeper learning competencies were represented in a sample of O*NET jobs and careers.

1 The William and Flora Hewlett Foundation, *Deeper Learning Strategic Plan Summary: Education Program*. (Menlo Park, CA: Hewlett Foundation, 2012), p. 3. www.hewlett.org/wp-content/uploads/2016/09/Education_Deep_Learning_Strategy.pdf.

2 Hewlett Foundation, 2012, p. 4.

3 As part of its survey of job holders and occupational experts, O*NET asks respondents to rate the degree of importance of each KSAW for a particular occupation. KSAWs that receive a score of 50 or more are identified as important in the O*NET summary for that occupation. The O*NET database also shows the relative importance of KSAWs, but the CEP analysis only distinguished between important (scale score of 50 or above) and not important (scale score of 49 or less), and excluded important KSAWs that were not likely to be part of a K-12 curriculum (for example, service orientation). The CEP analysis matched the important KSAWs for each occupation to the deeper learning competency that was the best fit, using the methodology described here and in the appendix.

Box A — Deeper Learning Competencies

- **Master core academic content** — Students develop and draw from a baseline understanding of knowledge in an academic discipline and are able to transfer knowledge to other situations.
- **Think critically and solve complex problems** — Students apply tools and techniques gleaned from core subjects to formulate and solve problems. These tools include data analysis, statistical reasoning, and scientific inquiry as well as creativity, nonlinear thinking, and persistence.
- **Work collaboratively** — Students cooperate to identify and create solutions to academic, social, vocational, and personal challenges.
- **Communicate effectively** — Students clearly organize their data, findings, and thoughts.
- **Learn how to learn** — Students monitor and direct their own learning.
- **Develop academic mindsets** — Students develop positive attitudes and beliefs about themselves as learners that increase their academic perseverance and prompt them to engage in productive academic behaviors. Students are committed to seeing work through to completion, meeting their goals, and doing quality work, and thus search for solutions to overcome obstacles.

Methodology

From a methodological standpoint, demonstrating the relationship between O*NET and deeper learning is a challenging endeavor. CEP researchers developed a two-step coding system to “link” the KSAWs identified as important by O*NET to the six deeper learning competencies. As a first step, we removed any KSAWs that were not typically addressed in the K-12 education curriculum. In the second step, six experts matched each remaining K-12-relevant KSAW with the deeper learning competency that was the most similar. For example, the O*NET ability “persuasion” was linked to the deeper learning competency *communicate effectively*. Using these matches, CEP calculated the percentage of important KSAWs that were linked to each deeper learning competency. We applied this coding process to a broad sample of 301 O*NET occupations, or about 30% of the 963 occupations in the database.

The sample included a representative mix of O*NET’s Bright Outlook and Job Zones (see **Box B**). Occupations designated by O*NET as Bright Outlook are new and emerging, are expected to grow rapidly in the next several years, or will have large numbers of openings. All other occupations in the sample are designated as non-Bright Outlook. It is important to note that not all Bright Outlook occupations require high-level skills. Some Bright Outlook occupations are low-skill just as some non-Bright Outlook occupations are high-skill.

A complete description of our methodology, including the study’s limitations, can be found in the appendix available at www.cep-dc.org. Also available on our website is a supplemental Excel file with the raw data.

Box B — O*NET Terms and Definitions

O*NET Database — The O*NET database collects information on hundreds of occupation descriptors through ongoing surveys of a broad range of occupational experts and employees in unique job areas. In this way, O*NET elicits knowledge about what each occupation requires of its workers.

KSAWs — The knowledge, skills, abilities, and work styles (KSAWs) associated with particular occupations in O*NET. For examples, “mathematics” is a specific area of knowledge, “critical thinking” a skill, “oral comprehension” an ability, and “independence” a work style. Altogether, O*NET reports on 33 areas of knowledge, 35 skills, 52 abilities, and 16 work styles.

CEP’s linking process omitted KSAWs that were less relevant to K-12 education. Our final analysis is based on 12 areas of knowledge, 18 skills, 12 abilities, and 11 work styles, for a total of 53 KSAWs.

Bright Outlook — Occupations that are expected to grow rapidly in the next several years, will have large numbers of openings, or are new and emerging. CEP’s sample included 120 Bright Outlook occupations. The term **non-Bright Outlook** refers to all other occupations in our sample. Sample occupations include:

- Bright Outlook: First-line Supervisors of Retail Sales Workers, Radiation Therapists, Lawyers
- Non-Bright Outlook: Paperhangers; Computer Science Teachers, Postsecondary; Civil Drafters

Job Zones — The levels of education, experience, and training necessary to perform a given occupation. Zone 1 requires the least amount of education, experience, and training and Zone 5 the most. CEP’s sample included 13 occupations in Job Zone 1, 86 in Zone 2, 83 in Zone 3, 70 in Zone 4, and 49 in Zone 5.

