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Editorial

WORKPLACE BASICS: THE SKILLS EMPLOYEES NEED AND EMPLOYERS WANT

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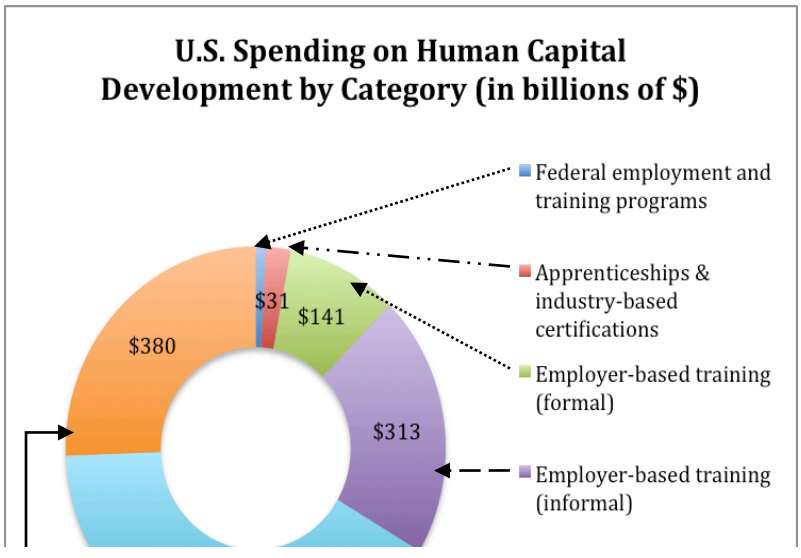
From the Civil War until the 1970s, the United States was the world's most successful mass-production economy, the very best at producing standardized goods and services at least cost and selling them at the lowest price. These mass-production successes required rigorous discipline and narrow skill. Final products and services were broken down into their smallest reproducible components and rigid single-purpose machinery was built to mass-produce standardized components. A large mass of unskilled labor was used to tend the machines. A much smaller group of broadly skilled and broadly assigned white-collar and technical elites were installed at the top of large-scale organizational pyramids.

Something happened in the early 1970s. Suddenly the United States' mass-production system seemed to lose its competitive edge. People began to demand more than mass-produced standardized goods and services because often they could afford more. Family income doubled between 1946 and 1972 in the United States, and America's economic "golden age" was mirrored in the rest of the world.
Insert Figure 1 about here



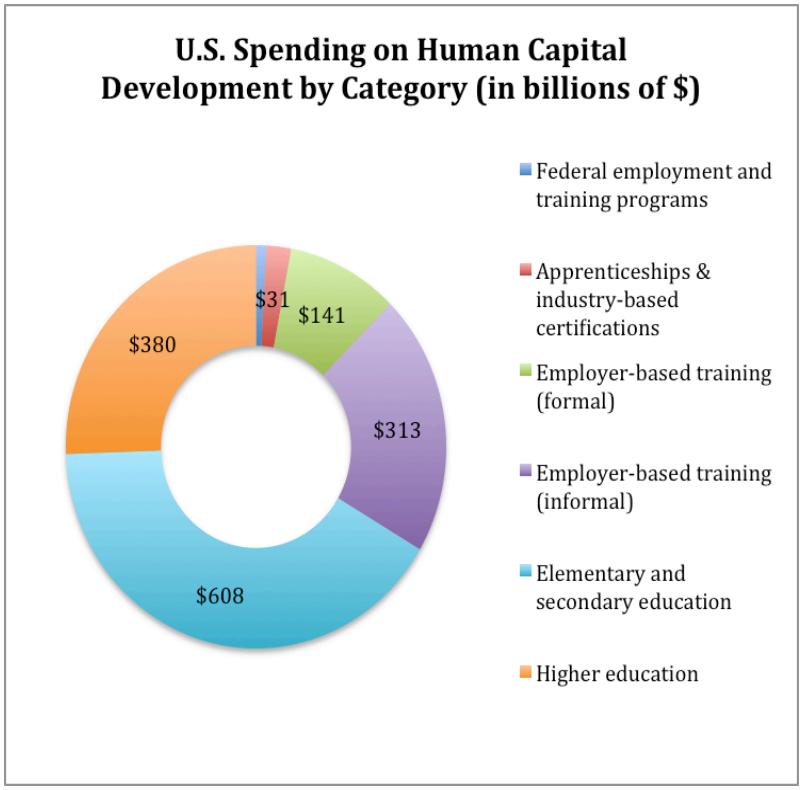


Fig. 1 The U.S. Human Capital Development System.

