Are They Really Ready To Work?

Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce

The Conference Board

Partnership for 21st Century Skills

Corporate Voices for Working Families

ABOUT THIS REPORT

In collaboration, The Conference Board, Corporate Voices for Working Families, the Partnership for 21st Century Skills, and the Society for Human Resource Management conducted an in-depth study of the corporate perspective on the readiness of new entrants into the U.S. workforce by level of educational attainment. The study includes results from both an in-depth survey conducted during April and May 2006 and interviews with a sampling of a dozen HR and other senior executives. In addition, a Workforce Readiness Report Card is presented to provide an accessible snapshot of the basic knowledge and applied skills that are either "deficient" or "excellent" in those areas that employer respondents rate as "very important."

This research defines Workforce Readiness by asking employer respondents:

1. Whether or not the skill levels that new entrants are currently bringing to their jobs are deemed "excellent," "adequate," or "deficient,"
2. What basic knowledge and applied skills they consider "very important," "important," or "not important." Basic knowledge refers to the academic subjects and skills acquired in school. Applied skills refer to those that enable new entrants to use what they learned in school to perform in the workplace. (See Definition of Terms, pages 15–16.)
3. How the importance of these skills may change over the next five years,
4. What emerging content areas are considered "most critical" over the next five years, and
5. What are the nature and costs of remedial training or initiatives, if basic skills are lacking.

The data are typically presented throughout the report separately for high school, two-year college/technical school, and four-year college levels.

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The Partnership for 21st Century Skills has emerged as the leading advocacy organization focused on infusing 21st century skills into education. The organization brings together the business community, education leaders, and policymakers to define a powerful vision for 21st century education to ensure every child's success as citizens and workers in the 21st century. The Partnership encourages schools, districts and states to advocate for the infusion of 21st century skills into education and provides tools and resources to help facilitate and drive change.

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Presidents' Letter

What skills are necessary for success in the workplace of the 21st century? And do new entrants to the workforce, graduates of high school, two-year and four-year colleges have those skills? These and other questions were posed in a survey of human resource professionals mounted in the spring of 2006 by The Conference Board, Corporate Voices for Working Families, the Partnership for 21st Century Skills and the Society for Human Resource Management. It is our hope that through our combined resources, reputations, and strong member bases that the business community, educators, policy makers, students and their families will listen to what employers collectively think of the new workforce in America. The results indicate that the U.S. is not doing enough, fast enough, to prepare for a vibrant economic future for our children and our nation.

Young people need a range of skills, both basic academic skills as well as the ability to apply these skills and knowledge in the workplace. The survey results indicate that far too many young people are inadequately prepared to be successful in the workplace. At the high school level, well over one-half of new entrants are deficiently prepared in the most important skills—*Oral* and *Written Communications*, *Professionalism/Work Ethic*, and *Critical Thinking/Problem Solving*. College graduates are better prepared, with lower levels of deficiency on the most important skills, but too few are excelling. Only about one-quarter of four-year college graduates are perceived to be excellent in many of the most important skills, and more than one-quarter of four-year college graduates are perceived to be deficiently prepared in *Written Communications*.

How can the United States continue to compete in a global economy if the entering workforce is made up of high school graduates who lack the skills they need, and of college graduates who are mostly "adequate" rather than "excellent"? The quandary is particularly problematic because it comes just as the workforce is entering a period of realignment. As the baby-boomers retire—taking their skills and knowledge with them—America faces a shortage of available workers. This report indicates that the pool of talented workers available is even smaller.

So, what are the solutions? All of us must do our part to ensure that our students are well-prepared for the workforce demands of the 21st century. The education and business communities must agree that applied skills integrated with core academic subjects are the "design specs" for creating an educational system that will prepare our high school and college graduates to succeed in the modern workplace and community life. These skills are in demand for all students, regardless of their future plans, and will have an enormous impact on our students' ability to compete.

Business leaders must take an active role in outlining the kinds of skills we need from our employees for our companies and economy to thrive. This report is a first step in articulating these necessary skills. But we can do much more than that. As business leaders, we must also play a role in creating opportunities for young people to obtain the skills they need. Businesses can partner with schools and other organizations that work with young people to provide internships, job shadowing programs and summer jobs. Businesses can encourage their employees to serve as mentors and tutors. Businesses can invest in programs at the local and national level that have demonstrated their ability to improve outcomes for young people. Finally, business leaders can use their expertise in innovation and management to help identify new and creative solutions.

This report underscores the importance of increased workforce readiness. This requirement is now more important than ever because of our increasingly complex knowledge- and technology-based global economy. The business community must speak with one voice: new entrants to the U.S. workforce must be equipped with the basic knowledge and applied skills necessary to be competitive in the global economy of the 21st century. We hope the messages found in the results of this study will inspire action.

Richard E. Cavanagh
President and CEO
The Conference Board

Ken Kay
President
Partnership for 21st Century Skills

Donna Klein
President and CEO
Corporate Voices for Working Families

Susan R. Meisinger
President and CEO
Society for Human Resource Management

Executive Summary

The future U.S. workforce is here—and it is woefully ill-prepared for the demands of today's (and tomorrow's) workplace. So say employers in a unique study by The Conference Board, Corporate Voices for Working Families, Partnership for 21st Century Skills, and the Society for Human Resource Management, which looks at the readiness of new entrants to the workforce. Knowing how employers view these new entrants is an important first step in enabling both these new entrants and U.S. business to succeed on the global economic playing field.

The four participating organizations jointly surveyed over 400 employers across the United States. These employers articulate the skill sets that new entrants—recently hired graduates from high school, two-year colleges or technical schools, and four-year colleges—need to succeed in the workplace. Among the most important skills cited by employers:

- Professionalism/Work Ethic
- Oral and Written Communications
- Teamwork/Collaboration and
- Critical Thinking/Problem Solving.

In fact, the findings indicate that applied skills[1] on all educational levels trump basic knowledge and skills, such as *Reading Comprehension* and *Mathematics*. In other words, while the "three Rs" are still fundamental to any new workforce entrant's ability to do the job, employers emphasize that applied skills like *Teamwork/Collaboration* and *Critical Thinking* are "very important" to success at work.

Basic Knowledge/Skills	Applied Skills
English Language (spoken)	Critical Thinking/Problem Solving
Reading Comprehension (in English)	Oral Communications
Writing in English (grammar, spelling, etc.)	Written Communications
Mathematics	Teamwork/Collaboration
Science	Diversity
Government/Economics	Information Technology Application
Humanities/Arts	Leadership
Foreign Languages	Creativity/Innovation
History/Geography	Lifelong Learning/Self Direction
	Professionalism/Work Ethic
	Ethics/Social Responsibility

1 Applied skills refer to those skills that enable new entrants to use the basic knowledge acquired in school to perform in the workplace.

A Poor Report Card

When asked to assess new workforce entrants, employers report that many of the new entrants lack skills essential to job success. A Workforce Readiness Report Card[2] presents each of the three educational levels considered in the study (see page 41). Employers expect young people to arrive in the workplace with a set of basic and applied skills, and the Workforce Readiness Report Card makes clear that the reality is not matching expectations.

- The Workforce Readiness Report Card for new entrants with a high school diploma does not have a single item in the Excellence List. All 10 skills that a majority of employer respondents rate as "very important" to workforce success are on the Deficiency List.
- For two-year college-educated entrants, one "very important" applied skill—*Information Technology Application*—appears on the Excellence List while seven skills appear on the Deficiency List.
- Only for the four-year college-educated entrants to the workforce is the Excellence List longer than the Deficiency List on the Report Card.

Encouraging news, however, is the appearance of *Creativity/Innovation* on the Excellence List for four-year college-educated entrants. Creativity and innovation are important drivers for the economic progress of individual businesses and for the economy-at-large. It should be noted, however, that *Creativity/Innovation* barely clears the threshold for placement on the Excellence List.

The report's findings reflect employers' growing frustrations over the lack of skills they see in new workforce entrants. Which skills do employers view as "very important" now and which are increasing in importance?

A combination of basic knowledge and applied skills are perceived to be critical for new entrants' success in the 21st century U.S. workforce, but when basic knowledge and applied skills rankings are combined for each educational level, the top five "most important" are almost always applied skills.

- *Professionalism/Work Ethic*, *Teamwork/Collaboration* and *Oral Communications* are rated as the three "most important" applied skills needed by entrants into today's workforce.
- *Knowledge of Foreign Languages* will "increase in importance" in the next five years, more than any other basic skill, according to over 60 percent (63.3 percent) of the employer respondents.
- *Making Appropriate Choices Concerning Health and Wellness* is the No. 1 emerging content area for future graduates entering the U.S. workforce as reported by three-quarters of the employer respondents (76.1 percent).[3]
- *Creativity/Innovation* is projected to "increase in importance" for future workforce entrants, according to more than 70 percent (73.6 percent) of employer respondents. Currently, however, more than half of employer respondents (54.2 percent) report new workforce entrants with a high school diploma to be "deficient" in this skill set, and relatively few consider two-year and four-year college-educated entrants to be "excellent" (4.1 percent and 21.5 percent, respectively).

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2 Skills rated "very important" by a majority of employer respondents appear on either the Excellence List or on the Deficiency List of the Report Card if at least 1 in 5 employer respondents rate new entrants' skill readiness as "excellent" or "deficient," respectively.

3 Emerging content areas refer to topics not typically emphasized in schools today, such as personal financial responsibility.

> "Our nation's long-term ability to succeed in exporting to the growing global marketplace hinges on the abilities of today's students."
>
> J. Willard Marriott, Jr., Chairman and CEO, Marriott International, Inc.

In the next five years, college graduates will continue to increase in number among new hires. More than one-quarter of employer respondents (27.7 percent) project that over the next five years their companies will reduce hiring of new entrants with only a high school diploma. Almost 60 percent (58.8 percent) project that their companies will increase hiring of four-year college graduates and about half (49.5 percent) project increased hiring of two-year college/technical school graduates.

Improvements Needed

The results of this study leave little doubt that improvements are needed in the readiness of new workforce entrants, if "excellence" is the standard for global competitiveness. While the employer respondents report that some new workforce entrants have "excellent" basic knowledge and applied skills, significant "deficiencies" exist among entrants at every educational level, especially those coming directly from high school.

High School Graduates are:

- "Deficient" in the basic knowledge and skills of *Writing in English, Mathematics*, and *Reading Comprehension*,
- "Deficient" in *Written Communications* and *Critical Thinking/Problem Solving*, both of which may be dependent on basic knowledge and skills,
- "Deficient" in *Professionalism/Work Ethic*, and
- "Adequate" in three "very important" applied skills: *Information Technology Application*, *Diversity*, and *Teamwork/Collaboration*.

Two-Year and Four-College Graduates are:

- Better prepared than high school graduates for the entry-level jobs they fill,
- "Deficient" in *Writing in English* and *Written Communications*, and
- "Deficient" in *Leadership*.

Demographic Issues Warrant Action

With significant numbers of workers retiring over the next 10 years, the United States is facing a serious challenge in preparing students to meet workplace demands in an increasingly complex, knowledge- and technology-based, global economy. The results of this study reinforce the need for action. The demographic and economic changes facing the United States today have major implications for the worker, the workplace, and for U.S. competitiveness.

- Over half (57 percent) of U.S. CEOs report education and workforce preparedness is a "very important" or "most important" policy issue. Nearly three-quarters (73 percent) of those CEOs who report having difficulty finding qualified workers in the U.S. rate global competitiveness as "very important" or "most important."[4]
- Between 2000 and 2010, the number of workers ages 35-44 will decrease by 10 percent and those aged 16–24 will increase by 15 percent.[5]
- Between 2000 and 2015, about 85 percent of newly created U.S. jobs will require education beyond high school.[6]

4 *The Business Council Survey of Chief Executives: CEO Survey Results, February 2006*. The Business Council and The Conference Board, Chart 4 and p. 7.

5 U.S. Bureau of Labor Statistics, *Occupational Outlook Quarterly*, Winter 2001-02.

6 Gunderson, Steve; Jones, Roberts; and Scanland, Kathryn, *The Jobs Revolution: Changing How America Works*, 2005. Copywriters Incorporated, a division of The Greystone Group, Inc.

The study's findings are valuable to new (and future) workforce entrants, as well as to business people, educators, policy makers, and members of community organizations—anyone who has an interest in ensuring the success of new entrants into the U.S. workforce. The preparedness and skill levels of its workforce are critical factors in the ability of the United States to stay competitive in the 21st century.

Across the U.S. alarm bells are sounding in the business community about educating tomorrow's workforce. This study's results are consistent with important initiatives launched by a number of other business organizations in response to a growing talent gap and to the impact that gap has on the United States' ability to maintain its competitive lead in the world economy.[7] The business community, as represented in part by this research consortium, is speaking with one voice, calling for higher standards of workforce excellence consistent with the demands of the 21st century.

7 *Tapping America's Potential*, July 2005. The Business Roundtable; *Innovate America: Thriving in a World of Challenge and Change*, July 2004. National Innovation Initiative, Council on Competitiveness; Pawlowski, Brett, *Notes from the 2005 Business Education Network Summit*, October 2005. U.S. Chamber of Commerce, DeHavill and Associates; *2005 Skills Gap Report—A Survey of the American Manufacturing Workforce*, November 2005. National Association of Manufacturers, Manufacturers Institute, and Deloitte Consulting LLP.

Summary of Results by Educational Level

High School Graduate Entrants

Falling Short in *Overall Preparation* for Entry-Level Jobs

Over 40 percent (42.4 percent) of employer respondents rate new entrants with a high school diploma as "deficient" in their *Overall Preparation* for the entry-level jobs they typically fill. Almost the same percentage (45.6 percent) rate the *Overall Preparation* of high school graduate entrants as "adequate," but almost no one (less than ½ of 1 percent—0.2 percent) rates their *Overall Preparation* as "excellent."

Many Report "Deficiencies" in Three "Very Important" Basic Skills

Writing in English—72.0 percent of employer respondents rate new entrants with a high school diploma as "deficient." Almost half (49.4 percent) of them say basic *Writing in English*, including grammar and spelling, are "very important" for high school graduates' successful job performance.

Mathematics—53.5 percent of employer respondents report high school graduate entrants as "deficient." Almost one-third of respondents (30.4 percent) say knowledge of *Mathematics* is "very important" for this group of entrants.

Reading Comprehension —38.4 percent of employer respondents report high school graduate entrants as "deficient." Nearly two-thirds of respondents (62.5 percent) say *Reading Comprehension* is "very important" for high school graduate entrants' success in the workforce.

Most Report "Deficiencies" in Applied Skills

Written Communications—80.9 percent of employer respondents report high school graduate entrants as "deficient." More than half (52.7 percent) say *Written Communications*, which includes writing memos, letters, complex reports clearly and effectively, is "very important" for high school graduates' successful job performance.

Professionalism/Work Ethic—70.3 percent of employer respondents report high school graduate entrants as "deficient." *Professionalism/Work Ethic*, defined as "demonstrating personal accountability, effective work habits, e.g., punctuality, working productively with others, time and workload management" is rated "very important" for high school graduates' successful job performance by 80.3 percent of employer respondents.

Critical Thinking/Problem Solving—69.6 percent of employer respondents report high school graduate entrants as "deficient." More than half of the employer respondents (57.5 percent) indicate that *Critical Thinking/Problem Solving* abilities are "very important" to successful performance on the job for this group of new entrants.