Sample occupations include:

- Zone 1: Amusement and Recreation Workers, Laundry and Dry-Cleaning Workers, Automotive and Watercraft Service Attendants
- Zone 2: Pile-Driver Operators, Forest Firefighters, Locomotive Engineers
- Zone 3: Medical Secretaries, Massage Therapists, Aviation Inspectors
- Zone 4: Loan Counselors, Technical Writers, Coaches and Scouts
- Zone 5: Clinical Psychologists, Archivists, Veterinarians

The following sections of this report include key findings from our analysis, a discussion of data, and a brief commentary that contextualizes the analysis within the current policy environment and offers suggestions for future research.

Key Findings

CEP's analysis of the six deeper learning competencies and a sample of occupations from the O*NET database resulted in the following key findings:

- All 301 occupations analyzed by CEP require some types of deeper learning competencies.⁴
- The deeper learning competencies are more important for occupations designated as Bright Outlook by O*NET than those designated as non-Bright Outlook.
- The deeper learning competencies are more important for occupations that require more education, experience, and training.
- *Develop academic mindsets* — which means that students develop attitudes and beliefs that lead to perseverance and productive academic behaviors — was the most important deeper learning competency based on our analysis across all job types.
- Other readiness skills emphasized by deeper learning — *learn how to learn, communicate effectively, think critically and solve complex problems, and work collaboratively* — were also important for many O*NET jobs.
- *Master core academic content* — which means that students develop and draw from a baseline understanding of academic disciplines and are able to transfer knowledge — was the least important deeper learning competency based on our analysis.
- Compared with higher Job Zones, Zone 1 shows the greatest variation in the importance of deeper learning competencies between Bright Outlook and non-Bright Outlook occupations.
- Zone 5 shows the least amount of variation in the importance of deeper learning competencies between Bright Outlook and non-Bright Outlook occupations.

Analysis of O*NET Occupations and Deeper Learning Competencies

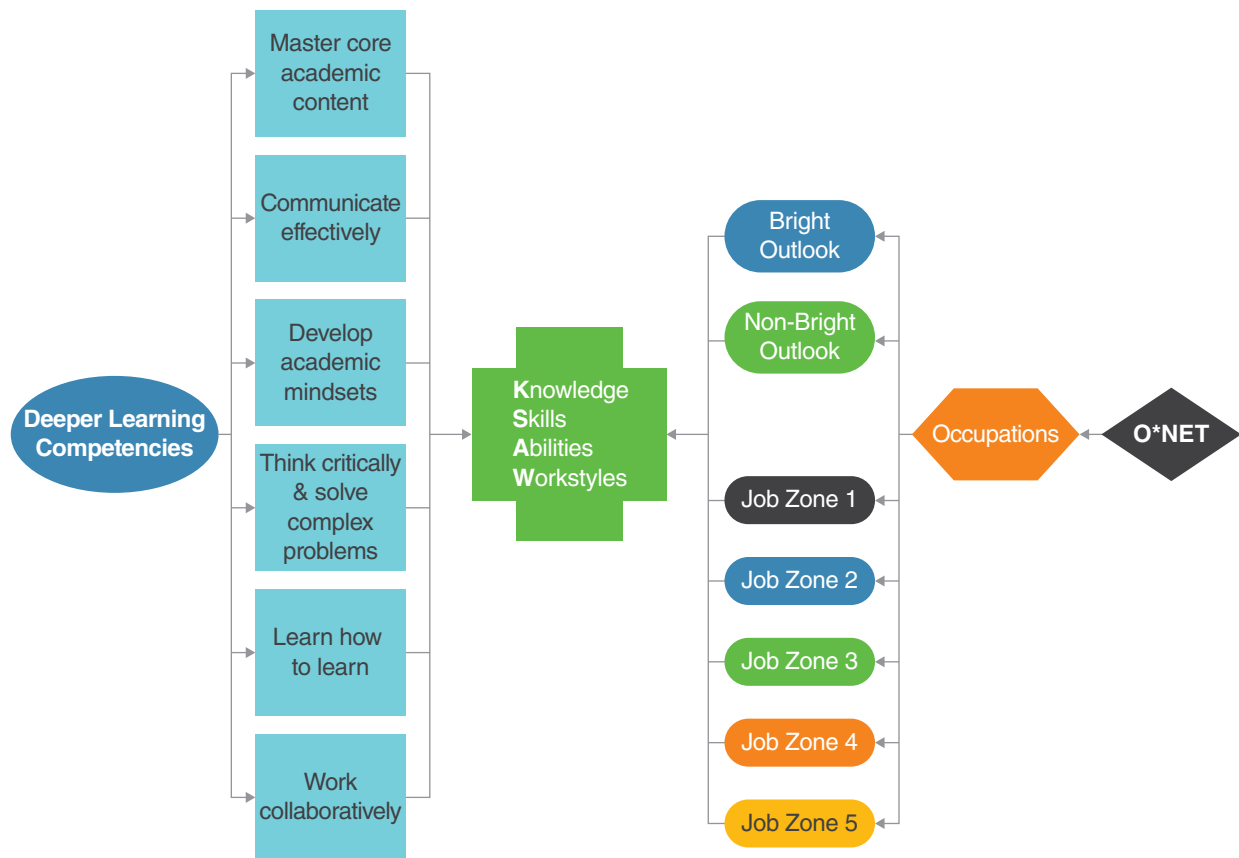
To help convey the relationship between the labor market data from O*NET and the deeper learning competencies, CEP developed the conceptual map in **figure 1**. The left side of the conceptual map displays the six deeper learning competencies. The right side displays the occupational data provided by O*NET and the different categorizations of occupations within the O*NET database. Both the right side and left side converge on KSAWs. In other words, KSAWs were used to link O*NET to deeper learning. This was accomplished by asking experts to connect the deeper learning competency to the specific KSAW that was most similar.