Today, the United States spends roughly $1.5 trillion (11% of GDP) on human capital or skills development each year. Elementary and secondary education, which primarily focuses on developing basic skills, represents the largest share of human capital development spending at $608 billion (41% of spending) (Cornman, 2013). Employer-based training is a crucial element of America's human capital development system. Together, formal and informal training by employers represent $454 billion (30% of spending): $313 billion on informal training and $141 billion on formal training (Carnevale et al., Sept. 2012). By comparison, the U.S. spends $380 billion on higher education, which largely consists of formal education programs at colleges and universities, and other postsecondary institutions (Snyder and Dillow, 2012).

New Market Forces Create Demand for New Skills

As the world got richer the value of standardized commodities declined, competition shifted to new kinds of value added. The increasing competition and the demand for new kinds of value added have created more intense and complex competitive requirements. The traditional competition based on the ability to mass produce standardized goods and services and sell them at low cost has been gradually displaced by a competition based on a diverse mix of requirements and new kinds of value added, including:

Productive Investment: The old-time religion of cost reduction does not work in the knowledge economy because it tends to reduce investments in skilled employees, information-based technologies, and flexible organizational formats necessary to meet new performance standards. In the knowledge economy, productivity is pursued through productive investments in the synergies between technology and skill that lead to institutions that are sufficiently robust to compete in modern markets.

Quality: No longer insulated from serious global competition, quality is a primary component of competitive production. Quality requires lots of new skills up and down the line ranging form technical competency to the ability to take responsibility for the final product or service irrespective of your job description.

Figure 2. New Competitive Standards.

Insert Figure … about here

Variety: As competition has intensified, plain vanilla is no longer good enough. To satisfy the growing diversity of demand in both domestic and global markets, the once standardized offerings of mass production have given way to an explosion of choices. The ability to produce variety requires workers with the creativity and problem-solving skills necessary to provide more than one size fits all products or services.

Customization: Standardization has been superseded by customized goods and services. Customization, like variety, requires the ability to be able to problem solve and empathize with customer wants and needs.

Convenience: Busy people crave convenience. Convenience requires workers who can empathize with customer needs and use interpersonal skills, communications and listening skills necessary for good old-fashioned customer service.

Consistency: Meeting performance standards some of the time is not enough. Workers require dependability and commitment in order to meet efficiency, quality, variety, customization, convenience, speed, innovation and social responsibility standards al the time.

Speed and Continuous Innovation: There are a variety of benchmarks for improvements in speed or cycle time. The first is generating a new idea ahead of the competition. But getting ideas first is not enough. The organizational achievements come by getting new ideas off the drawing board and into the hands of the customers. Improving products or services incrementally and continuously to stay ahead of the competition also is critical.

Social Responsibility: As consumers are given more and more goods and services to choose from, the values associated with a particular brand can make a competitive difference. Consumers who become wealthier and have more choices tend to want to satisfy more than their material needs. Customers want products and services from organizations that, at least, do not violate their values and, at most, represent their values.

The Skills and Abilities Employers Want

Fundamental changes in skill requirements in the American economic system have been due to the shift from the industrial era to the postindustrial era of the knowledge economy. The new knowledge economy that has emerged has replaced the rote skills of the assembly lines of yesteryear with flexible technologies and "high-performance work systems" that rely on more skilled and autonomous workers. In an era of flexible production and service delivery systems and more rapid economic change, workers not only need better technical preparation, they also need sufficiently robust skills to adapt to changing requirements on the job.

Insert Figure 3 about here

Figure 3. Skills and Abilities in the Knowledge Economy.

As the structure of the U.S. economy has shifted from an industrial economy to a postindustrial service economy, new skill requirements have emerged. In general the demand for specific academic and vocational skills has been augmented with a growing need for general skills—including learning, reasoning, communicating, general problem-solving skills, and behavioral skills.

New postindustrial jobs in industries like business services, education, health care, and office service jobs require higher levels of interpersonal and problem-solving skills because the work entails higher levels of human interaction and personalized responses to people's wants and needs. These same behavioral skills are required in high-technology and manufacturing jobs as well, because the technology itself takes on more of the rote, manual processing tasks, allowing employees to spend more time interacting with each other in order to exploit the new flexible technologies in order to provide cutting edge value added such as quality, variety, customization, convenience, speed, and innovation.