"Adequate" in Three "Very Important" Applied Skills

While "excellence" is infrequently reported, over 60 percent of employer respondents rate the preparation of high school graduate entrants as "adequate" in three applied skills considered "very important" for successful job performance by a majority of employers—*Information Technology* (IT) *Application*, *Diversity*, and *Teamwork/Collaboration*.

IT Application—62.8 percent report high school graduate entrants' preparation is "adequate." *IT Application* is rated "very important" by 53.0 percent of employer respondents.

Diversity—61.8 percent report high school graduate entrants' preparation is "adequate." *Diversity* is rated "very important" by 52.1 percent of employer respondents.

Teamwork/Collaboration—60.9 percent of employer respondents rate high school graduate entrants' preparation as "adequate." *Teamwork/Collaboration* is considered "very important" by nearly three-quarters (74.7 percent) of employer respondents.

Two-Year and Four-Year College Graduates

"Adequate" in General Preparation for the Entry-Level Jobs They Typically Fill

Employer respondents were asked, in general, how they rated the preparation of recent graduates hired for entry-level jobs in their U.S. workplaces (*Overall Preparation*). The majority of employer respondents rate *Overall Preparation* of both two-year and four-year college graduates as "adequate" (70.1 percent and 64.5 percent, respectively) for the entry-level jobs they fill. A small percentage reports that two-year and four-year college-educated entrants are "excellent" in terms of their *Overall Preparation* (10.3 percent and 23.9 percent, respectively). On a more positive note, only a small percentage of employer respondents (10.8 percent and 8.7 percent, respectively) rates two-year and four-year college graduates as "deficient" in their *Overall Preparation* for work.

"Deficiencies" in Basic Knowledge of *Writing in English* and in *Written Communications*, Even with a College Diploma

Writing in English—46.4 percent of employer respondents report new workforce entrants with a two-year college diploma as "deficient," and over a quarter (26.2 percent) report that new workforce entrants with a four-year college diploma are "deficient." Almost two-thirds of employer respondents (64.9) say *Writing in English* is "very important" for two-year college graduates; almost 90 percent (89.7 percent) say these skills are "very important" for four-year college graduates.

Written Communications—47.3 percent and 27.8 percent of employer respondents, respectively, report new entrants with two-year and four-year college diplomas as "deficient." Almost three-quarters of the employer respondents (71.5 percent) say *Written Communications* is "very important" for two-year college graduates. For four-year college graduates, 93.1 percent say *Written Communications* is "very important."

"Deficiencies" in a "Very Important" Applied Skill: *Leadership*

Leadership—42.6 percent of employer respondents report two-year college-educated entrants as "deficient," and almost a quarter (23.8 percent) report four-year college-educated entrants "deficient." This "deficiency" is the second most frequently rated "deficient" skill for both two-and four-year college graduates. *Leadership* is rated as a "very important" applied skill for new entrants with a two-year college diploma by 45.4 percent of employer respondents. An overwhelming majority (81.8 percent) rate *Leadership* as "very important" for new entrants with a four-year college diploma.

Definition of Terms

The following are key terms used in the survey and interview process.

Adequate, Deficient, and **Excellent** refer to the three levels of proficiency presented on the survey which the employer respondents used for rating the basic knowledge and applied skills of new entrants into the workforce. In the context of this report, "deficient" means lacking or poorly prepared, "adequate" means sufficient or satisfactory preparation, and "excellent" refers to the highest level or superior preparation.

Applied Skills refer to those skills that enable new entrants to use the basic knowledge they have acquired in school to perform in the workplace. Applied skills include those based on cognitive abilities such as *Critical Thinking/Problem Solving*, as well as more social and behavioral skills such as *Professionalism/Work Ethic*. Some of the other applied skills, such as *Oral Communications* and *Teamwork/Collaboration*, combine both cognitive abilities and social skills. See list, page 16.

Basic Knowledge refers to (1) basic skills—*English Language (spoken), Reading Comprehension, Writing in English,* and *Mathematics*, and 2) other academic subjects: *Science, Government, Economics, Humanities/Arts, Foreign Languages,* and *History/Geography*. These are the basic skill and knowledge areas normally acquired in school and, for the most part, are the core academic subjects identified by the No Child Left Behind Act of 2001. See list, page 16.

Cognitive Abilities refer to mental learning and thinking abilities, such as language, reading, writing, and math skills. As defined, applied skills may be underpinned by cognitive abilities.

Core Competencies refer to the knowledge, skills, abilities and behaviors that contribute to an employee's job success and that are often included in corporate human resource development plans.

Emerging Content Areas refer to topics typically not emphasized in schools today, such as personal financial planning and career management.

Employer Respondents refer to those individuals completing the survey.

New Entrants refer to recent or new entrants with one of three levels of educational attainment: high school diploma, two-year college or technical school diploma, or four-year college diploma.

Post-secondary Graduates refer to both two-year college/technical school graduates and four-year college graduates.

Two-Year College in the context of the report includes technical schools when not explicitly stated.

List of Skills

Basic Knowledge/Skills*

English Language (spoken)
Reading Comprehension (in English)
Writing in English (grammar, spelling, etc.)
Mathematics
Science
Government/Economics
Humanities/Arts
Foreign Languages
History/Geography

Applied Skills **

Critical Thinking/Problem Solving—Exercise sound reasoning and analytical thinking; use knowledge, facts, and data to solve workplace problems; apply math and science concepts to problem solving.

Oral Communications—Articulate thoughts, ideas clearly and effectively; have public speaking skills.

Written Communications—Write memos, letters and complex technical reports clearly and effectively.

Teamwork/Collaboration—Build collaborative relationships with colleagues and customers; be able to work with diverse teams, negotiate and manage conflicts.

Diversity—Learn from and work collaboratively with individuals representing diverse cultures, races, ages, gender, religions, lifestyles, and viewpoints.

Information Technology Application—Select and use appropriate technology to accomplish a given task, apply computing skills to problem-solving.

Leadership—Leverage the strengths of others to achieve common goals; use interpersonal skills to coach and develop others.

Creativity/Innovation—Demonstrate originality and inventiveness in work; communicate new ideas to others; integrate knowledge across different disciplines.

Lifelong Learning/Self Direction—Be able to continuously acquire new knowledge and skills; monitor one's own learning needs; be able to learn from one's mistakes.

Professionalism/Work Ethic—Demonstrate personal accountability, effective work habits, e.g., punctuality, working productively with others, and time and workload management.

Ethics/Social Responsibility—Demonstrate integrity and ethical behavior; act responsibly with the interests of the larger community in mind.

*For the most part, this list of basic knowledge and skill areas includes the core academic subjects as identified by the No Child Left Behind Act of 2001.

**The list of applied skills was derived primarily from the Partnership for 21st Century Skills. In addition, several members of The Conference Board's Business and Education Council were consulted.

Part 1

Determining the Current Basic Knowledge and Applied Skill Requirements for Workforce Readiness

Employer respondents were asked to indicate which basic knowledge and applied skill areas (see Definition of Terms on pages 15–16) they rate as "not important," "important" or "very important" for new entrants' successful job performance. The findings indicate that, for the most part, what employer respondents rate as "very important" for entry-level jobs is similar across the three educational levels. However, their responses indicate that, in general, the importance of the basic knowledge and applied skill requirements for entry-level jobs increases as the educational level of those recent hires increased.

Basic Knowledge—High School/College

For high school graduates, the top five basic knowledge areas and skills are: *Reading Comprehension (in English)* with nearly two-thirds (62.5 percent) of employer respondents rating this skill as "very important," followed by *English Language (spoken)* (61.8 percent), *Writing in English* (49.4 percent), *Mathematics* (30.4 percent), and *Foreign Languages* (11.0 percent). Knowledge of *Science* is close behind *Foreign Languages* with 9.0 percent saying *Science* is "very important" for high school graduates.

For two-year college graduates, nearly three-quarters of the employer respondents say *Reading Comprehension (in English)* (71.6 percent) and *English Language (spoken)* (70.6 percent) are "very important" for successful job performance. Over 60 percent (64.9 percent) rate *Writing in English* as "very important," while 44.0 percent and 21.2 percent rate *Mathematics* and *Science* as "very important," respectively.

For four-year college graduates, the majority of the employer respondents rate *Writing in English* (89.7 percent), *English Language (spoken)* (88.0 percent), and *Reading Comprehension (in English)* (87.0 percent) as "very important" for successful job performance, while almost two-thirds (64.2 percent) rate *Mathematics* as "very important." One-third (33.4 percent) rate *Science* as "very important." In comparison, less than 20 percent rate the other academic areas, such as *Government/Economics* (19.8 percent), and *History/Geography* (14.1 percent), as "very important."

Table 1

A majority of employer respondents view *Reading Comprehension* and *English Language* as "very important" basic skills for job success for new workforce entrants at all education levels.

High School Graduates

Rank	*Basic Knowledge/Skills*	
1	Reading Comprehension	62.5%
2	English Language	61.8
3	Writing in English	49.4
4	Mathematics	30.4
5	Foreign Languages	11.0
6	Science	9.0
7	Government/Economics	3.5
8	History/Geography	2.1
9	Humanities/Arts	1.8

Basic knowledge/skills rank ordered by percent rating as "very important."
Number of respondents varied for each question, ranging from 336 to 361.

Two-Year College Graduates

Rank	*Basic Knowledge/Skills*	
1	Reading Comprehension	71.6%
2	English Language	70.6
3	Writing in English	64.9
4	Mathematics	44.0
5	Science	21.2
6	Foreign Languages	14.1
7	Government/Economics	6.7
8	Humanities/Arts	4.4
9	History/Geography	3.6

Basic knowledge/skills rank ordered by percent rating as "very important."
Number of respondents varied for each question, ranging from 334 to 360.

Four-Year College Graduates

Rank	*Basic Knowledge/Skills*	
1	Writing in English	89.7%
2	English Language	88.0
3	Reading Comprehension	87.0
4	Mathematics	64.2
5	Science	33.4
6	Foreign Languages	21.0
7	Government/Economics	19.8
8	History/Geography	14.1
9	Humanities/Arts	13.2

Basic knowledge/skills rank ordered by percent rating as "very important."
Number of respondents varied for each question, ranging from 382 to 409.

Writing in English—High School/College

Writing in English is rated "very important" for high school graduates by nearly half of the employer respondents (49.4 percent). This skill becomes increasingly "important" for two-year and four-year college graduates (64.9 percent and 89.7 percent respectively), according to employer respondents.

Mathematics—High School/College

Thirty percent (30.4 percent) of employer respondents rate knowledge of *Mathematics* as "very important" for high school graduates' successful job performance at the entry level. Compare this to the 44.0 percent and 64.2 percent of employer respondents who rate *Mathematics* as "very important" for two-year and four-year college graduates, respectively.

Science—High School/College

Nine percent (9.0 percent) of employer respondents rate *Science* as "very important" for high school graduates. However, 20.3 percent of the employer respondents in the manufacturing industries rate *Science* as "very important" for high school graduates. While it may be that the employer respondents do not view *Science* as a "very important" requirement for a high school graduate's entry-level job, 39.4 percent of employer respondents rate *Science* as "important" for high school graduate entrants' successful job performance. *Science* increases in importance for two-year and four-year college graduates. More than one in five respondents (21.2 percent) rate *Science* as "very important" for two-year college graduates, and 33.4 percent for four-year college graduates.

Foreign Languages—High School/College

The knowledge of *Foreign Languages* is included in the top five as a "very important" basic skill for high school graduates. However, the proportion of employer respondents rating this skill as "very important" is low in comparison with the other knowledge and skill components appearing in the top five. Only 11.0 percent of employer respondents rate knowledge of *Foreign Languages* as "very important" for current job performance. Yet, as illustrated on page 49, 63.3 percent of responding employers report *Foreign Languages* as increasingly "important" for high school and college graduates—more so than any other basic knowledge area or skill.

Other Basic Knowledge—High School/College

No more than 20 percent of employer respondents rate the other academic subjects (*Government/Economics*, *Humanities/Arts* and *History/Geography*) as "very important" for high school, two-year college, and four-year college graduates. Notable percentages of employer respondents (a quarter or more), however, rate these other knowledge areas as "important" for the three educational groups. As illustrated in the interviews and the examples reported, when those other basic knowledge areas are considered in the context of workplace needs and emerging trends, employer respondents' comments suggest that basic knowledge beyond reading, writing, and mathematics is relevant.

Applied Skills[8]—High School/College

When asked to rate the importance of applied skills to current high school and college graduates' successful entry-level job performance, substantial majorities of employer respondents report applied skills as being "very important," their responses were consistent across the three educational levels.

For high school graduates, the five most frequently reported applied skills considered "very important" for successful entry level job performance are: *Professionalism/Work Ethic* (80.3 percent), *Teamwork/Collaboration* (74.7 percent), *Oral Communications* (70.3 percent), *Ethics/Social Responsibility* (63.4 percent), and *Critical Thinking/Problem Solving* (57.5 percent).

For two-year college graduates, the five most frequently reported applied skills considered "very important" are: *Professionalism/Work Ethic* (83.4 percent), *Teamwork/Collaboration* (82.7 percent), *Oral Communications* (82.0 percent), *Critical Thinking/Problem Solving* (72.7 percent), and *Written Communications* (71.5 percent).

For four-year college graduates, the five most frequently reported applied skills considered "very important" are: *Oral Communications* (95.4 percent), *Teamwork/Collaboration* (94.4 percent), *Professionalism/Work Ethic* (93.8 percent), *Written Communications* (93.1 percent), and *Critical Thinking/Problem Solving* (92.1 percent).

Table 2

Professionalism, *Communications*, *Teamwork*, and *Critical Thinking* among top five "very important" applied skills for job success for new workforce entrants at all education levels.

High School Graduates

Rank	*Applied Skill*	
1	Professionalism/Work Ethic	80.3%
2	Teamwork/Collaboration	74.7
3	Oral Communications	70.3
4	Ethics/Social Responsibility	63.4
5	Critical Thinking/ Problem Solving	57.5
6	Information Technology Application	53.0
7	Written Communications	52.7
8	Diversity	52.1
9	Lifelong Learning/ Self Direction	42.5
10	Creativity/Innovation	36.3
11	Leadership	29.2

Basic skills rank ordered by percent rating as "very important."
Number of respondents varied for each question, ranging from 352 to 356.

Two-Year College/Tech. School Grads.

Rank	*Applied Skill*	
1	Professionalism/Work Ethic	83.4%
2	Teamwork/Collaboration	82.7
3	Oral Communications	82.0
4	Critical Thinking/ Problem Solving	72.7
5	Written Communications	71.5
6	Ethics/Social Responsibility	70.6
7	Information Technology Application	68.6
8	Lifelong Learning/ Self Direction	58.3
9	Diversity	56.9
10	Creativity/Innovation	54.2
11	Leadership	45.4

Basic skills rank ordered by percent rating as "very important."
Number of respondents varied for each question, ranging from 354 to 359.

Four-Year College Graduates

Rank	*Applied Skill*	
1	Oral Communications	95.4%
2	Teamwork/Collaboration	94.4
3	Professionalism/Work Ethic	93.8
4	Written Communications	93.1
5	Critical Thinking/ Problem Solving	92.1
6	Ethics/Social Responsibility	85.6
7	Leadership	81.8
8	Information Technology Application	81.0
9	Creativity/Innovation	81.0
10	Lifelong Learning/ Self Direction	78.3
11	Diversity	71.8

Basic skills rank ordered by percent rating as "very important."
Number of respondents varied for each question, ranging from 402 to 409.