⁴ See Box B for examples of occupations and the appendix or supplemental Excel file for a full list of sampled occupations.

Using KSAWs as the linking variable allowed CEP to analyze the selected sample of 301 O*NET occupations in several different ways:

- 1) CEP looked at the importance of the 53 KSAWs relevant to K-12 education for the occupations in our sample.
- 2) CEP analyzed the links between the O*NET KSAWs and deeper learning competencies for the sample.
- 3) CEP analyzed the links between the O*NET KSAWs and deeper learning competencies in more detail for both Bright Outlook and non-Bright Outlook jobs and for the five different Job Zones.

Figure 1. Conceptual map linking deeper learning to O*NET KSAWs



All sampled occupations require at least one deeper learning competency.

The 301 occupations in the sample required a range of specific knowledge, skills, abilities, and work styles, as identified by O*NET. Each of the occupations in the sample included at least eight important KSAWs from the 53 KSAWs in the analysis. **Table 1** shows the three occupations in the CEP sample with the highest percentage of important KSAWs and the three occupations with the lowest. As the table indicates, Environmental Engineers have the highest percentage of important KSAWs while Nursery Workers and Painting, Coating, and Decorating Workers have the lowest.

For the lowest-ranking occupations by KSAW, the characteristics that O*NET calls work styles, such as “dependability” or “independence,”⁵ tend to be more important than specific kinds of knowledge, skills, or abilities. For example, seven of the KSAWs important for Nursery Workers are work styles, and the other is knowledge of English language.

The several KSAWs that are important to both the highest- and lowest-ranking occupations are work styles. They include “achievement/effort,” “attention to detail,” “dependability,” “independence,” and “stress tolerance.” Simply put, this means that certain work styles are almost universally important to our sampled occupations.

Table 1. Occupations with the highest and lowest percentage of important KSAWs

Occupation name	Bright Outlook occupation	% of all KSAWs
Environmental Engineers	No	89%
Nuclear Medicine Physicians	Yes	85%
Biomedical Engineers	Yes	83%
Slaughterers and Meat Packers	No	17%
Nursery Workers	Yes	15%
Painting, Coating, and Decorating Workers	No	15%

Table reads: Of the 53 specific knowledge, skills, abilities, and work styles included in our analysis, 89% of these KSAWs are important to do the job of Environmental Engineer. This is the highest percentage of important KSAWs for the 301 jobs analyzed by CEP.

Table 2 shows the percentage of the 301 occupations in the sample for which particular KSAWs were important. Two work styles, “attention to detail” and “dependability,” were identified as important for all occupations in our sample. “Foreign language” (an area of knowledge) was identified as important for only 1% of all sampled occupations. The percentages in table 2 suggest that certain work styles are generally important for all occupations, while certain areas of knowledge are important for a small and specialized group of occupations. For example, “foreign language” is critically important for the occupation of Interpreters and Translators, but it is not considered as important for most other occupations in our sample. It is interesting to note that even in a global economy, certain work styles are considered more important to an occupation than the ability to speak a foreign language.