Basic Skills: Reading, Writing, and Mathematics

Most employers today cannot compete successfully without a workforce that can use solid academic skills in applied settings. Increased interaction with sophisticated computerized machinery requires good technical reading skills, and writing is frequently the first step in communicating with customers, documenting competitive transactions, or successfully moving new ideas into the workplace.

Employers need workers who have mastered reading processes that allow them to locate information and use higher-level thinking strategies to solve problems. Similarly, writing on the job often requires analysis, conceptualization, syntheses and distillation of information, and clear articulation of points and proposals. In a work environment, mathematic skills need to be contextual and rooted in problem identification, reasoning, estimation, and problem solving.

Foundation Skills: Knowing How to Learn

Learning is now a fact of life if workers are going to keep up with the blur of change in modern workplaces. Workers who have "learned how to learn" can achieve competency in other required workplace skills, but for those who have not, learning is not as rapid, nor as efficient or comprehensive.

Communication Skills: Listening and Oral Communication
Communication is central to the smooth operation of all work environments. Workers spend most of their days in some form of communication. They communicate with each other about procedures and problems, and they also relay and receive information to and from customers. Effective oral communication also requires that workers have sufficient self-awareness to understand how they are perceived and what they hear. It is important for workers to understand and value communication approaches that are different in style from their own, as well as adjust their style when in communication with someone who has a style that is different from their own. Listening skills also affect the efficient transmission and receipt of information in the workplace. Communication skills are at the heart of getting and keeping customers and gathering product feedback, as well as for participating in work teams and resolving conflicts on the job.

Adaptability: Problem Solving and Creative Thinking
An institutions' ability to achieve its strategic objectives often depends on how quickly and effectively it can transcend barriers to improved productivity and competitiveness. These pressures put problem solving and creative thinking at a premium—at all levels of an organization. Problem solving includes the ability to recognize and define problems, invent and implement solutions, and track and evaluate results. Cognitive skills, group interaction skills, and problem-processing skills are all crucial to successful problem solving. New approaches to problem solving, organizational design, or product development all spring from the individual capacity for creative thinking.

Group Effectiveness: Interpersonal Skills, Negotiation, and Teamwork
Interpersonal, negotiation, and teamwork skills are basic tools for achieving the flexibility and adaptability that America's workforce must have to remain competitive.
The use of workplace teams to meet complex sets of standards is now commonplace in many American businesses. Change strategies also are dependent upon the ability of employees to pull together and refocus on the new common goal.

This pooling of resources, however, frequently requires team members to have an array of skills that individual or routine jobs do not demand. Quality teamwork results when team members know how to recognize and cope with various and unique personalities and when each has a sense of the cultures and approaches that other team members represent. Interpersonal and negotiation skills are the cornerstones of successful teamwork. Unresolved, conflicts can sap productivity and short-circuit strategic plans.

Influence: Organizational Effectiveness and Leadership
Both organizational effectiveness and leadership skills are essential to successful institutions businesses. In order to be effective in an organization, workers need a sense of the cultural workings of the organization and how their actions affect organizational and strategic objectives. At the same time, organization effectiveness requires that workers understand what organizations are, why they exist, and how to navigate the social waters of varying types of organizations.

At its most basic level, leadership means that a person can influence others to act in a certain way. Organizational skills are the building blocks for leadership. Unaccompanied by them, leadership skills can be misplaced and even counterproductive. Every person may need, at times, to lead or influence a work group or provide a vision of what the organization as a whole requires.

Personal Management: Self-Esteem and Motivation/Goal Setting
In the past, employers viewed workers with solid occupational-specific skills as sufficient for success on the job. But as workers are increasingly called upon to make decisions at the point of production or point of sale and display good interpersonal skills when working in teams or with customers, the confidence that engenders success in these areas springs from a positive sense of self-worth or self-esteem.

Self-esteem is at the core of many other skills required on the job. Workers with a healthy self-esteem are able to recognize their current skills, be aware of their impact on others, and understand their emotional set points and abilities to cope with stress, change, and criticism on the job. They also are able to recognize their own limits and seek new information or assistance to solve problems and construct solutions.