8 As noted in Definition of Terms, Applied Skills refer to those skills that enable new entrants to use the basic knowledge they have acquired in school to perform in the workplace.

Applied Skills and Basic Knowledge: Combining and Ranking

Before examining the specific applied skills, it is valuable to consider the relative rankings of a combined list of basic knowledge areas and applied skills. One difficulty in defining the ideal skill set needed for new entrants' workforce readiness is determining the relative importance of basic knowledge, such as *Reading Comprehension*, *Writing in English*, *Mathematics* and *English Language* skills, and the applied skills, which are often considered to be more social or behavioral. While several of the applied skills are social or behavioral in nature, others, such as *Critical Thinking/Problem Solving* and *Creativity/Innovation*, are also based on cognitive abilities (see Definition of Terms, pages 15–16). To determine how employers view the relative importance of basic knowledge versus applied skills, both skill sets are combined and the overall rankings are considered for each of the three educational levels in Tables 3, 4, and 5.[9]

Table 3

For new entrants with a high school diploma, applied skills are four of the top five "very important" skills in combined ranking with basic knowledge and skills.

Rank	*Skill*	
1	Professionalism/Work Ethic*	80.3%
2	Teamwork/Collaboration*	74.7
3	Oral Communications*	70.3
4	Ethics/Social Responsibility*	63.4
5	Reading Comprehension	62.5
6	English Language	61.8
7	Critical Thinking/ Problem Solving*	57.5
8	Information Technology Application*	53.0
9	Written Communications*	52.7
10	Diversity*	52.1
11	Writing in English	49.4
12	Lifelong Learning/ Self Direction*	42.5
13	Creativity/Innovation*	36.3
14	Mathematics	30.4
15	Leadership*	29.2
16	Foreign Languages	11.0
17	Science	9.0
18	Government/Economics	3.5
19	History/Geography	2.1
20	Humanities/Arts	1.8

Basic and applied skills rank ordered by percent rating as "very important."
Number of respondents varied for each question, ranging from 336 to 361.
* Indicates an applied skill

Table 4

For new entrants with a two-year college/technical school diploma, applied skills are four of the top five "very important" skills in combined ranking with basic knowledge and skills.

Rank	*Skill*	
1	Professionalism/Work Ethic*	83.4%
2	Teamwork/Collaboration*	82.7
3	Oral Communications*	82.0
4	Critical Thinking/ Problem Solving*	72.7
5	Reading Comprehension	71.6
6	Written Communications*	71.5
7	English Language	70.6
8	Ethics/Social Responsibility*	70.6
9	Information Technology Application*	68.6
10	Writing in English	64.9
11	Lifelong Learning/ Self Direction*	58.3
12	Diversity*	56.9
13	Creativity/Innovation*	54.2
14	Leadership*	45.4
15	Mathematics	44.0
16	Science	21.2
17	Foreign Languages	14.1
18	Government/Economics	6.7
19	Humanities/Arts	4.4
20	History/Geography	3.6

Basic and applied skills rank ordered by percent rating as "very important."
Number of respondents varied for each question, ranging from 334 to 360.
* Indicates an applied skill

Table 5

For new entrants with a four-year college diploma, applied skills are the top five "very important" skills in combined ranking with basic knowledge and skills.

Rank	*Skill*	
1	Oral Communications*	95.4%
2	Teamwork/Collaboration*	94.4
3	Professionalism/Work Ethic*	93.8
4	Written Communications*	93.1
5	Critical Thinking/ Problem Solving*	92.1
6	Writing in English	89.7
7	English Language	88.0
8	Reading Comprehension	87.0
9	Ethics/Social Responsibility*	85.6
10	Leadership*	81.8
11	Information Technology Application*	81.0
12	Creativity/Innovation*	81.0
13	Lifelong Learning/ Self Direction*	78.3
14	Diversity*	71.8
15	Mathematics	64.2
16	Science	33.4
17	Foreign Languages	21.0
18	Government/Economics	19.8
19	History/Geography	14.1
20	Humanities/Arts	13.2

Basic and applied skills rank ordered by percent rating as "very important."
Number of respondents varied for each question, ranging from 382 to 409.
* Indicates an applied skill

9 It should be noted that employers may assess as more important those skills they can observe directly. Applied skills rather than basic skills are more likely to be observed in day-to-day job performance.

For high school graduates, Table 3 illustrates the skills ranking, combining both basic and applied. Of the five skills most frequently rated "very important," the four at the top of the list are all applied skills: *Professionalism/Work Ethic* (80.3 percent), *Teamwork/Collaboration* (74.7 percent), *Oral Communications* (70.3 percent), *Ethics/Social Responsibility* (63.4 percent); only one basic skill, *Reading Comprehension* (62.5 percent), is ranked in the top five.

For two-year college graduates, Table 4 illustrates the mixed basic and applied skills ranking. Again, of the five skills most frequently rated "very important," the four at the top of the list are all applied skills: *Professionalism/Work Ethic* (83.4 percent), *Teamwork/Collaboration* (82.7 percent), *Oral Communications* (82.0 percent), *Critical Thinking/Problem Solving* (72.7 percent). For new entrants at the two-year college level, *Reading Comprehension* (71.6 percent) is fifth and the only basic skill in the top five.

For four-year college graduates, Table 5 shows the mixed rankings of both basic knowledge and applied skills. In this case, the top five most important skills are all applied skills: *Oral Communications* (95.4 percent), *Teamwork/Collaboration* (94.4 percent), *Professionalism/Work Ethic* (93.8 percent), *Written Communications* (93.1 percent), and *Critical Thinking/Problem Solving* (92.1 percent).

Clearly, applied skills dominate the top five on the combined ranking list. And these skills build on each other. Successful *Teamwork/Collaboration*, an important skill across all three educational levels, depends in part on successful *Oral* and *Written Communications* and *Critical Thinking/Problem Solving* skills. It is also important to note that several of the basic knowledge skills, such as *Reading Comprehension*, *English Language (spoken)*, *Writing in English*, and *Mathematics* underpin the applied skills that the employer respondents say are "very important" for all new entrants into the workforce. Excellence in applied skills such as *Critical Thinking/Problem Solving*, *Oral* and *Written Communications*, and *Teamwork/Collaboration* is supported by a strong foundation in the "three Rs." For example, knowledge of math concepts may help one think analytically and critically. Strong basic writing and speaking skills underpin effective communication. In the end, it is the application of math concepts and writing techniques used to conduct business more efficiently that appears to be most valued by the employer respondents.

It should be noted, however, that at all three educational levels, basic English language skills essentially tie in ranking with the fifth ranked skill: 61.8 percent of employer respondents say *English Language (spoken)* is "very important" for high school graduates, 70.6 percent for two-year college graduates, and 88.0 percent for four-year college graduates. In addition, at the four-year and two-year college levels, *Writing in English* is rated "very important" by 89.7 percent and 64.9 percent of employer respondents, respectively.

Applied Skills in the 21st Century Workplace

What follows is a closer examination of the five most frequently reported applied skills employer respondents rate as "very important:" *Professionalism/Work Ethic*, *Oral and Written Communications*, *Teamwork/Collaboration*, *Critical Thinking/Problem Solving*, and *Ethics/Social Responsibility*.

Professionalism/Work Ethic

A "very important" skill for all new entrants into the workforce is *Professionalism/Work Ethic*, which is rated highly by employer respondents across all three educational levels. 80.3 percent say *Professionalism/Work Ethic* is "very important" for high school graduates, 83.4 percent for two-year college graduates, and 93.8 percent for four-year college graduates. Employer respondents were almost unanimous in their emphasis on *Professionalism/Work Ethic*, regardless of industry, size of firm, or region.

The follow-up interviews with the employer respondents reinforce those findings. Many of the human resource executives interviewed throughout this study emphasize the need for proper dress, strong interviewing and communication skills and an understanding of the job application process. Great River Health Systems (GRHS), based in West Burlington, Iowa, includes a major hospital, outpatient, and nursing home facilities. GRHS hires high school, two-year and four-year college graduates in appropriately defined entry-level positions. There, the emphasis on professionalism occurs before the individual is hired. The ability to express oneself clearly and articulately is critical, according to Jim Kammerer, Director of Human Resources at GRHS. "More and more we are doing behavioral interviewing during which we ask high school graduates specific questions about their experiences, such as: 'Describe how you worked together with classmates on a special project in high school.' 'What role did you play?' 'Did the team work well?' 'What were the problems?' 'What were the outcomes of the project?' "

Other employer respondents express the need for the entrant to have a sense of personal responsibility, professionalism and commitment to the job. "Just making good grades on a test doesn't necessarily make a good employee. It's the work ethic that makes the difference," notes Chyrel Fortner, Human Resources Director at Pan Pacific Products, a small manufacturer in Oklahoma. Several members of The Conference Board's Business and Education Council, primarily representing Fortune 500 companies, also pointed to the need for their new entrants—mostly college graduates—to have clear expectations of the business world and some sense of corporate procedures.

Oral and *Written Communications*

Oral Communications ranks among the top five applied skills reported by employer respondents as "very important" across all three educational levels, with *Written Communications* becoming increasingly "important" for two-year and four-year college graduates. Seventy percent (70.3 percent) of employer respondents report that *Oral Communications* skills are "very important" for high school graduates entering the workforce, 82.0 percent for two-year college graduates, and 95.4 percent for four-year college graduates. More than half (52.7 percent) of employer respondents say *Written Communications* is "very important" for high school graduates' job performance; 71.5 percent for two-year college graduates and 93.1 percent for four-year college graduates.

> "To succeed in today's workplace, young people need more than basic reading and math skills. They need substantial content knowledge and information technology skills; advanced thinking skills, flexibility to adapt to change; and interpersonal skills to succeed in multi-cultural, cross-functional teams."
>
> J. Willard Marriott, Jr., Chairman and CEO, Marriott International, Inc.

At the high school level communications is considered essential to teamwork at Pan Pacific Products where high school graduates are hired in entry-level production jobs operating chop saws. "Three people are on a team, and they need to be able to communicate with one another and also with those at different stations on the production line. We want them to get involved. If they see a problem on the assembly line, like poor quality materials, we want them to take the initiative and communicate the need to set the materials aside—not wait to be told what to do by the supervisor," notes Fortner.

Communications skills are also important at GlaxoSmithKline (GSK), according to Annette Byrd, U.S. Work Life Support Manager, who says that college graduate entrants are in front-line positions and have direct contact with customers, for example, entry-level marketing and sales positions. The company provides extensive technical orientation and training to educate its sales and marketing employees about its many products, to understand legal issues concerning compliance with the Federal Drug Administration. "We hire many [college] graduates in sales, and they need to be extremely well-rounded since they are talking with a variety of people—doctors, pharmacists, health-care plan administrators, patients—these are all our customers. And salespeople need to relate to them. Their relationship with the customer is critical."

Teamwork/Collaboration and *Critical Thinking/Problem Solving*

Teamwork/Collaboration skills rank second in importance for all new entrants to the workforce, regardless of educational level, and *Critical Thinking/Problem Solving* skills are among the top five "most important" applied skills for all educational levels. Three-quarters of respondents (74.7 percent) say *Teamwork/Collaboration* is "very important" for high school graduates' successful job performance; 82.7 percent for two-year college graduates, and 94.4 percent for four-year college graduates. In addition, 57.5 percent of employer respondents say *Critical Thinking/Problem Solving* is "very important" for high school graduates; 72.7 percent for two-year college graduates, and 92.1 percent for college graduates.

At Great River Health Systems, high school graduates are hired in housekeeping, dietary, and grounds maintenance positions. Ron Halligan, Vice President for Human Resources, emphasizes that in organizations committed to high levels of performance, effective teamwork also requires

effective problem-solving—at all levels. "Every employee needs to understand how they fit into the strategic plan; it takes all 1,700 employees to reach our goals, and each employee needs to understand how their job impacts those goals." Teams operate at every level of the organization, and every new employee goes through 24 hours of customer service training—even if the job does not entail direct customer contact. "We need everyone in this organization—including those in the entry level positions, such as housekeeping—to function as a team, to think critically in order to solve problems as they come up, and to think on their own—not to act as robots taking orders."

At Shell Trading and Shipping, William Fitzpatrick, Vice President of Human Resources, indicates that "it is a plus when high school graduates demonstrate qualities that set them apart and reveal that they are capable of handling increased responsibilities. We are giving them more and more responsibility, if they demonstrate problem-solving and project-management skills, and if they want the added responsibility."

Ethics/Social Responsibility

Nearly two-thirds of respondents (63.4 percent) report *Ethics/Social Responsibility* as "very important" for high school graduates, 70.6 percent for two-year college graduates and 85.6 percent for four-year college graduates. The definition of *Ethics/Social Responsibility* is two-fold: "Demonstrate integrity and ethical behavior; act responsibly with interests of larger community in mind." Employer respondents' comments reflect both elements.

Ron Halligan of Great River Health Systems emphasizes the importance of individual responsibility and integrity in upholding high standards when carrying out job responsibilities, whether it is a Ph.D. in chemistry involved in research or a housekeeper cleaning the patient rooms. "While the vast majority of housekeepers may never come into direct contact with patients, they have to understand that the patient rooms they are cleaning have to be absolutely infection-free...the young people we hire have to understand that helping patients is a way of life here."

When asked what qualities they look for in young people entering the workforce, respondents from Quest Diagnostics and from Shell—which hire college graduates primarily—view community involvement as a way to cultivate interpersonal skills and gain experience related to job performance.

"We're looking for people who can build relationships, have presence, and have intellectual capacity, people who have been involved in the community, in civic activities, individuals who can engage with people both inside and outside the company," notes William Fitzpatrick of Shell Trading and Shipping.

Learning Through Real-World Examples

The following three initiatives illustrate how opportunities can be created that give students a chance to cultivate applied skills needed in the workplace and to understand how learning connects to careers or to solving real-world problems. The first describes CVS Corporation's public-private partnership, which connects K-12 schools, community colleges, and four-year colleges in a program called Pathways to Pharmacy. The next two examples describe how "project-based learning" is carried out in two places: online and in a special high school. On the Internet, student teams around the world connect through ThinkQuest, a multinational competition sponsored by Oracle Education Foundation. These teams are designing educational websites on globally relevant topics. In California, students at New Technology High School use project-based learning to further their skills at this school created in 1996 by local educators, business leaders, and parents in response to the need for a high-tech work force in the Napa Valley.

Pathways to Pharmacy

The CVS Corporation's Pathways to Pharmacy program is an excellent example of a public-private partnership that prepares high school students in inner cities and impoverished rural areas for careers as pharmacists—considered to be among the faster-growing occupations with median annual earnings of $84,900, according to the Bureau of Labor Statistics.[10] Stephen Wing, CVS Director of Government Programs, notes that the Pathways to Pharmacy program focuses on school districts where participation and success in the sciences and math have resulted in special challenges. "These are inner city and rural districts where there has been a shortage of teachers, particularly in the sciences, and a shortage of textbooks. Students can't even take books home; they have to share."