⁵ During the second stage of coding, experts determined that “dependability” was not a skill taught in the K-12 curriculum. See discussion of the coding process in the appendix.

Table 2. KSAWs identified as important for the highest and lowest percentage of sampled occupations

KSAW	KSAW element	Deeper learning competency linked to KSAW	% of all sampled occupations
Work Style	Attention to detail	Learn how to learn	100%
	Dependability	Not taught in K-12 education curriculum	100%
	Self control	Develop academic mindsets	99%
Knowledge	Philosophy and theology	Master core academic content	3%
	History and archeology	Master core academic content	2%
	Foreign language	Master core academic content	1%

Table reads: Of the 53 specific knowledge areas, skills, abilities, and work styles included in our analysis, the work style “attention to detail” has been identified as important for 100% of the 301 occupations in CEP’s sample and linked by CEP’s panel of experts to the deeper learning competency *learn how to learn*.

*Some deeper learning competencies are more important for O*NET occupations than others.*

Table 3 shows the percentage of important KSAWs that were linked to each deeper learning competency for all 301 occupations in our sample. The table shows that of the three KSAWs linked to the deeper learning competency *develop academic mindsets*, 99% were identified as important. *Master core academic content* was the competency with the smallest percentage (20%) of important KSAWs linked to it.

Table 3. Percentage of important KSAWs in the O*NET sample linked to deeper learning competencies

Deeper learning competency	Number of linkages to O*NET KSAWs	% of importance for linked KSAWs
Develop academic mindsets	3	99%
Learn how to learn	4	76%
Communicate effectively	9	74%
Think critically and solve complex problems	13	66%
Work collaboratively	3	63%
Master core academic content	15	20%

Table reads: Across all 301 occupations in the O*NET sample, 99% of the knowledge, skills, abilities, and work styles linked by CEP experts to the deeper learning competency *develop academic mindsets* were identified as important by O*NET.

Despite its low percentage of important KSAWs, the deeper learning competency *master core academic content* should not be considered unimportant in terms of workplace competencies. Rather, CEP researchers hypothesize that many of the core academic content areas are too specific to be important for a majority of sampled occupations, as noted in the previous example about knowledge of foreign languages. In other words, the O*NET responses reflect a focus on other more generalized competencies as opposed to the more specific content and knowledge areas. This hypothesis finds validation when one looks at the KSAWs linked to *master core academic content* that have a high percentage of importance. **Figure 2** shows that the more general O*NET knowledge areas of “English language,” “computers and electronics,” and “mathematics” are important for a majority of occupations in our sample. The remaining 12 KSAWs linked to the competency *master core academic content* were identified as important for a much lower percentage of occupations.

Figure 2. Analysis of KSAWs linked to the deeper learning competency *master core academic content*