Workplace success also depends on workers who are motivated and able to set and meet reasonable goals. Workers' lack of motivation or goal-setting skills can produce an organizational undercurrent of repeated errors, absenteeism, and quality problems, or it can construct barriers along the path to change. Poor performance can often be lined to deficiencies in self-esteem or motivation.

Resilience: Cognitive Style
The new, fast-paced, and unforgiving global economy results in constant change in skills required for specific jobs. Constant economic and technological change also discourages growth in job tenure and increases the overall rate of job creation and job destruction. The subtlest behavioral asset in managing school, work, and life in the constant flux of modern times is a positive cognitive style.

The notion of "positive cognitive style" is more than self-esteem or the power of positive thinking. Self-esteem and positive thinking are internal attitudes that persist irrespective of external experiences of success or failure. Cognitive styles are the various ways people process information gained from experience—positive cognitive styles encourage success and negative styles encourage failure. Those with a negative cognitive style tend to see failure as a result of causes that are "permanent, pervasive, and personal." They tend to discount successes as temporary, limited in scope, and unrelated to personal merit. People with a negative cognitive style tend to be less successful because they cede control over the choices in their lives to their circumstances, reducing their ability to act and persevere. The available evidence and old-fashioned common sense suggest that the feelings of helplessness that underlie a negative cognitive style are a learned behavior subject to environmental influences (Seligman, 1998). If those subjected to persistent negative feedback in their interactions with the world learn to perceive failures as "persistent, pervasive, and personal," this can lead to "learned helplessness" unless extraordinary compensatory support is provided.

Applied Skills: Occupational and Professional Competencies
At some point, everyone has to put an occupational point on his or her educational pencil. A small share of students begins to receive occupational preparation in high school through vocational programs, career academies, and other applied curricula. In general, with notable exceptions, high school vocational preparation does not provide long lasting earnings advantages. For the most part, these programs survive as an alternative applied pedagogy to meet statewide academic performance standards and as preparation for further postsecondary education.

Among those who terminate their education with high school, most get job training primarily on the job, although as a general rule those with the most postsecondary education get the most training on the job.

For most high school students, occupational preparation continues or begins with some kind of postsecondary education or training. Smaller shares of elite college graduates continue general education through the BA and then get their occupational or professional education in graduate or professional school. As a general rule, those with the richest mix of educational attainment and occupational or professional education earn the most money.

To some extent, the increase in the demand for both education and occupational credentialing derives from the changing relationships between employers and employees. As change accelerates on the job, employers need better learners and cannot take the time to develop talent from the ground up. Education credentials are increasingly used to signal learning potential. And when relationships between employers and employees become less stable, reliable educational and occupational credentials become more important in matching individual skills to new job requirements.

The increasing reach of economic market competition raises educational hiring standards. As economic markets for goods, services and labor go form local to regional to national to global, skill requirements also escalate from local to national and, ultimately, world-class standards. In addition, in larger geographic market employers are hiring strangers, putting a premium on proven education and occupational degrees and certified experience.

21st Century Competencies: Knowledge, Skills, Abilities

21st century skills are competencies required for the jobs of the future. Having a workforce with 21st century skills will be critical if the U.S. wants to remain competitive, attract the right type of industry, and engage the right type of talent in the new knowledge economy.

Using the O*Net database, we measure the incidence and intensity of core competencies in the economy today. [1] O*Net specifies the full set of occupational competencies required for success in particular occupations and related clusters of similar careers. Operated by the National O*Net Consortium and funded by the U.S. Department of Labor, the database includes occupational knowledge, skills and abilities, work values, work contexts, and work interests, as well as key performances (tasks and activities).

These competencies are multi-dimensional and the interactions between them are highly correlated. Yet, we have attempted to simplify the concepts by asserting that cognitive ability allows one to acquire knowledge, which is a foundational requirement for skills-acquisition. These terms are defined later.

O*Net's occupational data are anchored in a tripartite set of cognitive competencies, knowledge, skills and ability.

[1] The approach to this connection was twofold. First, we determined the extent of the relatedness of occupational clusters, based on the similarities of the intensity of responses from incumbents in those occupations. Second, we determined the incidence in the national economy, controlling for the size of occupations. Factor analysis was the primary data-reduction tool employed.

- Knowledge classifications are content domains familiar to educators, from math and the sciences, to the humanities, to knowledge in more-applied disciplines like accounting.