The program starts early, in elementary school, with pharmacists speaking to students about their careers. It continues in middle school, where students job shadow pharmacists and learn more about the job and career paths. High school students, once accepted into the program, take the required math, chemistry, and biology courses. Retired pharmacists are recruited to become mentors and help the students with any problems as they go through the program. The high school program starts in the sophomore year; paid eight-week summer internships usually start between the junior and senior years. In the first three weeks of the internships, students meet college professors and take special research and development courses in local universities. The next five weeks the students work in stores as pharmacy assistants or as technicians. "This is where they really start to understand why they're learning certain things—like the metric system. They see how it applies to the work they're doing. Kids learn by example," notes Wing.

In addition to taking the core science and math courses, along the way students are learning valuable job-related skills, including proper dress and conduct for interviews, resume writing, and interpersonal skills for dealing with customers. Of all the skills taught, Wing believes the most central is lifelong learning skills. "People have to retool, be flexible, and continue to learn. It may not mean going back to school to get a degree but taking courses to acquire skills at different points in their lifetime." After the eight-week internship, students become certified as the highest level of pharmacy technician. Upon graduation from high school they enter a two-year pharmacy apprenticeship, which combines course work at a local community college and working as a pharmacist's assistant in a CVS store. They are then prepared to enter a four-year college degree program in pharmacy.

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10 *Occupational Outlook Handbook*, 2006–07 Edition. Bureau of Labor Statistics, U.S. Department of Labor, www.bls.gov

Scholarships and loan programs are available to help those with the least financial resources. Up to $5,000 a year is forgiven in their loans for each year they stay with the company. The program is rigorous and competitive—only the most motivated get in. "The results have been phenomenal," notes Wing. "We've seen kids who were doing terribly or even failing, and this program has turned them around. …These kids are often the first people in their families to graduate high school. Some are immigrants. In some cases, the parents don't speak English." He adds that the program has been particularly successful in recruiting young black males—a group that traditionally has been hard to reach and that experiences high dropout rates. In addition, four-year pharmacy college programs have had difficulty recruiting minorities.

The Pathways program is nationwide. Critical to its success is the close cooperation of all the partners involved: the employers, students and parents, K-12 schools, community colleges, and universities. By starting early, the program develops students' interest in science and math in elementary and middle school, keeps them motivated by connecting them to the work world in high school, and provides them with educational opportunities at community colleges and universities.

• • •

Project-Based Learning (PBL) is a teaching model that organizes and focuses students' learning on interdisciplinary projects; involves students in investigative, problem-solving and decision-making activities; is student-driven to some degree; and incorporates real-life challenges.[11] The two examples that follow show PBL in action.

ThinkQuest

This multinational competition offers unique project-based learning experiences to students and teachers around the world. Students are connected through the Internet and work in cross-cultural teams with teachers acting as coaches. These diverse student teams research various topics to create educational websites and to compete for prizes. The websites are published in ThinkQuest's online library, which currently includes over 5,500 websites—a rich online resource that can be used by other students for homework or for further research and by teachers who can download or transmit portions for use in the classroom.

The websites cover a wide range of topics. The 2006 prize winners included, for example: "A Dollar-A-Day" which examines poverty in developing nations and discusses solutions for reducing poverty, "e-divide: Information Inequality," which examines the impact of the digital divide on young people and proposes action plans to bridge the gap. "Math Maze—Be Maze-merised," is a website designed "to make more and more people love math" by discussing how math applies in various fields, such as architecture, medicine, nature, music, and information technology. Websites are designed by and for students in three different age categories: 19 and under, 15 and under, and 12 and under. Some of the websites designed by elementary- and middle-school students include: "Chicken Dumplings for Your Mind" about the farming industry, and "Mom! You're Embarrassing Me" which includes a survey and interviews with adolescent girls and examines how different cultures influence mother-daughter relationships.

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11 See *A Review of Research on Project-Based Learning*, by John W. Thomas. Ph.D., The Autodesk Foundation, March 2000; (http://www.bobpearlman.org/BestPractices/PBL_Research.pdf)

The purpose of ThinkQuest is to "get students involved in complex, challenging problems and projects that have meaning or relevance to the real world or to their own lives and enable then to develop skills in critical thinking, computing, creativity, collaboration, communication and cross-cultural understanding," according to Bernie Trilling, Senior Director of Oracle Educational Foundation. "The need for 'project learning and management' skills for high school and college graduates entering the work world is critical," says Trilling, "yet it is a sorely missing component of the traditional K-12 and postsecondary school curriculum. The lingua franca in business—it's mostly projects. Why aren't we teaching more of that? Projects make up at least 50 percent of the work in jobs—even in some low-level jobs."

At the college level, students are acquiring great theoretical knowledge, notes Trilling, "but they're deficient when it comes to applying it—they're just not able to connect it to real life. One exception is medicine, which is hands-on. Even in engineering, with some notable exceptions, there has been all too little hands-on experience in 'design, build and innovate.' "

The ThinkQuest project has seen great examples of students' improvement in both basic reading, writing, and math skills, as well as various applied critical thinking, collaboration, creative thinking, and communication skills. "When students get involved in these projects, they are learning across the curriculum—not just one discipline at a time. One project may include as many as 50 standards of measurement. And from the growing body of research on project learning, we're seeing significant improvement in both the basic and higher-level applied skills."[12]

New Technology High School

Project-based learning is also the basis of New Technology High School's learning environment, where teachers assign periodic projects instead of handing out daily assignments. Projects include various components, such as a written essay, a website, a PowerPoint presentation, or a photo essay. Students may work individually or with a partner or in a group. At the end of each project, students present their work orally to their classmates. In the process, they learn organizational and time management skills, since due dates may appear to be far off. Small class sizes and personal relationships with instructors help create what the school founders call "A Community of Trust," which encourages self-sufficiency and individual responsibility for learning.

NTHS's website, which is maintained by the students, describes the environment: "There are no bells telling them when classes begin and end, and no hall passes required to go to the bathroom. It's more like college, or even a workplace, than a high school. In addition, the atmosphere of trust and respect makes students feel comfortable leaving their backpacks behind in a classroom—a seemingly insignificant privilege, but one that comes at a time when too many students across the country fear that the locker next to theirs may hold a handgun or a knife."

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12 For further research on project-based learning, see http://pb1mm.k12.ca.us/sri/SRIEvaluation.htm. For examples of student-designed websites, see http://www.thinkquest.org.

NTHS has pioneered ways to assess students on eight different outcomes—curricular literacy (content standards), collaboration, critical thinking, oral communication, written communication, career preparation, citizenship and ethics, and technology literacy. The school uses digital, web-based tools that feature online grade reports for evaluating and giving students feedback on their progress in the various skills.

According to the school's website, NTHS was created out of frustration: "local business leaders' frustration with the lack of skilled local employees; students' frustration as they came out of school unprepared for jobs in a technologically advanced marketplace; and the community's frustration with the quality of public education in general. Out of frustration came inspiration, and New Technology High School was born." Partnerships have been forged with local and national companies, community groups, and government and institutional organizations, which have provided support and a variety of services. Since its creation in 1996, 361 students have graduated, many of whom have entered top colleges and internships with nearby Silicon Valley companies.[13]

13 See http://www.newtechhigh.org/School/about/about_default.asp , *Results That Matter: 21st Century Skills and High School Reform*, March 2006. Partnership for 21st Century Skills.

Part 2

Assessing the Recent Entrants' Preparation in Terms of Basic Knowledge and Applied Skills

In addition to asking employer respondents to evaluate the importance of a range of basic knowledge and applied skills, employer respondents were also asked to rate the knowledge and skill levels of new entrants. The rating choices were: "deficient," "adequate," and "excellent." The findings also include the employer respondents' rating of the *Overall Preparation* of recent high school, two-year and four-year college graduates hired for entry-level jobs.

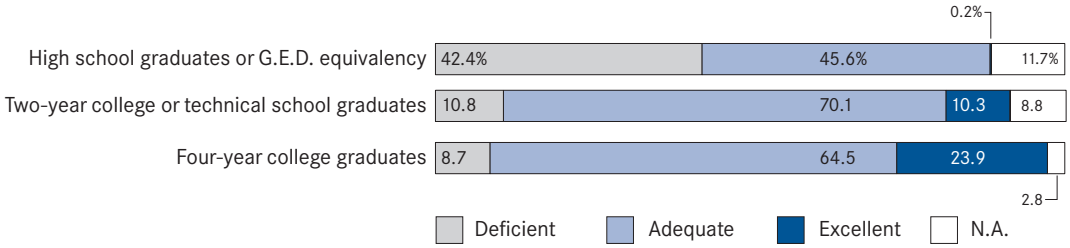
Assessing the *Overall Preparation* of New Entrants

'Deficiencies' in Workforce Readiness of New Entrants with High School Diplomas Are Seen Nationwide

Over 40 percent (42.4 percent) of employer respondents rate the *Overall Preparation* of high school graduates for the entry-level jobs they fill as "deficient." And, the significant lack of workforce readiness reported in our survey is experienced nationwide. Dividing the respondent results by company size, industry, or region does not alter the finding. Almost the same share (45.6 percent) rate high school graduates' preparation as "adequate," and less than one percent (0.2 percent) select "excellent" when asked to rate new entrants' *Overall Preparation* to enter the workforce. This finding is similar to previous surveys that have queried employers on high school graduates' *Overall Preparation* for work.[14]

Chart 1

Preparation level of workforce entrants



Number of respondents varied for each question, ranging from 401 to 423.
N.A. selected when company does not hire in selected category.
Percentages may not add to 100% due to rounding.

Small Proportion of Two-Year and Four-Year College Graduate Entrants Rated "Excellent"

When asked about *Overall Preparation* for appropriate entry-level jobs, employer respondents rate post-secondary entrants as better prepared than high school graduates. But, employer respondents consider the preparation to be "excellent" for only a minority of post-secondary new entrants. Just 10.3 percent of the employer respondents rate two-year college graduates as "excellent" in terms of *Overall Preparation* for the entry-level jobs they enter. And, even for four-year college educated entrants, less than a quarter (23.9 percent) of employer respondents rate their preparation as "excellent."

Greater percentages of respondents (70.1 percent and 64.5 percent, respectively) rate two-year and four-year college graduates as "adequately" prepared for the entry-level jobs they fill. In comparison with high school graduates, "deficiencies" among college graduates decrease considerably. Only 10.8 percent of employer respondents rate two-year graduates as "deficiently" prepared, while 8.7 percent say four-year college graduates are "deficiently" prepared for entry-level jobs.

14 *Rising to the Challenge: Are High School Graduates Prepared for College and Work? A Study of Recent High School Graduates, College Instructors, and Employers,* February 2005. Achieve, Inc. Peter D. Hart Research Associates/Public Opinion Strategies.

Percent Reporting "Deficiencies" in Basic Knowledge and Applied Skills Drops as Education Level of Entrants Rises

Tables 6, 7, and 8 indicate how employers rate the basic knowledge and applied skills of high school graduates, two-year college and four-year college graduates. Basic and applied skills "deficiencies" are reported widely among high school graduates. As the educational level of new entrants increases from high school to two-year college to four-year college, "deficiencies" decrease, though some "deficiencies" persist at the college level, particularly in skills employers say are very important for successful job performance: basic *Writing in English*, *Written Communications*, *Leadership*, and *Professionalism/Work Ethic*.

Table 6

Rating Percentages for High School Graduates

Very few rate skills of new entrants with a high school diploma as "excellent."

Deficient

Rank	Skill	
	Basic knowledge/skills	
1	Writing in English	72.0%
2	Foreign Languages	61.7
3	Mathematics	53.5
4	History/Geography	45.7
5	Government/Economics	45.6
6	Science	44.5
7	Reading Comprehension	38.4
8	Humanities/Arts	30.7
9	English Language	21.0
	Applied skills	
1	Written Communications	80.9
2	Leadership	72.5
3	Professionalism/Work Ethic	70.3
4	Critical Thinking/ Problem Solving	69.6
5	Lifelong Learning/ Self Direction	58.2
6	Creativity/Innovation	54.2
7	Oral Communications	52.7
8	Ethics/Social Responsibility	44.1
9	Teamwork/Collaboration	34.6
10	Diversity	27.9
11	Information Technology Application	21.5

Number of respondents varied for each question, ranging from 258 to 357 for basic skills and 342 to 353 for applied skills.

Adequate

Rank	Skill	
	Basic knowledge/skills	
1	English Language	73.1%
2	Humanities/Arts	67.8
3	Reading Comprehension	58.2
4	Science	54.8
5	Government/Economics	54.1
6	History/Geography	53.5
7	Mathematics	45.1
8	Foreign Languages	38.0
9	Writing in English	27.1
	Applied skills	
1	Information Technology Application	62.8%
2	Diversity	61.8
3	Teamwork/Collaboration	60.9
4	Ethics/Social Responsibility	53.0
5	Oral Communications	45.9
6	Creativity/Innovation	43.8
7	Lifelong Learning/ Self Direction	40.1
8	Critical Thinking/ Problem Solving	30.1
9	Professionalism/Work Ethic	28.3
10	Leadership	26.3
11	Written Communications	18.9

Number of respondents varied for each question, ranging from 258 to 357 for basic skills and 342 to 353 for applied skills.

Excellent

Rank	Skill	
	Basic knowledge/skills	
1	English Language	5.9%
2	Reading Comprehension	3.4
3	Humanities/Arts	1.5
4	Mathematics	1.5
5	Writing in English	0.8
6	History/Geography	0.8
7	Science	0.7
8	Foreign Languages	0.4
9	Government/Economics	0.4
	Applied skills	
1	Information Technology Application	15.8
2	Diversity	10.3
3	Teamwork/Collaboration	4.5
4	Ethics/Social Responsibility	2.9
5	Creativity/Innovation	2.0
6	Lifelong Learning/ Self Direction	1.8
7	Professionalism/Work Ethic	1.4
8	Oral Communications	1.4
9	Leadership	1.2
10	Written Communications	0.3
11	Critical Thinking/ Problem Solving	0.3

Number of respondents varied for each question, ranging from 258 to 357 for basic skills and 342 to 353 for applied skills.

Substantially greater percentages of employer respondents rate college graduates as adequate on all the basic and applied skills, in comparison with high school graduates. The employer respondents indicate increasing levels of "excellence," particularly among four-year college graduates in the applied skill areas: *Critical Thinking /Problem Solving* (27.6 percent), *Diversity* (28.3 percent), and *Information Technology Application* (46.3 percent). However, no more than 30 percent of employers rate four-year college graduates' preparation as "excellent" in any one skill with the one exception of *Information Technology Application*.

Table 7

Rating Percentages for Two-Year College Graduates

Majority rank skills of new entrants with a two-year college/technical school diploma as "adequate."

Deficient

Rank	*Skill*	
Basic knowledge/skills		
1	Foreign Languages	50.0%
2	Writing in English	46.4
3	Government/Economics	32.3
4	History/Geography	25.8
5	Mathematics	25.4
6	Science	20.3
7	Humanities/Arts	19.7
8	Reading Comprehension	12.8
9	English Language	11.3
Applied skills		
1	Written Communications	47.3
2	Leadership	42.6
3	Professionalism/Work Ethic	31.3
4	Lifelong Learning/ Self Direction	27.9
5	Creativity/Innovation	27.6
6	Critical Thinking/ Problem Solving	22.8
7	Oral Communications	21.3
8	Ethics/Social Responsibility	21.0
9	Diversity	15.6
10	Teamwork/Collaboration	12.1
11	Information Technology Application	7.9

Number of respondents varied for each question, ranging from 264 to 363 for basic skills and 350 to 357 for applied skills.