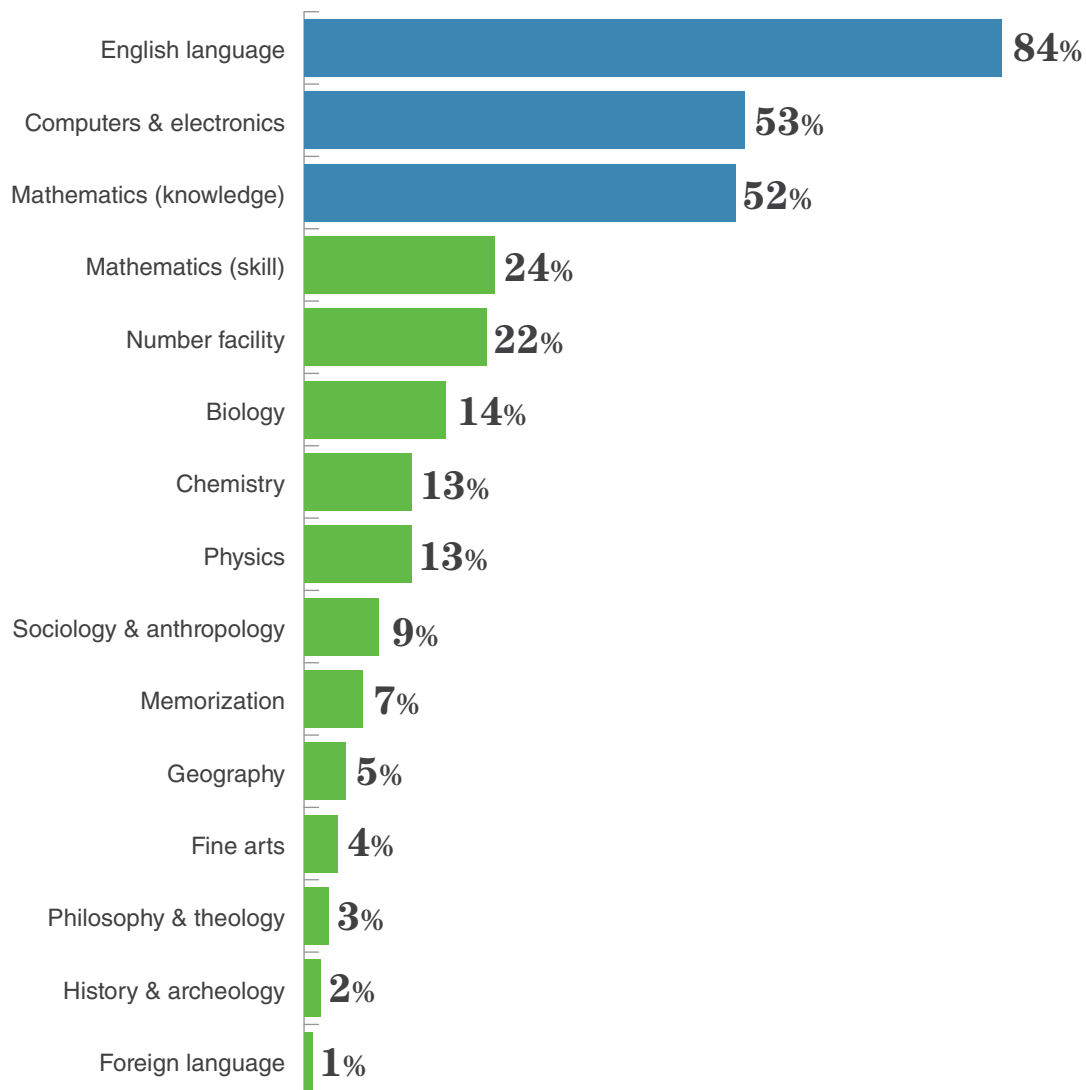


Figure reads: “English language” knowledge was identified by O*NET as important for 84% of all occupations in CEP’s sample.

Deeper learning competencies are more important for O*NET’s Bright Outlook occupations than for non-Bright Outlook occupations.

CEP’s sample included both Bright Outlook and non-Bright Outlook occupations from all five Job Zones. Examples of such Bright Outlook occupations included Waiters and Waitresses (Zone 1) and Anesthesiologists (Zone 5). The non-Bright Outlook sample included such occupations as Crossing Guards (Zone 1) and Librarians (Zone 5). As these examples illustrate, not all Bright Outlook occupations are high-paying or require high-level skills. CEP’s sample includes some low-skill occupations that are considered Bright Outlook, as well as some high-skill occupations that are non-Bright Outlook.

Table 4 displays the percentage of important KSAWs that were linked to each deeper learning competency across all Bright Outlook and non-Bright Outlook occupations in our sample. The table shows that deeper learning competencies were considered important for both Bright Outlook and non-Bright Outlook occupations. However, the percentages of important KSAWs linked to deeper learning competencies were generally higher for Bright Outlook than non-Bright Outlook occupations. The biggest difference (10 percentage points) between the Bright and non-Bright groups was for the competency *work collaboratively*, while the smallest difference was for the competency *develop academic mindsets*.

At the same time, the relative importance of the six deeper learning competencies, down each column from the highest percentage to lowest, is identical for Bright Outlook and non-Bright Outlook occupations. The competency *develop academic mindsets* was linked to 99% of the important KSAWs for Bright Outlook jobs and with 98% for non-Bright Outlook. At the low end, the competency *master core academic content* was linked to 23% of the important KSAWs for Bright Outlook occupations and 18% for non-Bright Outlook jobs. Once again, it is important to remember that the competency *master core academic content* likely indicates a lower percentage of important O*NET KSAWs because of the specific nature of content areas.