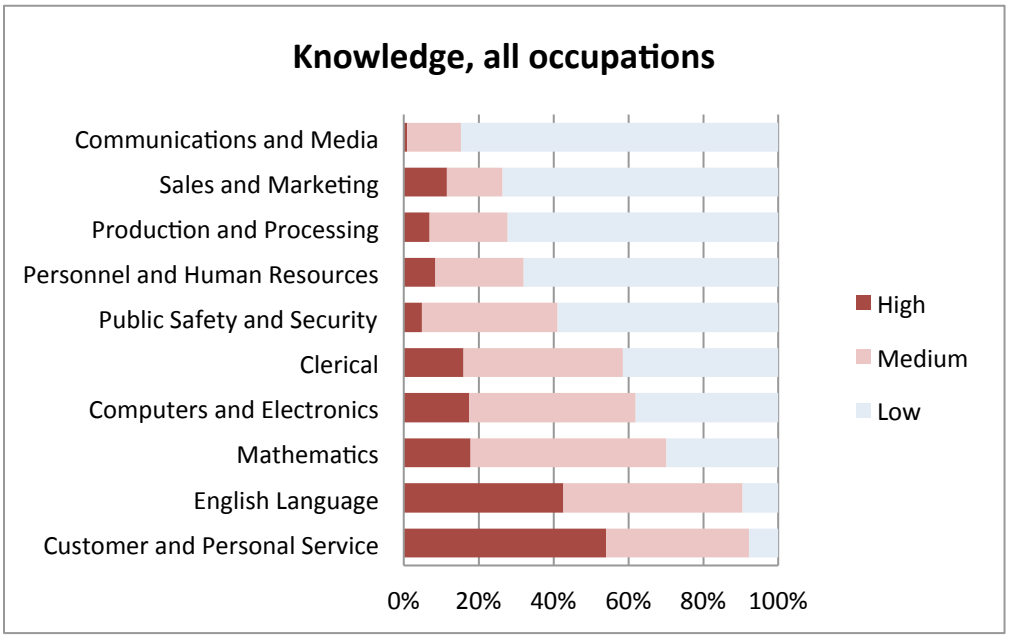
- Skills are competencies that promote further learning. They are divided into content, processing, and problem-solving skills. Content skills are fundamental skills needed to acquire more specific skills in an occupation. These include reading comprehension, active listening, speaking, writing, math, and science. Professing skills are procedures that contribute to the more-rapid acquisition of knowledge and skills. These include critical thinking, active learning, learning strategies, and monitoring. Problem-solving skills involve the identification of complex problems and related information required to develop and evaluate options and implement solutions.

- Abilities are defined as enduring and developed personal attributes that influence performance at work. In the parlance of education psychology, these closely approximate "aptitudes," O*Net divides abilities broadly into creativity, innovation, mathematical reasoning, and oral and written expression. Each of these broad abilities is subdivided into component elements. For example, innovative abilities include fluency of ideas, problem sensitivity, deductive reasoning, and inductive reasoning.

Knowledge Competencies are biased in favor of service occupations

Insert Figure 4 about here

Figure 4. Demand for Knowledge competencies, 2010



Source: Georgetown Center on Education and the Workforce analysis of O*Net

Figure 4. Demand for Knowledge Competencies, 2010

The figure above summarizes the top 10 knowledge bases in the economy and the level at which they are utilized. Customer and personal services and English language are used most intensely across occupations. High levels of customer service and English language are required in 55

percent of all jobs. This is not surprising as 80 percent of all jobs today are in the service sector. Jobs in industries like business services, education, health care, and office service jobs require higher levels of interpersonal and problem-solving skills because the work entails higher levels of human interaction and personalized responses to people's wants and needs. These same behavioral skills are required in high-technology and manufacturing jobs as well, because the technology itself takes on more of the rote, manual processing tasks, allowing employees to spend more time interacting with each other in order to exploit the new flexible technologies in order to provide cutting edge value added such as quality, variety, customization, convenience, speed an innovation.