Adequate

Rank	*Skill*	
Basic knowledge/skills		
1	Reading Comprehension	83.0%
2	English Language	82.9
3	Humanities/Arts	78.5
4	Science	76.7
5	History/Geography	73.1
6	Mathematics	71.5
7	Government/Economics	66.7
8	Writing in English	51.1
9	Foreign Languages	47.8
Applied skills		
1	Teamwork/Collaboration	76.9%
2	Oral Communications	75.4
3	Ethics/Social Responsibility	73.7
4	Critical Thinking/ Problem Solving	73.5
5	Diversity	70.5
6	Creativity/Innovation	68.4
7	Information Technology Application	66.4
8	Lifelong Learning/ Self Direction	65.2
9	Professionalism/Work Ethic	63.1
10	Leadership	55.4
11	Written Communications	50.7

Number of respondents varied for each question, ranging from 264 to 363 for basic skills and 350 to 357 for applied skills.

Excellent

Rank	*Skill*	
Basic knowledge/skills		
1	English Language	5.8%
2	Reading Comprehension	4.2
3	Mathematics	3.1
4	Science	3.0
5	Writing in English	2.5
6	Foreign Languages	2.2
7	Humanities/Arts	1.8
8	History/Geography	1.1
9	Government/Economics	1.1
Applied skills		
1	Information Technology Application	25.7
2	Diversity	13.9
3	Teamwork/Collaboration	11.0
4	Lifelong Learning/ Self Direction	6.8
5	Professionalism/Work Ethic	5.6
6	Ethics/Social Responsibility	5.4
7	Creativity/Innovation	4.0
8	Critical Thinking/ Problem Solving	3.7
9	Oral Communications	3.4
10	Written Communications	2.0
11	Leadership	2.0

Number of respondents varied for each question, ranging from 264 to 363 for basic skills and 350 to 357 for applied skills.

Writing Is Top Basic Knowledge "Deficiency" for High School Educated New Workforce Entrants

Employer respondents report "deficiencies" in *Writing in English*, *Mathematics*, and *Reading Comprehension,* skills considered "important" for successful job performance. At the top, with nearly three-quarters of employer respondents (72.0 percent) rating high school graduates as "deficient," is *Writing in English*. A majority of employer respondents (53.5 percent) rate new entrants from high school as "deficient" in *Mathematics*, and 38.4 percent report "deficiency" in *Reading Comprehension*. Twenty-one percent (21.0 percent) consider incoming high school

Table 8

Rating Percentages for Four-Year College Graduates

Readiness on several skills rated "excellent" for new entrants with a four-year college diploma, applied skills rated higher than basic skills.

Deficient

Rank	*Skill*	
Basic knowledge/skills		
1	Foreign Languages	40.7%
2	Writing in English	26.2
3	Government/Economics	17.4
4	History/Geography	17.0
5	Science	12.6
6	Mathematics	12.0
7	Humanities/Arts	7.6
8	Reading Comprehension	5.1
9	English Language	4.4
Applied skills		
1	Written Communications	27.8
2	Leadership	23.8
3	Professionalism/Work Ethic	18.6
4	Creativity/Innovation	16.5
5	Lifelong Learning/ Self Direction	14.3
6	Ethics/Social Responsibility	11.1
7	Oral Communications	9.8
8	Critical Thinking/ Problem Solving	9.0
9	Teamwork/Collaboration	8.1
10	Diversity	7.4
11	Information Technology Application	3.4

Number of respondents varied for each question, ranging from 306 to 413 for basic skills and 398 to 410 for applied skills.

Adequate

Rank	*Skill*	
Basic knowledge/skills		
1	Humanities/Arts	83.2%
2	History/Geography	77.8
3	Government/Economics	74.5
4	Science	72.8
5	Mathematics	69.8
6	English Language	69.5
7	Reading Comprehension	69.0
8	Writing in English	58.4
9	Foreign Languages	53.1
Applied skills		
1	Ethics/Social Responsibility	70.9%
2	Teamwork/Collaboration	67.3
3	Oral Communications	65.4
4	Professionalism/Work Ethic	64.6
5	Diversity	64.4
6	Critical Thinking/ Problem Solving	63.4
7	Creativity/Innovation	62.0
8	Leadership	61.3
9	Lifelong Learning/ Self Direction	59.8
10	Written Communications	56.4
11	Information Technology Application	50.2

Number of respondents varied for each question, ranging from 306 to 413 for basic skills and 398 to 410 for applied skills.

Excellent

Rank	*Skill*	
Basic knowledge/skills		
1	English Language	26.2%
2	Reading Comprehension	25.9
3	Mathematics	18.3
4	Writing in English	15.5
5	Science	14.6
6	Humanities/Arts	9.2
7	Government/Economics	8.1
8	Foreign Languages	6.2
9	History/Geography	5.2
Applied skills		
1	Information Technology Application	46.3
2	Diversity	28.3
3	Critical Thinking/ Problem Solving	27.6
4	Lifelong Learning/ Self Direction	25.9
5	Oral Communications	24.8
6	Teamwork/Collaboration	24.6
7	Creativity/Innovation	21.5
8	Ethics/Social Responsibility	18.1
9	Professionalism/Work Ethic	16.8
10	Written Communications	15.8
11	Leadership	15.0

Number of respondents varied for each question, ranging from 306 to 413 for basic skills and 398 to 410 for applied skills.

graduates as "deficient" in *English Language (spoken)*. While there were no significant variations based on company size or region, employer respondents from manufacturing industries were more likely to report basic knowledge "deficiencies" in *Mathematics*, *Science*, and *Reading Comprehension* (67.1 percent, 62.1 percent, and 49.3 percent respectively) than the employer respondents in all other industries (50.0 percent, 38.8 percent, and 35.5 percent respectively). Health care employer respondents were also more likely to report "deficiencies" in *English Language (spoken)* (31.9 percent) than the employer respondents in all other industries (19.5 percent).

Table 9

Manufacturing Compared to Other Industries

Manufacturing sector significantly more likely to rate new entrants with a high school diploma as "deficient" in *Mathematics*, *Science*, and *Reading Comprehension.*

Basic knowledge/skills		Manufacturing	Other industries
Writing in English	Deficient	77.3%	71.0%
	Adequate	22.7	27.9
	Excellent	0.0	1.1
Mathematics	Deficient *	67.1	50.0
	Adequate *	31.5	48.5
	Excellent	1.4	1.5
Science	Deficient *	62.1	38.8
	Adequate *	37.9	60.3
	Excellent	0.0	0.9
Reading Comprehension	Deficient *	49.3	35.5
	Adequate *	48.0	60.9
	Excellent	2.7	3.6
English Language	Deficient	24.0	20.4
	Adequate	72.0	73.1
	Excellent	4.0	6.5

* Difference significant at the 90% confidence level.

Number of respondents varied for each question, ranging from 283 to 357.

Table 10

Health Care Compared to Other Industries

Health care sector more likely to rate new entrants with a high school diploma as "deficient" in *English Language (spoken)*, little difference in rating of other basic skills.

Basic knowledge/skills		Health Care	Other industries
Writing in English	Deficient	76.1%	71.8%
	Adequate	23.9	27.2
	Excellent	0.0	1.0
Mathematics	Deficient	53.7	53.7
	Adequate	46.3	44.7
	Excellent	0.0	1.7
Reading Comprehension	Deficient	41.3	38.0
	Adequate	58.7	58.0
	Excellent	0.0	3.9
English Language (spoken)	Deficient *	31.9	19.5
	Adequate	66.0	73.9
	Excellent	2.1	6.5
Science	Deficient	8.9	13.0
	Adequate	77.8	72.4
	Excellent	13.3	14.6

* Difference significant at the 90% confidence level.

Number of respondents varied for each question, ranging from 283 to 357.

Written Communications Stands Out Among Applied Skill "Deficiencies" for New Entrants with a High School Diploma

Employer respondents also report "deficiencies" in several applied skills for high school educated new entrants. *Written Communications* tops the ranking, with 80.9 percent of employer respondents rating high school graduates "deficient" in this skill. *Leadership* (72.5 percent), *Professionalism/ Work Ethic* (70.3 percent), and *Critical Thinking/Problem Solving* (69.6 percent) cluster with around 70 percent of employer respondents rating preparation in these skills as "deficient." A majority of employer respondents report "deficiency" in *Lifelong Learning/Self Direction* (58.2 percent) as well.

That *Written Communications* is at the top of the applied skill Deficiency List is significant. It reinforces the earlier finding that lack of basic writing skills, including grammar and spelling, is also the most frequently reported among basic knowledge "deficiencies."

Employers Rate *Leadership* "Deficient" among High School Educated Entrants, but Fewer Than One-Third Consider It "Very Important"

Employer respondents also rate *Leadership* skills to be "deficient." However, they rate *Leadership* as less important than other skills, with only 29.2 percent of employer respondents rating this skill as "very important" for high school graduates (see Table 2).

High Ratings of "Deficiency" on "Very Important" *Professionalism/Work Ethic*

A substantial majority of employer respondents (70.3 percent) report that *Professionalism/Work Ethic* among recently hired high school graduates is "deficient." The majority of the employer respondents report a lack of *Professionalism/Work Ethic*, regardless of company industry, size, or region. Interviewees also support that finding and stress the importance of this applied skill.

"We have experienced horrendous turnover rates among high school graduates we hire," says Chyrel Fortner of Pan Pacific Products. "We hire these young people, and then they don't come to work. And they don't see a problem with being absent. And when they do come, what they seem to care about is when they can leave work." Within one month, half of those hired and terminated were recent high school graduates for whom this was their first full-time job. Yet, at the same time, a sense of entitlement prevails. "Kids want to get that top job right away, the nice air-conditioned office with the computer—never mind that the way managers achieved those jobs was by starting at the bottom and working their way up."

Jim Kammerer, Director of Human Resources at Great River Health Systems, agrees. "Young people come to apply for a job in cut-off jeans. They have no understanding of how to act in an interview, no presentation skills, and a total lack of understanding of the impression they're making on the employer. Instead, the attitude is 'Hey, take me for what I am. I am an individual,' and that's what matters most."

While lack of *Professionalism/Work Ethic* among incoming high school graduates has been previously reported in other surveys, the findings reported in this survey indicate a greater percentage of employer respondents indicating deficiencies.[15]

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15 *Rising to the Challenge: Are High School Graduates Prepared for College and Work? A Study of Recent High School Graduates, College Instructors, and Employers*, February 2005. Achieve, Inc. Peter D. Hart Research Associates/Public Opinion Strategies.

2005 Skills Gap Report—A Survey of the American Manufacturing Workforce, November 2005. National Association of Manufacturers, Manufacturers Institute, and Deloitte Consulting LLP.

"Deficiencies" for High School Educated Entrants Also Reported for *Critical Thinking/Problem Solving*, a "Very Important" Skill

Just under 70 percent of employer respondents (69.6 percent) consider high school graduates "deficient" in *Critical Thinking/Problem Solving*, while over half (57.5 percent) consider it "very important" for high school graduates' successful job performance. "Deficiencies" in *Critical Thinking/Problem Solving* may be related to earlier findings that over half the employer respondents (53.5 percent) report deficiencies in *Mathematics*, and more than a third (38.4 percent) report "deficiencies" in *Reading Comprehension* (see Table 7). Past studies have shown that as the demand for problem-solving skills increases in the workplace, particularly high performance workplaces, basic math and reading skill requirements often increase as well.[16]

Lifelong Learning/Self Direction

Almost 60 percent (58.2 percent) of employer respondents rate high school graduates as "deficient" in skills related to *Lifelong Learning/Self Direction*. While employer respondents do not rate *Lifelong Learning/Self Direction* as important as other applied skills for high school graduates, many rate it "very important" nonetheless. According to 42.5 percent of employer respondents, *Lifelong Learning/Self Direction* is "very important" for high school graduates' successful job performance. Compare this to 58.3 percent who rate it "very important" for two-year college graduates, and 78.3 percent of employer respondents who rate *Lifelong Learning/Self Direction* "very important" for four-year college graduates. *Lifelong Learning/Self Direction* cannot be ignored as a necessary skill for workforce success.

Stephen Wing, Director of Government Programs at CVS, notes: "Lifelong learning is a critical connection people need to continue to pursue. People may have five or six jobs during their employment." In fact, in an increasingly knowledge-based economy, where the need is for flexible knowledge and skills and the ability to move easily from one job to another, the number of careers in a professional lifetime may be as many as 10 to 14.[17]

"Adequacy" in *Information Technology Application*, *Diversity* and *Teamwork/Collaboration* Provides Encouraging News

In contrast to the responses on other applied skills, the findings indicate that the majority of employer respondents rate high school graduates as "adequately" prepared in three areas: *Information Technology Application* (62.8 percent), *Diversity* (61.8 percent), and *Teamwork/Collaboration* (60.9 percent). These higher ratings may reflect the results of increased communication and cooperation between business and schools on these three skill areas. As companies increasingly upgraded their information technologies, adopted front-line teams to solve workplace problems, and diversified their workforces, several initiatives were implemented to communicate business needs to the K-12 schools, and the schools responded.

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16 *2005 Skills Gap Report—A Survey of the American Manufacturing Workforce*, November 2005. National Association of Manufacturers, Manufacturers Institute, and Deloitte Consulting LLP.

Rosow, Jerome M., Casner-Lotto, Jill; and Hickey, John V. *Participation, Achievement, Reward: Creating the Infrastructure for Managing Continuous Improvement, Part II: Achievement*, 1997. Work in America Institute.

Rosow, Jerome M., Zager, Robert, *Job-Linked Literacy: Innovative Strategies at Work, Part II and III*, 1992, 1993. Work in America Institute.

17 Gunderson, Steve; Jones, Roberts; Scanland, Kathryn, *The Jobs Revolution: Changing How America Works*, 2005. Copywriters Incorporated, a division of the Greystone Group, Inc.

Basic Knowledge and Applied Skills "Deficiencies" Persist Even in Two-Year and Four-Year College Graduates

While both two-year and four-year college graduates are rated better in *Overall Preparation* for entry-level jobs than high school graduates, "deficiencies" in both basic *Writing in English* and *Written Communications* persist among two-year and four-year college graduates. *Writing in English* is the most frequently reported basic academic skill "deficiency" reported for high school graduates. For two-year and four-year college graduates, it is the second most frequently reported. Similarly, *Written Communications* is the most frequently reported applied skill "deficiency" for all three educational levels.

Nearly half the employer respondents (46.4 percent) report that two-year college graduates are "deficient" in basic *Writing in English*; over a quarter (26.2 percent) rate four-year college graduates "deficient" in basic *Writing in English*. And when asked about applied skills, almost half of the employer respondents report "deficiencies" in *Written Communications* among two-year college graduates (47.3 percent), while over a quarter (27.8 percent) report this as a "deficiency" among four-year college graduates.

In follow-up interviews the employer respondents commented that lack of basic writing skills and effective business communication skills appears to be a major stumbling block among new entrants—even at the college level. Spelling errors, improper use of grammar, and the misuse of words were common in written reports, PowerPoint presentations, and email messages. Ron Halligan, Vice President for Human Resources, at Great River Health Systems agrees that problems are common for both two-year and four-year college graduates.