Table 4. Percentage of important O*NET KSAWs linked to deeper learning competencies for Bright Outlook and non-Bright Outlook occupations

Deeper learning competency	Bright Outlook jobs	Non-Bright Outlook jobs
Develop academic mindsets	99%	98%
Learn how to learn	80%	74%
Communicate effectively	77%	72%
Think critically and solve complex problems	70%	63%
Work collaboratively	69%	59%
Master core academic content	23%	18%

Table reads: Across the Bright Outlook occupations in our sample, 99% of the knowledge, skill, abilities, and work styles linked by CEP experts to the deeper learning competency *develop academic mindsets* were identified as important by O*NET.

Deeper learning competencies are more important for higher Job Zones than lower Zones.

CEP also looked at the links between important KSAWs and deeper learning competencies across the five O*NET Job Zones. Our representative sample included a mix of occupations from all Zones. Examples include Counter and Rental Clerks (Zone 1); Childcare Workers (Zone 2); Machinists (Zone 3); Fraud Examiners, Managers, Investigators, and Analysts (Zone 4); and Zoologists and Wildlife Biologists (Zone 5).

Table 5 shows the results of the analysis by Job Zone. All deeper learning competencies have links to important KSAWs in every Job Zone. However, the higher the Job Zone, the greater the percentage of importance for each deeper learning competency.⁶ Our analysis of the O*NET database seems to indicate that the deeper learning competencies are highly relevant to a range of occupations, but especially relevant for the jobs that require the most preparation and experience (those jobs in Zones 3, 4, and 5).

Across all Job Zones, the deeper learning competency *develop academic mindsets* is ranked the highest — for this competency, 100% of the KSAWs for all sampled occupations in Zones 3, 4, and 5 were identified as important. This finding corroborates what researchers Carol Dweck, David Conley, and others have written about the value of a growth mindset and its impact on achievement and success.⁷ Once again, *master core academic content* is the lowest ranked competency across all Job Zones (for reasons already addressed in this report). The biggest gap (67 percentage points) between Zone 1 and Zone 5 occupations is for the deeper learning competency *think critically and solve complex problems*.

Table 5. Percentage of important O*NET KSAWs linked to deeper learning competencies by Job Zone

Deeper learning competency	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Develop academic mindsets	90%	97%	100%	100%	100%
Learn how to learn	54%	63%	77%	85%	93%
Communicate effectively	33%	53%	77%	92%	93%
Work collaboratively	33%	45%	65%	79%	76%
Think critically and solve complex problems	20%	43%	67%	86%	87%
Master core academic content	7%	10%	21%	28%	32%

Table reads: For Zone 1 jobs in the O*NET sample, 90% of the knowledge, skills, abilities, and work styles that were linked by CEP experts to the deeper learning competency *develop academic mindsets* were identified as important by O*NET.

6 There is one exception. The deeper learning competency *work collaboratively* is 3 percentage points higher in Zone 4 than in Zone 5.
 7 See, for example, David T. Conley, *College and Career Ready: Helping All Students Succeed Beyond High School* (San Francisco: Jossey-Bass, 2010); and Carol S. Dweck, *Mindset, the New Psychology of Success: How We Can Learn to Fulfill Our Potential* (New York: Random House, 2006).

Competencies vary in importance for Bright Outlook occupations when analyzed by Job Zone.

The analysis thus far has indicated that the deeper learning competencies are more important for occupations categorized as Bright Outlook than for non-Bright Outlook occupations. But an additional analysis indicated that the deeper learning competencies become more important to both Bright Outlook and non-Bright Outlook occupations in Job Zones 3, 4, and 5. (It is important to remember that higher Job Zones represent occupations that usually require more preparation and experience.) Given these findings, CEP decided to conduct a follow-up analysis to examine the extent to which deeper learning competencies identified as important for Bright Outlook and non-Bright Outlook professions vary across Job Zones.

A good example of the variation among Job Zones is the deeper learning competency *master core academic content*. For Bright Outlook occupations in Job Zone 1, 11% of the KSAWs linked to this competency were identified as important; the comparable percentage for non-Bright Outlook occupations in Zone 1 is 3% (**table 6**). In other words, in the lowest Job Zone the competency *master core academic content* was more important for Bright Outlook than for non-Bright Outlook occupations.