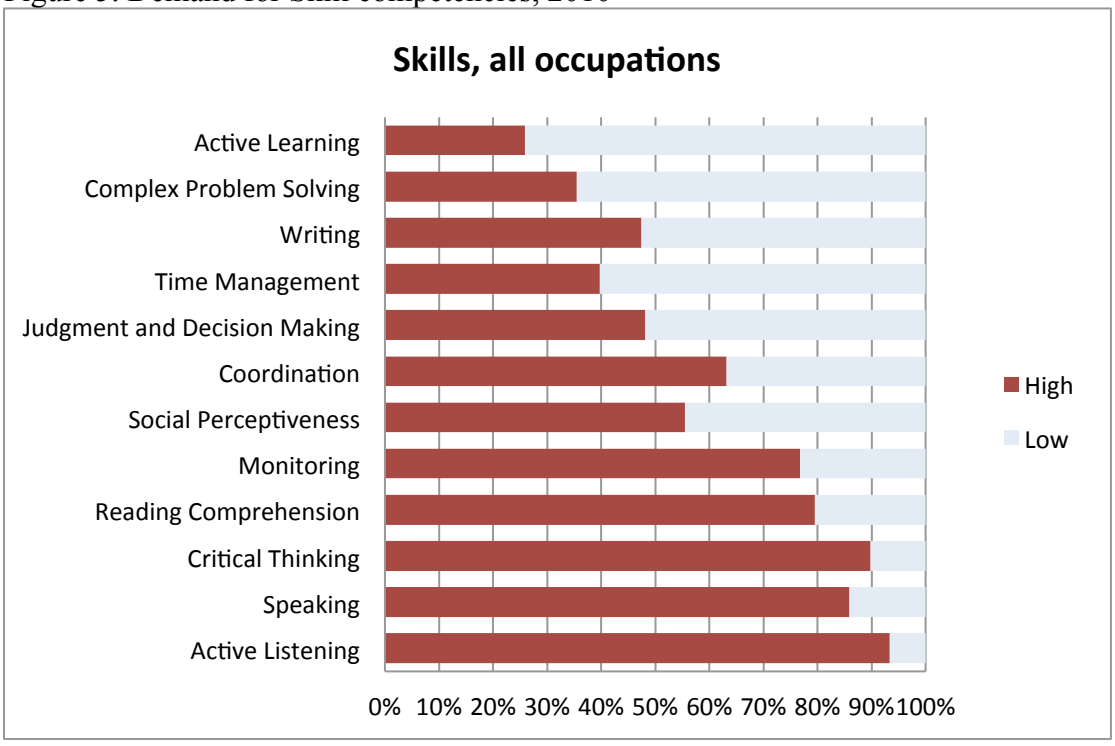
Mathematical Knowledge and Computers and Electronics are also highly valued and transferable across occupations. Medium to high levels of mathematics and computational knowledge are required in 70 percent of all jobs, and medium to high computer skills are required in 62 percent of all jobs.

Knowledge bases of high-wage, high-growth, high-skills occupations, include more complex competencies (economics and accounting, law and government and administration and management) than those of the general economy and excluded other competencies such as sales and marketing, production and procession and public safety and security.

Skills and Abilities are generally more transferable than Knowledge

Skills that are highly concentrated in the economy can be found in the box below, and include, among others, Active Listening, Complex Problem-Solving, Writing and Time Management.

Figure 5. Demand for Skill competencies, 2010



Source: Georgetown Center on Education and the Workforce analysis of O*Net

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Figure 5. Demand for Skill competencies, 2010

Communications skills such as reading comprehension, critical thinking, speaking, and active listening are skills that are highly valued in occupations. Active listening is a skill that to be extremely important to almost all jobs that require you to work in hierarchical teams or to serve customers. Forty-eight percent of jobs require very high levels of active listening, with reading comprehension, speaking and critical thinking following closely behind.

Five of the top twelve skills that are most valued in the economy are essentially communicative in nature. The ability to listen, interpret, follow instructions, and communicate these to other people both orally and written appear time and again in various jobs – even those with relatively lower levels of education required.
Skills that process information and require sophisticated cost-benefit analyses such as critical thinking, complex problem solving, judgment and decision-making are also highly valued. Critical Thinking is a skill that is often touted by employers as a necessary requirement for success in many occupations. O*Net data confirm this assertion. It is very important in close to 20 percent of all jobs. Moreover, 96 percent of all occupations consider Critical Thinking to be either very important or extremely important to that job.