Part of the problem may be due to an over-reliance on email communications which has led people to write casually; some educators, however, point to the benefits of online, out-of-the-classroom communications as a way of developing articulate, fluid writing, particularly for technologically-savvy teenagers for whom text and instant messaging is a way of life.[18] Other educational organizations note that writing instruction is not given enough attention in schools. A report by the National Commission on Writing for America's Families, Schools, and Colleges report notes: "Although many models of effective ways to teach writing exist, both the teaching and practice of writing are increasingly shortchanged throughout the school and college years."[19] The lack of effective business writing skills persists at the college graduate level, but it also shows up as a major problem among current employees, as documented in a follow-up report by the National Commission in collaboration with The Business Roundtable.[20]

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18 Barker, Olivia, "Technology Leaves Teens Speechless," *USA Today, The Journal News*, June 5, 2006, p.11c. The article quotes Carol Jago, co-editor of the California Reading and Literature Project and a spokeswoman for the National Council of Teachers of English.

19 *The Neglected "R": The Need for a Writing Revolution*, April 2003. College Board, National Commission on Writing for America's Families, Schools, and Colleges.

20 *Writing: A Ticket to Work or a Ticket Out–A Survey of Business Leaders*, September 2004. College Board, National Commission on Writing for America's Families, Schools, and Colleges.

Leadership

For both two-year and four-year college graduates, lack of *Leadership* was the second most frequently reported applied skill "deficiency," behind *Written Communications*. 42.6 percent of employer respondents rate their two-year college graduate hires "deficient" in *Leadership*, and 23.8 percent rate four-year college graduates to be "deficient" as well. While substantial percentages of employer respondents rate two-year and four-year college graduates as having "adequate" *Leadership* skills (55.4 percent and 61.3 percent, respectively), only 2.0 percent of employer respondents say two-year college graduates have "excellent" *Leadership* skills, and 15.0 percent indicate four-year college graduates have "excellent" *Leadership* skills.

The lack of *Leadership* may be linked to college graduates' lack of familiarity with the business world and with corporate cultures when they arrive at the workplace, noted Diane Barrett, Vice President, National Education Program and Sales Services, *USA TODAY*. "College graduates' lack of understanding of corporate policies and procedures inhibits their effectiveness in performance reviews. They don't know what questions to ask in performance reviews or how to use the feedback received," a factor which may impede development of *Leadership* skills.

Given the huge demographic shifts underway, with the Baby Boomers retiring and the younger generations taking their place, the organizational implication of lack of *Leadership* is an issue that warrants increased attention from corporate leaders. However, a 2005 report from the Society for Human Resource Management notes that the majority of HR professionals indicated that their organizations were either just beginning to examine internal policies and management practices or just becoming aware of issues related to the retirement of the Baby Boom generation. [21]

Professionalism/Work Ethic "Deficient"

The employer respondents report "deficiencies" in *Professionalism/Work Ethic* among two-year and four-year college graduates, although not nearly as significantly as with high school graduates. Almost one-third of employer respondents (31.3 percent) report *Professionalism/Work Ethic* as a "deficiency" among two-year college graduates, and 18.6 percent of the employer respondents say the same for four-year college graduates. Several Business and Educational Council members commented on college-graduate hires' attitude of entitlement, particularly related to unrealistic salary and promotional expectations.

"We're seeing a conflict in young people who arrive in our workplace today, in terms of what they expect and the reality of what occurs," notes Diane Barrett of *USA TODAY*. They come with their college degrees polished and are ready to move up the ladder. But much of what they have learned in school is not applicable. They get disillusioned after a short time on the job." In some cases, college graduates expect to move to a senior position in one or two years, "a totally unrealistic view of what it takes to move up the corporate ladder," she added.

In addition, "Leadership and professionalism are two skills that are critical to young people's success in the workplace and in life. Supporting positive youth development is one way that business can help ensure that young people get the opportunities they need to develop these important skills," says Jennifer Hunter, Vice President, Philip Morris USA.

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21 Collison, Jessica, *2005 Future of U.S. Labor Pool Survey Report*, June 2005. Society for Human Resource Management.

Part 3

Report Card on Workforce Readiness

In the preceding sections, the employer respondents considered the importance of the basic knowledge and applied skills to job success and rated the new entrants' basic knowledge and applied skill levels as "deficient," "adequate" and "excellent." The Workforce Readiness Report Card presents some of the data in a different way by focusing *simultaneously* on these basic knowledge and applied skills considered to be "very important" and on whether new entrants' skill levels are "excellent" or "deficient."

The Workforce Readiness Report Card presents the "very important" skills, as defined by a majority of employer respondents for each of the three educational levels considered in the study. Two lists were created, one for Excellence and one for Deficiency. To be placed on either list, a specific "very important" skill must have at least 1 in 5 employer respondents reporting new entrants' readiness on that skill as "excellent" (Excellence List) or as "deficient" (Deficiency List).

Table 11

Workforce Readiness Report Card for New Entrants to Workforce

Assessment of new workforce entrant readiness on "very important" skills (basic knowledge and applied skills rated as "very important" by a majority of employer respondents). "Very Important" skills are placed on the Deficiency/Excellence Lists if at least 1 in 5 respondents report entrant readiness as "deficient"/"excellent."

High School Graduates

Deficiency	
Written Communications	80.9%
Professionalism/Work Ethic	70.3
Critical Thinking/Problem Solving	69.6
Oral Communications	52.7
Ethics/Social Responsibility	44.1
Reading Comprehension	38.4
Teamwork/Collaboration	34.6
Diversity	27.9
Information Technology Application	21.5
English Language	21.0

Excellence

No skills are on the Excellence List for new entrants with a high school diploma.

Two-Year College/Technical School Graduates

Deficiency	
Written Communications	47.3%
Writing in English	46.4
Lifelong Learning/Self Direction	27.9
Creativity/Innovation	27.6
Critical Thinking/Problem Solving	22.8
Oral Communications	21.3
Ethics/Social Responsibility	21.0

Excellence	
Information Technology Application	25.7%

Four-Year College Graduates

Deficiency	
Written Communications	27.8%
Writing in English	26.2
Leadership	23.8

Excellence	
Information Technology Application	46.3%
Diversity	28.3
Critical Thinking/Problem Solving	27.6
English Language	26.2
Lifelong Learning/Self Direction	25.9
Reading Comprehension	25.9
Oral Communications	24.8
Teamwork/Collaboration	24.6
Creativity/Innovation	21.5

"Very Important" Skills Considered for:

High School Graduates Report Card (% very important): Professionalism/Work Ethic (80.3%); Teamwork/Collaboration (74.7%); Oral Communications (70.3%); Ethics/Social Responsibility (63.4%); Reading Comprehension (62.5%); English Language (61.8%); Critical Thinking/Problem Solving (57.5%); Information Technology (53.0%); Written Communications (52.7%); Diversity (52.1%)

Two-Year College/Technical School Graduates Report Card (% very important): Professionalism/Work Ethic (83.4%); Teamwork/Collaboration (82.7%); Oral Communications (82.0%); Critical thinking/Problem Solving (72.7%); Reading Comprehension (71.6%); Written Communications (71.5%); English Language (70.6%); Ethics/Social Responsibility (70.6%); Information Technology (68.6%); Writing in English (64.9%); Lifelong Learning/Self Direction (58.3%); Diversity (56.9%); Creativity/Innovation (54.2%)

Four-Year College Graduates Report Card (% very important): Oral Communications (95.4%); Teamwork/Collaboration (94.4%); Professionalism/Work Ethic (93.8%); Written Communications (93.1%); Critical Thinking/Problem Solving (92.1%); Writing in English (89.7%); English Language (88.0%); Reading Comprehension (87.0%); Ethics/Social Responsibility (85.6%); Leadership (81.8%); Information Technology (81.0%); Creativity/Innovation (81.0%); Lifelong Learning/Self Direction (78.3%); Diversity (71.8%); Mathematics (64.2%)

Percentages calculated from among the number of respondents to each question.

Number of respondents varied for each question, ranging from 347 to 357 for high school graduates; 351 to 360 for two-year college/ technical school graduates; 400 to 413 for four-year college/university graduates.

High School Graduates

The Workforce Readiness Report Card for new entrants with a high school diploma has no items on the Excellence List. All 10 skills that a majority of employer respondents rate as "very important" to workforce success for high school graduates are on the Deficiency List of the Report Card. These are: *Professionalism/Work Ethic, Teamwork/Collaboration, Oral Communications, Ethics/Social Responsibility, Reading Comprehension, English Language (spoken), Critical Thinking/Problem Solving, Information Technology Application, Written Communications,* and *Diversity*. The only applied skill close to being on the Excellence List for new entrants with a high school diploma is *Information Technology Application*, with fewer than 1 in 6 respondents (15.8 percent) rating skill levels as "excellent."

On the Deficiency List of the Workforce Readiness Report Card for new workforce entrants with a high school diploma, the skills include two from the basic knowledge category and ten from among the applied skills. At the top of the Deficiency List is *Written Communications*, with over 80 percent (80.9 percent) of employer respondents reporting that these new entrants' readiness is "deficient" in this "very important" skill. In fact, five of the ten "very important" skills on the Deficiency List are related to communication ability (*Written Communications, Oral Communications, Reading Comprehension, English Language (spoken)*, and *Teamwork/Collaboration*).

Two-Year College Graduates

On the two-year college level the Workforce Readiness Report Card illustrates a change in the Deficiency and Excellence Lists. For new entrants to the workforce with two years of college, one "very important" skill now appears on the Excellence List, and the Deficiency List decreases to seven.

One-quarter of the employer respondents (25.7 percent) report that proficiency on *Information Technology Application* for this level of new workforce entrant is "excellent." While three communication-related skills that appear on the Deficiency List for high school graduate entrants still appear on the Deficiency List for this group (*Written Communications, Writing in English*, and *Oral Communications*), three other communication-related skills, *Reading Comprehension, English Language (spoken)*, and *Teamwork/Collaboration*, no longer appear. *Professionalism/Work Ethic* improves and moves off the Deficiency List. The other "very important" skills that appear on the Deficiency List for two-year college graduates are: *Lifelong Learning/Self Direction, Creativity/Innovation, Critical Thinking/Problem Solving*, and *Ethics/Social Responsibility*.

Four-Year College Graduates

Four-year college-educated entrants to the workforce are the only group for which the Excellence List is longer than the Deficiency List. It has nine of the fifteen skills determined to be "very important" by a majority of the employer respondents.

At the top of the Excellence List for college-educated workforce entrants is *Information Technology Application* with 46.3 percent of employer respondents' rating the readiness of college-educated entrants as "excellent." About one-quarter of the employer respondents report that readiness is "excellent" on eight other "very important" skills: *Diversity* (28.3 percent), *Critical Thinking/Problem Solving* (27.6 percent), *English Language (spoken)* (26.2 percent), *Lifelong Learning/*

Self Direction (25.9 percent), *Reading Comprehension (in English)* (25.9 percent), *Oral Communications* (24.8 percent), and *Teamwork/Collaboration* (24.6 percent). Just making the threshold for the Excellence List is *Creativity/Innovation* (21.5 percent).

Writing skills continue to be "deficient" even at the four-year college level. *Written Communications* (27.8 percent) and *Writing in English* (26.2 percent), rated "very important" by a majority of the employer respondents, appear on the Deficiency List.

Is the Threshold in the Workforce Readiness Report Card Strict Enough?

The Workforce Readiness Report Card assumes a threshold of at least 1 in 5 employer respondents reporting new entrants' readiness as "excellent" or as "deficient" for a skill to appear on the Excellence or Deficiency Lists. Is 1 in 5 (or 20 percent) a strict enough threshold for "Excellence?" Is it too lax for "Deficiency?"

Global competitiveness is getting fiercer as the costs of transportation and electronic communication continue to fall. The link between having the highest quality workforce and staying competitive in the new global arena is undeniable. Nearly three-quarters (73 percent) of CEOs who report having difficulty finding qualified workers in the U.S. also rate global competitiveness as "very" or "most" important.[22] Thus, one could argue that the implicit target reflected in the Report Card threshold should be different. Perhaps, thresholds of more than 50 percent of employer respondents rating readiness as "excellent" and as little as 5 percent rating readiness as "deficient" are appropriate to place skills on the Excellence and Deficiency Lists. The Workforce Readiness Report Card is a tool for identifying areas of need and of success. It can also serve to stimulate discussion on what should be the target for our nation's workforce readiness.

22 *The Business Council Survey of Chief Executives: CEO Survey Results*, February 2006. The Business Council and The Conference Board, Chart 4 and p. 7.

Part 4

Considering Remedial Basic Skills Training

In an effort to determine how and if the skill deficiencies are being addressed, the survey asked several questions related to testing and screening for basic knowledge/skills "deficiency," about remedial training provided at companies, and the cost of that training. Part Four considers the responses and presents some examples of training and on-the-job learning initiatives.

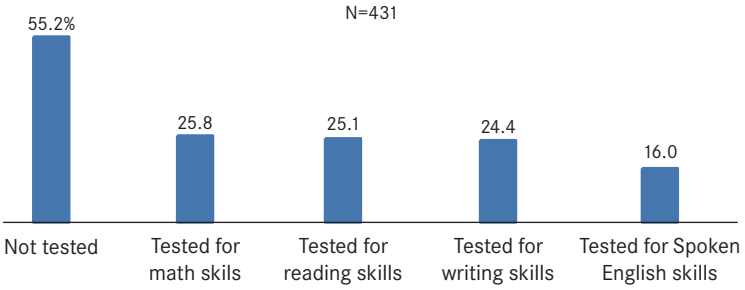
Testing and Screening

When asked if recent high school or college applicants are tested or screened, 44.8 percent of employer respondents say they test or otherwise screen recent high school and college graduate applicants to determine proficiency in some specific basic knowledge/skills (i.e., *Math, Reading, Writing, Spoken English,* or *Other*). Another question asks the employer respondents to report on whether or not the company hires applicants if the testing reveals deficiencies. In this instance, 39.2 percent report they do not hire the applicant, while 58.1 percent report they "sometimes" hire the applicant, and 2.7 percent say they hire the applicant.

Despite the majority of employer respondents citing basic writing and math skills "deficiencies" among high school graduates entering the workforce (less so among college graduates), only about a third (33.2 percent) provide remedial basic skills training to bring recent graduates "up to expectations." However, in a study surveying manufacturing employers specifically, a majority (68 percent) did provide training to raise the basic skills of entry-level workers.[23] For those employer respondents whose companies do provide such remedial training, a median of 10.0 percent of recent graduates entering their U.S. workforces participates in this type of basic skills training.

Chart 2

Majority do not test new entrants in basic skills*



* Respondents asked to check all that apply.

Cost of Training

How much is business spending on remedial training? The answer is not clear. In general, training costs are not often tracked precisely enough to provide accurate data on remedial training expenditures. For example, in pre-survey interviews and in response to open-ended survey questions, human resource professionals note that in some companies the total cost of all employee training is not calculated across the entire company, but instead is tallied for individual business units. In this study, only 18.8 percent of employer respondents provided a dollar estimate specifically for the cost of remedial training.

23 *2005 Skills Gap Report—A Survey of the American Manufacturing Workforce*, November 2005. National Association of Manufacturers, Manufacturers Institute, and Deloitte Consulting LLP.