Table 6. Percentage of important O*NET KSAWs linked to deeper learning competencies for Bright Outlook and non-Bright Outlook occupations, by Job Zone

	Zone 1		Zone 2		Zone 3		Zone 4		Zone 5	
	Bright Outlook	Non-Bright Outlook	Bright Outlook	Non-Bright Outlook	Bright Outlook	Non-Bright Outlook	Bright Outlook	Non-Bright Outlook	Bright Outlook	Non-Bright Outlook
Master core academic content	11%	3%	11%	9%	22%	20%	30%	26%	32%	33%
Think critically and solve complex problems	14%	25%	45%	42%	70%	65%	86%	86%	87%	87%
Work collaboratively	39%	29%	53%	41%	70%	62%	79%	78%	78%	73%
Communicate effectively	35%	32%	48%	55%	80%	76%	92%	91%	93%	94%
Learn how to learn	46%	61%	66%	61%	79%	75%	88%	83%	92%	95%
Develop academic mindsets	89%	90%	100%	96%	100%	100%	100%	100%	100%	100%

Table reads: For Bright Outlook occupations within Job Zone 1, 11% of the knowledge, skills, abilities, and work styles identified as important were linked by CEP experts to the deeper learning competency *develop academic mindsets*.

But the differences in the percentage of important KSAWs between Bright Outlook and non-Bright Outlook jobs narrow as Job Zones increase (see **figure 3**). In this example, the deeper learning competency *master core academic content* shifted from being more important for Bright Outlook than non-Bright Outlook jobs in the lowest Zone, to being nearly as important for Bright and non-Bright Outlook jobs in highest Zone.

Figure 3. Difference between Bright Outlook and non-Bright Outlook by Job Zones

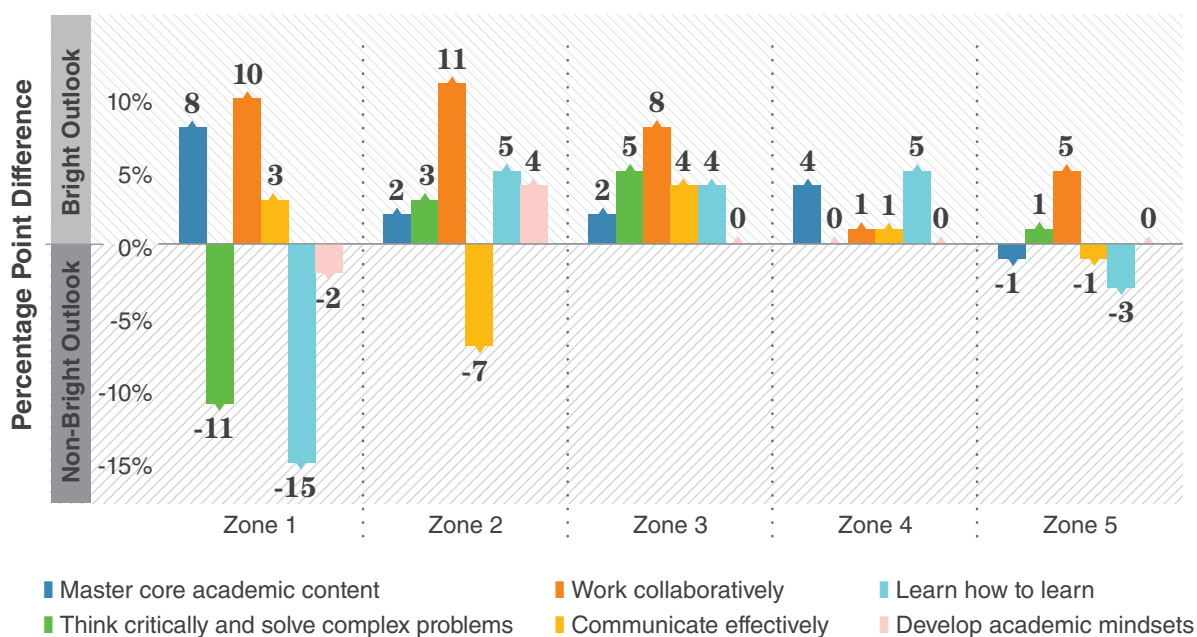


Figure reads: The competency *master core academic content* in Job Zone 1 was eight percentage points more important for Bright Outlook occupations than for non-Bright Outlook occupations.

Figure 3 shows that in higher Job Zones, deeper learning competencies are more transferable from Bright Outlook to non-Bright Outlook occupations. However, in lower Zones, deeper learning competencies are more clearly divided between Bright Outlook and non-Bright Outlook occupations. For example, the competency *master core academic content* in Job Zone 1 was eight percentage points more important for Bright Outlook occupations than for non-Bright Outlook occupations. This difference is almost exclusively based on the O*NET knowledge area of “English language.” Therefore, workers in a Job Zone 1, non-Bright Outlook occupation in our sample will likely need to speak English if they want to transfer to a Bright Outlook occupation.