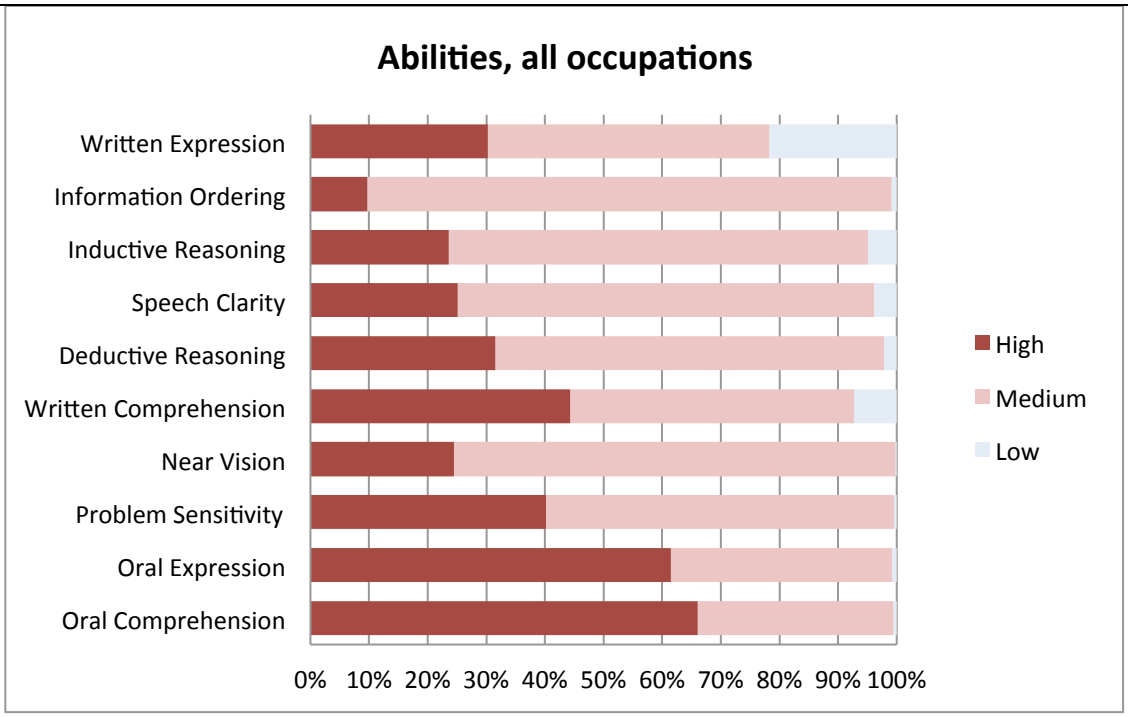
Finally, skills that demonstrate aptitude in a social setting and demonstrate an ability to work in a team setting and to complete tasks assigned in a timely fasting are also high valued. Coordination and monitoring are especially important to production occupations, STEM fields and healthcare. Social perceptiveness also has "caregiver" undertones and favors the traditional concentration of females into healthcare.

Abilities are more transferable across occupations than knowledge

Similar to skill, ability is associated with the capacity to utilize knowledge learned to solve problems. Abilities refer to capacities that are to some extent present in a person at early ages and developed over time. They include generic characteristics that allow individuals to acquire a skill.

Insert Figure 6 about here

Figure 6. Demand for Abilities competencies in high-wage, high-growth, high-demand occupations, 2010



Source: Georgetown Center on Education and the Workforce analysis of O*Net

Figure 6. Demand for Abilities competencies in high-wage, high-growth, high-demand occupations, 2010

Oral comprehension, oral expression and written comprehension, written expression at the highest level are valued in occupations throughout the economy. In fact, of all the abilities listed on O*NET, these four abilities are required at their highest level in the largest proportions of occupations.

Deductive reasoning is more highly demanded than inductive reasoning- though both are valued in over 22 percent of all occupations. Speech clarity together with the other verbal abilities highlights the importance of effective communications in the transmission of information in the workplace.

Summary

Education reform has shifted to focus on these key competencies, particularly as they pertain to life and career skills. The move towards making people both college and career ready essentially amounts to finding ways to learn basic knowledge, and transforming these capabilities into *deeper learning* in order to create a flexible and adaptable individual with the appropriate skills to survive in the 21st century. We are only at the very beginning of the dialogue and experimentation on exactly how we should teach these skills. What we do know, however, is that the learning curve is gentlest when these skills are introduced to students within a practical framework and appropriate context.

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