The median value of those estimates is approximately $500 per employee. The total cost to the business community, however, is a much larger and more elusive number. To calculate the entire cost that deficient workforce readiness imposes on business in the U.S., losses from foregone productivity and competitive disadvantage globally would need to be added onto any estimate of direct expenses as well.

Among those employer respondents (33.2 percent) who report providing some remedial training for employees, one-third (32.6 percent) rate their basic skills training programs as "effective," while 60.0 percent say they are only "somewhat effective."

At Great River Health Systems, for high school graduate hires who do not meet the basic reading and math requirements needed to support the level of problem-solving required, Great River provides an Adult Literacy Training Program. The program is open to anyone–not just recently hired high school graduates–who can take remedial courses in basic reading and math skills. The program also enables those without high school diplomas to obtain a GED equivalency.

The finding that only about one-third of companies offers basic skills training programs may suggest that companies do not value such training or cannot justify the expense because of the lack of tools or resources to measure the impact or the return on investment. While many companies have not assessed the value of their training dollars, the American Society for Training and Development (ASTD) reports a change in best practice firms with more advanced methods of evaluating investment in learning across the entire organization.[24] Kimo Kippen, incoming chairperson of ASTD's Board of Directors and Vice President of Human Resources, Renaissance Hotels & Resorts, believes "the future of training is in blended learning solutions which rely increasingly on web-based training and a mix of learning media that are geared to individual learning styles. Blended learning will allow us to dramatically improve how we measure training, and, at the same time, provide for more effective on-the-job learning and increased opportunities for individuals to apply what they've learned in real-time."

Examples of Workplace Learning Initiatives

When asked about on-the-job learning initiatives provided for new entrants, the three most frequently reported initiatives were: managerial coaching (66.8 percent), mentoring (55.5 percent), and peer coaching (50.6 percent)—techniques often used for developmental not remedial training. A model of in-depth monitoring of development training and employee advancement is in use at Quest Diagnostics. Quest does not offer formal remedial training, but does offer extensive on-the-job learning, according to HR Director Randy Steinhoff. "We create individual development plans that focus on developing key competencies. We are using more and more online learning, managerial coaching and mentoring, which can provide invaluable opportunities for learning and business application that's difficult to get in a classroom setting."

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24 Sugrue, Brenda and Rivera, Ray J., *2005 State of the Industry: ASTD's Annual Review of Trends in Workplace Learning and Performance*, 2005. American Society for Training and Development.

Quest Diagnostics also runs technical training programs, such as its eleven-week Sales Institute in which entry-level sales trainees learn different diagnostic tests and information products. But, trainees need a foundation of basic communication skills and knowledge of science to absorb the technical aspects of the training and to be effective in sales.

At Shell Trading and Shipping, college graduates fill entry-level positions in finance, accounting, marketing, and trading. College graduate hires are frequently assigned to different projects or fill support roles in very different functions. At Shell Corporation, recent hires rotate assignments every three or four years, switching from refinery to general support to human resources, which means they could be working on a wide variety of projects, from Sarbanes Oxley to oil rig operations. Shell provides extensive in-house training to help prepare graduates transition into these new assignments, but the flexibility and aptitude to be able to continuously learn these new skills is critical. “They have to keep skills current so that they are continuously employable, so that their skills are current with changing trends—that’s the new job security,” notes Fitzpatrick.

Part 5

Defining Future Workforce Readiness—Increasingly Important Skills and Emerging Content Areas

To determine future skill needs, employer respondents were asked to indicate how the importance of the basic knowledge and applied skill areas would change over the next five years. They were also asked to indicate which of several emerging content areas they believe to be "most critical" for future graduates entering the workforce over the next five years.

Applied skills surpass basic knowledge on the combined list of skills that employer respondents say will increase in importance over the next five years, and *Creativity/Innovation* ranks among the top five. In terms of basic knowledge specifically, the greatest proportion of employer respondents report that *Foreign Languages* will increase in importance.

Make Appropriate Choices Concerning Health and Wellness is the most frequently reported item among the emerging content areas (76.1).

Basic Knowledge and Applied Skills of Increasing Importance

Foreign Languages: A New Basic Skill for the 21st Century

Earlier in the study it was noted that only (11.0 percent) of employer respondents consider foreign language as "very important" for current job performance for high school or college graduates. Yet, when asked to project the changing importance of all 20 basic knowledge areas and applied skills over the next five years, nearly two-thirds (63.3 percent) report that *Foreign Languages* is a basic skill that will "increase in importance"—ranking it higher than any other basic skill queried. Related topics that appear in a separate question about emerging content areas support the growing importance of *Foreign Languages*. When asked to select which emerging content areas will be "most critical" in the near future, roughly half of the employer respondents select *Use of Non-English Languages as a Tool for Understanding Other Nations, Markets, and Cultures* (49.7 percent), and *Demonstrate Understanding of Global Markets and the Economic and Cultural Impacts of Globalization* (52.9 percent). In follow-up interviews, several individuals emphasized the importance of knowing *Foreign Languages* and understanding other cultures and their relevance in global work environments.

Randy Steinhoff of Quest Diagnostics indicates: "We have employees in Mexico, Belgium, the UK, and conduct business in several international markets directly or through joint ventures. Foreign languages are important in a global economy. In the past, we had not paid enough attention to this. Now, knowledge of foreign languages is in our leadership profile. We're asking people what languages they speak."

Annette Byrd of GlaxoSmithKline points out the advantages of knowing a foreign language: "We are a global company with many people working on global teams and traveling to other countries.

Table 12

Applied skills dominate rankings of knowledge and skills expected to increase in importance over next five years.

Rank	*Basic knowledge and applied skills*	
1	Critical Thinking/Problem Solving*	77.8%
2	Information Technology Application*	77.4
3	Teamwork/Collaboration*	74.2
4	Creativity/Innovation*	73.6
5	Diversity*	67.1
6	Leadership*	66.9
7	Oral Communications*	65.9
8	Professionalism/Work Ethic*	64.4
9	Ethics/Social Responsibility*	64.3
10	Written Communications*	64.0
11	Lifelong Learning/Self Direction*	64.0%
12	Foreign Languages	63.3
13	Mathematics	48.8
14	Writing in English	45.4
15	Reading Comprehension	41.0
16	Science	38.7
17	English Language	32.8
18	Government/Economics	24.8
19	History/Geography	17.9
20	Humanities/Arts	9.5

Number of respondents varied for each question, ranging from 398 to 424. Percents calculated out of total number of respondents electing "increase" in importance over the next five years.

* Indicates an applied skill

If they speak another language when on a global team or attend a meeting in another country, they are so much further ahead of their colleagues who have no foreign language skills." She also noted that in many GlaxoSmithKline facilities in other countries, the employees speak English since it is a required language in schools.

In contrast, the United States Department of Education indicates that fewer than 8 percent of U.S. undergraduates take a foreign language class in a given year, and fewer than 2 percent study abroad. Most colleges do not require much study of foreign languages, nor are foreign languages emphasized in U.S. elementary and secondary schools, unlike schools in other industrialized nations.[25]

Creativity/Innovation: Integrating Knowledge Across Disciplines

For the purposes of this study, *Creativity/Innovation* is defined as the ability to "demonstrate originality, inventiveness in work, communicate new ideas to others; integrate knowledge across disciplines." Nearly three-fourths of respondents (73.6 percent) expect *Creativity/Innovation* to "increase in importance" for future graduates, placing it in the top five of all skills in this category.

As Table 2 illustrates, employer respondents rate *Creativity/Innovation* as "very important" to job success as educational levels increase. While 36.3 percent rate *Creativity/Innovation* "very important" for high school graduates, 54.2 percent rate it "very important" for two-year college graduates and 81.0 percent for four-year college graduates. Yet, more than half (54.2 percent) of employer respondents report high school graduates to be "deficient" in skills related to *Creativity/Innovation* (Tables 6, 7, 8). While the percentages of respondents who report *Creativity/Innovation* "deficiencies" in two-year college graduates and four-year college graduates decreases considerably (27.6% and 16.5% respectively) as compared to high school graduates, only 4.0 percent of employer respondents say incoming two-year college graduates have "excellent" skills related to *Creativity/Innovation*. And, as shown in the Workforce Readiness Report Card, *Creativity/Innovation*, barely exceeds the threshold necessary for placement on the Excellence List for four-year college graduates, with just 21.5 percent of employer respondents rating entrants with a four-year college diploma as "excellent."

Employer respondents' focus on *Creativity/Innovation* as an increasingly important future skill coincides with numerous reports that emphasize the capacity to innovate as the single most important element in maintaining U.S. competitiveness. The Council on Competitiveness warns that "companies that do not embrace innovation as a core business value will fall to global competition." The Council further notes that "innovation is inherently multidisciplinary in nature" and observes that "the realms of science, politics, culture, business, health care and education are becoming increasingly intertwined." [26]

"We need people who think with the creative side of their brains," says GlaxoSmithKline's Annette Byrd, "people who have played in a band, who have painted, been involved in the

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25 Haurwitz, Ralph K.M., "Study of Foreign Languages a Low Priority in U.S. Higher Education," Statesmen.Com, July 17, 2006, http://www.statesman.com/news/content/news/stories/local/07/17foreign.html

26 *Innovate America: Thriving in a World of Challenge and Change*, July 2004. National Innovation Initiative, Council on Competitiveness.

community as volunteers. It enhances symbiotic thinking capabilities, not always thinking in the same paradigm, learning how to kick-start a new idea, or how to get a job done better, less expensively."

Notes Randy Steinhoff of Quest Diagnostics, while the company traditionally has considered mostly graduates with Bachelor of Sciences degrees, it is now looking at those with Bachelor of Arts too—"We're thinking differently about innovation and services."

Quest Diagnostics is not alone in its thinking. In fact, the rethinking—and reinvigoration—of what a liberal arts education should be in the 21st century is the topic of a national initiative and report by the Association of American Colleges and Universities (AACU). The report includes several provisions with direct implications for the workplace and supports the notion of a "practical" liberal arts education that "erases the artificial distinctions between studies deemed 'liberal' (interpreted to mean that they are not related to job training) and those called 'practical' (which are assumed to be)." In addition to its recommended actions, the AACU report notes several cutting-edge reforms underway on campuses that are responsive to emerging challenges in the workplace, in a diverse democracy, and in a globally interconnected world. [27]

Emerging Content Areas That Are "Most Critical"

Employer respondents were asked to consider which of a series of seven emerging content areas they believe to be "most critical" for future graduates entering the U.S. workforce in the next five years.

Making Appropriate Choices Concerning Health and Wellness No. 1 Emerging Area

Three-quarters of respondents (76.1 percent) rate *Make Appropriate Choices Concerning Health and Wellness, e.g. nutrition, exercise, stress reduction, work-life effectiveness* as an emerging content area that will be "most critical" for future graduates.

In some ways, it is not surprising that employer respondents consider this to be the "most critical" emerging content area for future entrants' workforce readiness. Escalating health care costs are a major concern in many corporations. One in five U.S. CEOs responding to The Conference Board CEO Challenge rates the cost of employee healthcare benefits as being "among my greatest concerns."[28] Not surprisingly then, rising health care costs were identified as the top factor that HR professionals believe will have the largest impact on the workplace and the HR profession over the next five years, according to the Society for Human Resource Management Workplace Forecast.[29] Employers are shifting responsibility for managing employer-provided health care benefits from the employer to the employee. Simultaneously, many companies have increased their focus on work/life strategies linked to bottom-line results, with growing evidence that reducing stress and improving work-life effectiveness can lead to improved productivity, reduced absenteeism, and turnover. [30]

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27 *Greater Expectations: A New Vision for Learning as a Nation Goes to College*, October 2002. Association of American Colleges and Universities.

28 *The Conference Board CEO Challenge 2006: Top 10 Challenges*, R-1380-05-RR.

29 Schramm, Jennifer, *SHRM® Workplace Forecast, June 2006*, The Society for Human Resource Management.

30 Bond, James T., Galinsky, Ellen; Kim, Stacy S., Brownfield, Erin. *2005 National Study of Employers*, 2005. Families and Work Institute. Casner-Lotto, Jill, *Holding a Job, Having a Life: Strategies for Change*, 2000. Work in America Institute.

Table 13

Expectations of personal responsibility for health, finances, and career on the rise

Emerging Content Areas	
Make appropriate choices concerning health and wellness, e.g., nutrition, exercise, stress reduction, work-life effectiveness	76.1%
Exercise personal financial responsibility, e.g., balancing a checkbook, budgeting skills, retirement planning	71.5
Use entrepreneurial skills to enhance workplace productivity and career options	70.5
Understand economic issues and the role of business in the U.S. and global economy	60.6
Demonstrate understanding of global markets and the economic and cultural effects of globalization	52.9
Participate effectively in community and government as an informed citizen	51.0
Use non-English languages as a tool for understanding other nations, markets, and cultures	49.7

N=431

Exercising Personal Responsibility and Using Entrepreneurial Skills

In addition to health and wellness, the next two most frequently reported emerging content areas also emphasize personal responsibility. Over 70 percent of respondents (71.5 percent) identify *Exercise Personal Financial Responsibility, e.g., balancing a checkbook, budgeting skills, retirement planning* and *Use Entrepreneurial Skills to Enhance Workplace Productivity and Career Options* (70.5 percent) as emerging content areas.

Again, both findings may be aligned with a trend of shifting responsibility from employer to employee. While major employers offer financial counseling services and a mix of training and career development options as part of the new "employee contract," the ultimate responsibility for managing retirement and careers increasingly now falls on the individual.

Part 6

Assuming Responsibility for Workforce Readiness

Employer respondents were asked to select their top three choices with regard to whose primary responsibility it is to make new entrants ready for work. Employer respondents point to the educational system as primarily responsible for workforce readiness.

Employers Place Responsibility on Educational Institutions and New Entrants

Three-quarters (75.6 percent) of employer respondents say that K-12 schools should be responsible for providing the necessary basic knowledge and applied skills for their new entrants. Over two-thirds (68.4 percent) say four-year colleges and universities, and 45.2 percent select two-year colleges among their top three choices. Half of the employer respondents (49.7 percent) say workforce readiness is the responsibility of the new entrants themselves.

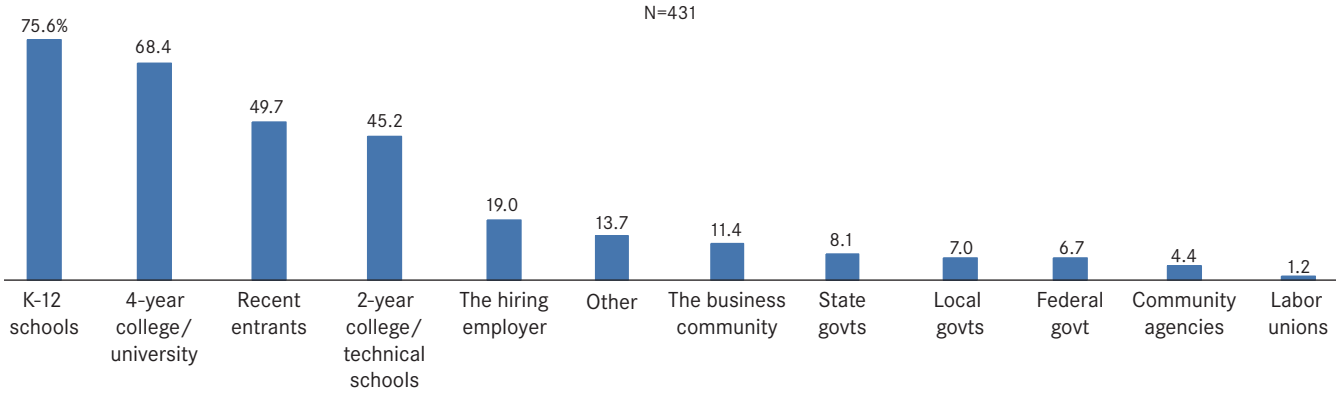
One of the choices for primary responsibility for making new entrants work-ready that was not presented on the survey was "parents." However, that response was written in many times in the "other" category. Employer respondents' comments indicate that "parents" are an important part of the equation, and that parents play a role by instilling in their children the importance of learning, work, and career. "The schools are handling all that they can handle. Parents are not pushing the importance of getting a job, keeping a job. I think the teachers are having a similar problem motivating kids to stay in school," notes Chyrel Fortner of Pan Pacific Products, who has worked with local school boards.