Finally, the analysis shows that one competency, *work collaboratively*, favors Bright Outlook occupations in all Zones, with only a small difference in Job Zone 4. This indicates that job seekers who are looking find employment in occupations that are predicted to have the greatest demand for workers will likely need to be able to work collaboratively, regardless of the applicant’s education or training.

Commentary

Overall, CEP's analysis indicates that across O*NET's five Job Zones and within both the Bright Outlook and non-Bright Outlook categories, the deeper learning competencies were identified as important for all occupations in the O*NET sample we studied.

Some interesting details in CEP's analysis are worth highlighting. For example, the deeper learning competency *master core academic content* had the greatest number of linkages with the O*NET occupation areas, yet it was identified as important far less often than the other deeper learning competencies. As explained in the report, this is less a value judgment on the importance of mastering core academic content and more an indication that the individuals responding to the O*NET survey questions regard academic content areas as too specific a competency to be important for a such a broad range of occupations. The *master core academic content* competency had 15 links to the KSAWs, but only 20% of those KSAWs were important for the 301 occupations in our sample. This was the case for Bright and non-Bright Outlook jobs and for all of the Job Zones.

The fact that the five other deeper learning competencies (*learn how to learn, think critically and solve complex problems, work collaboratively, communicate effectively, and develop academic mindsets*) were identified as important so often validates the idea that employees still need a range of skills and competencies even if they already have extensive content knowledge. Occupational experts and employees who contribute to the O*NET database seem to recognize the skills and competencies supported by deeper learning are a valuable part of the readiness equation. The deeper learning competencies might be reflected in the workplace as learning how to work independently and with others, analyzing new situations and processing multiple forms of information, articulating needs and opinions, or demonstrating consistency and dependability. Either way, CEP's analysis supports the notion that the students who leave school with a broad range of both content knowledge and key competencies will be better situated to access and navigate an evolving labor market.

Some policymakers and educators are trying to move beyond conversations that place content knowledge and other key competencies at odds with one another. Before leaving office, former Secretary of Education John B. King stressed the value of students receiving a "well-rounded education" that moves beyond the narrow focus of No Child Left Behind. To that end, the Every Student Succeeds Act (ESSA) requires districts to offer a well-rounded program of instruction. Already, many district and school leaders are working to actualize what researchers like Carol Dweck, Angela Duckworth, and others have been trying to validate — the need for students to possess positive academic mindsets and other non-cognitive competencies. Hopefully, ESSA's requirements will lead to other district and school leaders adopting instructional approaches that support student development of key competencies.

In addition to ESSA, the Carl D. Perkins Vocational and Technical Education Act is awaiting reauthorization. This federal law has long focused on increasing the quality of career and technical education in the U.S. But the reauthorization process, coupled with the larger policy discussion about the value of giving all students a chance to develop workplace skills and competencies, offers lawmakers an opportunity to rethink the intent and scope of the Perkins Act.

At the state and local levels, some education leaders have made changes to policy and practice to give students a well-rounded education and help them develop skills and abilities like the deeper learning competencies. State college- and career-ready standards, including but not limited to the Common Core, were developed with this specific goal in mind. And recent

polling data indicates the public also sees the value in students leaving school with more than just academic content knowledge. In some communities, academic and career pathway options for high school students, as well as competency-based assessment systems, are in place and can serve as models for those policymakers looking to enact similar practices.

Our research supports the views of a majority of Americans about the importance of career readiness skills, as captured in the 2016 Phi Delta Kappan (PDK) annual education poll. When asked what the main goal of public education should be, the majority of respondents said it should be to prepare students for work (25%) or to be good citizens (26%). Only 45% of PDK poll respondents said it should be to prepare students academically. As with CEP's analysis of O*NET, this kind of finding does not imply that the majority of Americans think preparing students academically is not an important goal of education. It simply shows that Americans feel there are other important aspects of education that students will also need as they progress through school, work, and life.

While there is no one best way to educate all students, CEP's analysis of the O*NET database offers some interesting insights about how occupational experts view the range of knowledge, skills, abilities, and work styles needed for a large sample of common occupations. The taxonomies used to describe the information in O*NET may be different from those used to describe deeper learning, but CEP's analysis demonstrates a strong common message: in addition to being academically prepared, students need opportunities to develop important skills and competencies. Moving forward, policymakers and education leaders will have ample opportunity to rethink how schools can best prepare and assess students so they are ready to meet the challenges of a constantly changing global economy. We hope this analysis is helpful to that process.

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