Only 19.0 percent of the employer respondents report that workforce readiness is primarily the responsibility of the hiring employer, and even fewer—11.4 percent—say it is primarily the responsibility of the business community. Is this surprising? Perhaps. Other reports have indicated that the business community shares in the responsibility for workforce readiness and is contributing considerable resources to that end. According to the U.S. Chamber of Commerce, business involvement in issues related to public education and workforce readiness has become increasingly more frequent, with companies contributing the equivalent of $2.5 billion in resources each year.[31]

Chart 3

K–12 schools, two-year and four-year colleges, and new entrants themselves considered to have primary responsibility for workforce readiness

N=431



31 Pawlowski, Brett, *Notes from the 2005 Business Education Network Summit*, October 2005. U.S. Chamber of Commerce, DeHavill and Associates.

And, in interviews conducted for this study, several respondents point to ways in which business could share in the responsibility for improving workforce readiness of new entrants. One way is to develop more meaningful internships that provide students with actual learning experiences that develop needed workplace skills, instead of "just a glimpse of the corporate environment." It was suggested that business could build stronger relationships with educators in order to communicate business needs.

At Shell Trading and Shipping, for example, which reports excellent results in terms of new entrants' workforce readiness, a key ingredient seems to be a close top-level connection between the company, universities, and high schools. According to William Fitzpatrick, Vice President for Human Resources, executives from Shell work closely with the presidents, deans, and faculties from 23 universities helping to develop curriculum and programs in engineering and geology and structuring internships. In addition, the company works with the universities in reaching out to schools in order to communicate to students the importance of math and science and their connection to careers in engineering, geology, and information technology.

One final note: It's important to acknowledge that the educational system—K–12 schools, and two-year and four-year colleges—serves purposes beyond graduates' preparation for the workforce. Few would argue that an important purpose of education, for example, includes preparation of informed citizens who are able to participate effectively in a democratic society. This study, reporting on employer perceptions, focuses only on the readiness of new entrants to the workforce.

Resources for Work-Based Learning Experiences

Junior Achievement uses hands-on experiences to help young people understand the economics of life. In partnership with business and educators, Junior Achievement brings the real world to students, opening their minds to their potential. http://www.ja.org/

Jobs for America's Graduates, or JAG, is a school-to-career program implemented in 700 high schools, alternative schools, community colleges, and middle schools across the country and United Kingdom. JAG's mission is to keep young people in school through graduation and provide work-based learning experiences that will lead to career advancement opportunities or to enroll in a postsecondary institution that leads to a rewarding career. http://www.jag.org/

EEOC Youth@Work Initiative: EEOC plans on hosting a series of forums and roundtable discussions with business leaders, human resource groups, industry trade associations, and others to further explore the workplace trends and challenges affecting young workers. EEOC is especially interested in hearing from businesses and industry associations about the types of technical assistance, guidance or other tools that would be helpful in managing America's next generation of workers.
http://youth.eeoc.gov/initiative_summary.html

Actions

"The numbers don't bode well for the future—the future of our workforce. It is in our interest to help solve the problem. And business has the capacity to help solve the problem by partnering with education and community leaders to create opportunities for young people to practice the skills they need to be successful."

Bill Shore, Director, U.S. Community Partners, GlaxoSmithKline

The following are actions for consideration by any individuals or groups who have the opportunity to improve the basic knowledge and applied skills of those graduates entering the workforce. Families, students, members of the community at large, as well as educators and business people may find opportunities to take actions that address the findings of this study.

High school and two-year and four-year college graduates should acquire basic knowledge and a complement of applied skills. To that end, current students should become familiar with the knowledge that is projected to increase in value to the business community, such as *Foreign Languages*.

Professionalism/Work Ethic is emphasized for new entrants at all educational levels, which suggests that issues of timeliness, dress, career growth, courtesy, teamwork, commitment, responsibility, integrity should be addressed as part of "Employment 101" for work-bound students at every educational level.

Critical Thinking/Problem Solving and *Communications,* both written and oral, are increasingly important. An emphasis on critical thinking and effective writing and speaking skills in secondary and postsecondary education can support success in the workplace.

Making Appropriate Choices Concerning Health and Wellness is the number one "most critical" emerging content area. Issues of nutrition, exercise, stress reduction and work-life effectiveness should be considered part of workforce readiness.

All stakeholders (business, educators, and community members) should consider methods of enhancing important workplace skills. For example, internships, summer jobs, work-study programs, job shadowing, mentoring, on-the-job training, as well as other educational approaches that include real-world experiences or community involvement, provide opportunities for students to acquire basic knowledge and skills, while cultivating applied skills.

Employers need a better understanding of the classroom environment, and academics need a better understanding of the workplace. Employers and academics should work together to make instruction meaningful and internships relevant to workplace needs.

All new entrants to the workforce should understand the importance of and need for *Lifelong Learning/Self Direction* throughout their working lives. Business should research, evaluate, and implement lifelong learning opportunities and partnerships that meet student needs and the changing knowledge and skills requirements in the workplace.

Creativity/Innovation is among the top five applied skills projected to increase in importance and yet employer respondents consider it "deficient." Stakeholders should seek opportunities to encourage creative thinking and the integration of knowledge across disciplines, lateral thinking, and new ways of problem-solving. In addition, given the current emphasis on standardized testing, which may promote rote learning and memorization, all stakeholders should consider how best to nurture creativity as well.

Over the next five years employer respondents expect to reduce their hiring of high school graduates and increase the hiring of post-secondary educated workers. The current and future members of the workforce should develop a sufficient knowledge and skill base to be accepted into two-year or four-year colleges. Simultaneously, affordability of higher education for the broadest base of society must be considered.

Leadership skills must be fostered. Opportunities should be sought and provided for new entrants into the workforce to assume roles requiring them to make decisions and to consider the implications of those decisions. Seeking opportunities for students to practice skills necessary for working within groups or teams should also be encouraged.

All stakeholders should examine the areas of greatest "deficiency" and "excellence," and consider developing cross-sector approaches to aid in the new entrants' development. *Diversity, Teamwork/ Collaboration*, and *Information Technology Application* are now perceived as areas in which the graduates are "adequate." How collaboration between business and schools on these skills has been promoted is an important area for assessment and modeling.

Business should consider calculating the actual costs of remedial training and determine the financial implications of providing versus not providing remedial training—both in the short and longer term—and should evaluate alternative methods of intervention.

Businesses should provide better training for new entrants so they better understand the expectations for advancement and are prepared to chart realistic career paths for themselves.

Educators should consider assessing current curricula in response to the deficiencies and future needs reported in the survey. They should research promising models for incorporating more hands-on and practical experience for students in the curricula and seek ways to involve community organizations and businesses to pilot workforce-applicable learning opportunities.

Young people and their families should assume a significant responsibility for learning and teaching, respectively. Students—the future entrants into the workforce—and their families should assume responsibility for seeking relevant and creative ways to develop basic knowledge and applied skills to enable them to succeed in the workforce.

The findings of the survey and interviews suggest the need for additional research. This work should include but not be limited to:

- case studies of programs that develop young graduates' workforce readiness,
- roundtable discussions among employers, educators, policymakers, and community members to address workforce readiness, and
- determining methods of evaluating training initiatives or other appropriate research that derives from the findings in this study.

Appendix: About the Survey

During April and May 2006, The Conference Board, Corporate Voices for Working Families, the Partnership for 21st Century Skills, and the Society for Human Resource Management collected data through an in-depth survey. The survey was presented with the option to submit responses either online or on paper. Employer respondents were asked to rate the importance of 20 areas of basic knowledge and applied skills to the job success of new entrants to their U.S. workforces at each of three educational levels—high school diploma, two-year college or technical school diploma, or four-year college diploma. Three choices were provided to employer respondents for the level of importance for each of the skills: "not important," "important," and "very important." Employer respondents were then asked to rate the readiness of each of these three groups of new entrants on each of the 20 skills. Three choices of readiness were provided to the employer respondents: "deficient," "adequate," and "excellent." Employer respondents were also asked to rate the "increase" or "decrease" in importance of these 20 skills, plus the importance of emerging content areas over the next five years.

The skills and content areas included on the survey were grouped into three classifications: Basic Knowledge, Applied Skills and Emerging Content Areas. The classification and definitions of skills included in our survey instrument rely upon several sources. Primarily, the skills are based on definitions and a framework created by The Partnership for 21st Century Skills.[32] The Partnership consulted with both business and educational leaders in determining the basic knowledge, applied skills and life skills that are considered essential for success in the workplace. (See www.21stcenturyskills.org). For the most part, the list of basic knowledge areas include core academic subjects as identified by the No Child Left Behind Act of 2001. The applied skills also incorporate input from interviews conducted with members of the Business and Education Council of The Conference Board. The final list of applied skills includes several core foundation competencies that are in use in some major Fortune 500 corporations.

About the Respondents

Four hundred thirty-one employers, representing a combined workforce of over 2 million U.S. based employees, responded to the survey (a response rate of 4.8 percent). The respondents' titles, industries, sizes and regional location of their companies were recorded. Caution should be used in generalizing results to the entire U.S. population of employers to the degree that the sample demographics differ from those of the U.S. economy.

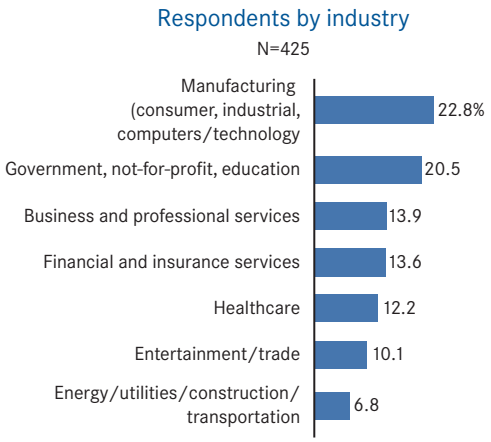
Titles of respondents ranged from CEO/President to HR specialist, including:

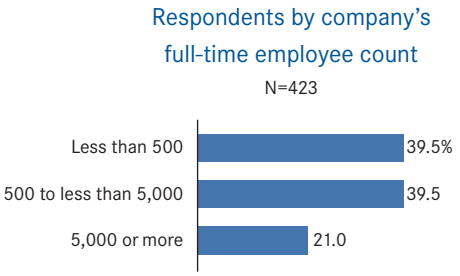
- Senior Vice President and above (7.1 percent)
- Vice President (21.1 percent)
- Director (53.4 percent)
- Manager/Supervisors and HR Specialist (12.2 percent)
- Other HR-related title (6.3 percent)

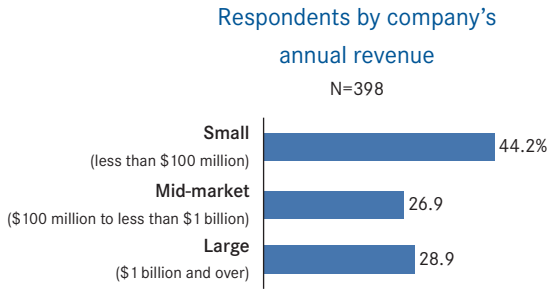
These respondents come from a wide range of industrial classifications with manufacturing being the largest (22.8 percent). More than a tenth of the responses come from business and professional services (13.9 percent).

Financial and insurance services (13.6 percent), health care companies (12.2 percent), and entertainment and trade companies (10.1 percent) are also well represented.

32 *Results That Matter: 21st Century Skills and High School Reform*, March 2006. Partnership for 21st Century Skills.







Note: Percentages may not add to 100 due to rounding.

One in 5 respondents (21.0 percent) is from a large company with 5,000 or more full-time employees. The balance of employer respondents is divided evenly between those from companies with fewer than 500 full-time employees (39.5 percent) and those with between 500 and 5,000 full-time employees (39.5 percent).

More than a quarter of the respondents are from companies with $1 billion or more in revenues (28.9 percent) and from those with more than $100 million but less than $1 billion in revenues (26.9 percent). More than two-fifths (44.2 percent) of the respondents are from small companies (those with less than $100 million in revenues).

About the Interviews

To provide further insight, a dozen in-depth interviews were conducted with employer respondents representing a variety of industries, regions, size of firms. A selection of comments from these discussions appears throughout the report. Interviewees answered such questions as:

- What are your expectations for high school, two-year and four-year college graduates?
- If you hire both high school and college graduates, how do your expectations differ for high school and college graduates?
- Have graduates been able to use on the job what they have learned in the classroom?
- When it comes to the workforce readiness of new entrants, what are some examples of success?
- What are the sources of the greatest frustration?

Workforce Readiness Project Team

Jill Casner-Lotto, lead author, is a writer and research consultant with over 20 years' experience in workplace and human resource management issues. Previously, she was Vice President for Policy Studies at Work in America Institute, a nonprofit workplace research organization. She has directed numerous research projects and wrote policy study reports on such topics as managing and training for new technology, high performance workplaces, teamwork, labor-management relations, work-life effectiveness and job-linked literacy.

Mary Wright Benner, project leader, is a Program Director for The Conference Board, where she is responsible for planning and managing five national conferences on a range of issues, including Corporate Community Involvement and Business and Education. She also manages two Councils of The Conference Board: the Business and Education Council, and the Community and Public Affairs Council. Previously, she was a Vice President of Muncipal Finance at Financial Guaranty Insurance Company, where she also served as manager of government affairs.

The Conference Board

Linda Barrington, Research Director/Labor Economist
Henry M. Silvert, Research Associate/Statistician
Frank Tortorici, Associate Director, Communications/Media Relations

Corporate Voices for Working Families

Donna Klein, President and CEO
Elyse Rosenblum, Senior Consultant
Johanna Ramos-Boyer, JRB Communications, LLC

Partnership for 21st Century Skills

Maureen Cain, Project Director
Barbara Michelman, Infotech Strategies

Society for Human Resource Management

Michael P. Aitken, Director, Governmental Affairs
Steven Williams, Director of Research
Evren Esen, Manager, Survey Program
Shawn Fegley, Survey Research Specialist
Frank Scanlan, Media Affairs Manager

Publishing Director **Chuck Mitchell**
Authors **Jill Casner-Lotto, Linda Barrington**
Project Coordinator **Wennie Lee**
Research Assistant **Laura Pilossoph**
Editor **Elizabeth Tierney**
Design **Peter Drubin**
Production **Andrew Ashwell**

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