

## A Different Take on the “Skills Gap”: Why Cultivating Diverse Competencies is Essential for Success in the 21st Century Economy

By: [Matthew T. Hora](#), [Ross J. Benbow](#), [Amanda K. Oleson](#), and [Yimin Wang](#)

In the wake of the Great Recession of 2008, many policymakers and pundits argue that one of the principal reasons for a sluggish economic recovery is the “skills gap.” The idea of a skills gap suggests that plenty of well-paying jobs exist but are lacking skilled applicants, primarily due to an educational sector that is inadequately responsive to workforce needs.

In response to the skills gap narrative, policymakers from President Barack Obama to Wisconsin Governor Scott Walker have adopted policies that create new, short-term training programs in industries currently experiencing labor shortages, such as computer programming and the skilled trades. However, while the idea of a skills gap is appealing to policymakers, its underlying assumptions are rarely scrutinized in light of evidence from independent, empirical research.

In this policy brief, we closely examine these assumptions using new data from a field study in the biotechnology and manufacturing sectors in Wisconsin. We conclude that the skills gap narrative

### Abstract

The nature of the “skills gap” in Wisconsin was examined through interviews with 141 employers and educators. Results highlight the importance of both technical and non-cognitive competencies for success in the workplace. To ensure students and workers acquire needed skills, policymakers should support high-quality teaching and training; recognize the value of the liberal arts/general education; and foster partnerships among educators, employers, and the community.

### About The Authors

#### [Matthew T. Hora](#)

Assistant Professor, Department of Liberal Arts and Applied Studies  
University of Wisconsin–Madison

#### [Ross J. Benbow](#)

Associate Researcher  
Wisconsin Center for Education Research

#### [Amanda K. Oleson](#)

Assistant Researcher  
Wisconsin Center for Education Research

#### [Yimin Wang](#)

Project Assistant  
Wisconsin Center for Education Research

ultimately provides an incomplete account of the challenges facing the state’s economic future. Consequently, policy solutions to date do not address the root causes of limited coordination among business owners, professional educators, and society at large.

We provide several recommendations for future higher education and workforce development policy that are based on a key finding—that employers, educators, and researchers all agree that *both* technical and what are known as “non-cognitive” skills are essential for students to succeed in school, work, and life in the 21st century.

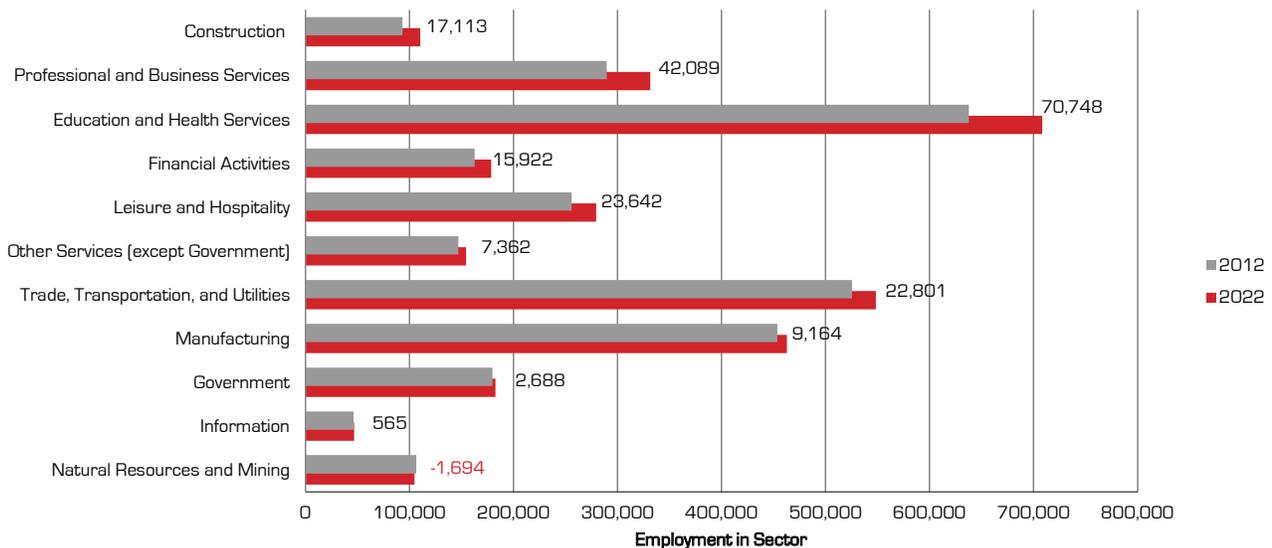
## Background to the Skills Gap Debate: the Wisconsin Economy

In early 2015, Wisconsin’s labor force of 3.1 million people was concentrated in trade, transportation, and utilities (2.8m), followed by manufacturing (472,600) and education and health services (434,400).<sup>1</sup> What are the jobs of the future? Sectors with the highest projected growth from 2012 to 2022 include construction (18.4 percent growth), professional and business services (14.5 percent), education and health services (11.1 percent), and financial activities (9.8 percent).<sup>2</sup> For total numbers of projected jobs by industry, see Figure 1.

Despite Wisconsin’s historic reliance on agriculture and manufacturing, most forecasts project an increasingly diversified economic base that will include these industries but also feature growth in the information technology, finance, health care, and biotechnology sectors.<sup>3</sup>

What type of education will be required for these jobs? Economists at Georgetown University project that through 2018, 61 percent of all Wisconsin jobs will require some form of postsecondary training.<sup>4</sup> Specifically, 704,000 (22 percent) of these jobs will require some college; 366,000 (11 percent)

Figure 1: Wisconsin long-term industry job projections, 2012 and 2022



will require an associate degree; 600,000 (19 percent) will require a bachelor's degree; and 255,000 (8 percent) will require a graduate degree.<sup>5</sup>

Thus, it is clear that a variety of disciplines and program offerings within the Wisconsin Technical College System (WTCS) and the University of Wisconsin System (UW System) will play central roles in preparing the workforce of the future.

## Influence of the Skills Gap Narrative on Public Policy

The skills gap is a ubiquitous term that is playing a central role in shaping federal and state policy on workforce development and higher education. In Wisconsin, the idea of a skills gap has been particularly influential. In a report for Gov. Scott Walker, consultant Tim Sullivan states that the apparent skills gap is caused by “an education system that has not been able to keep pace with evolving workforce needs.”<sup>6</sup>

Upon receipt of Sullivan's report, titled *The Road Ahead*, Gov. Walker commented, “We are looking to make dynamic changes in workforce development, and this report is a good starting point for true reform.”<sup>7</sup> That reform included the 2013 Wisconsin Fast Forward (WFF) legislation that funded a new Office of Skills Development and \$15 million in new workforce training grants.<sup>8</sup> In 2014, the legislature approved an additional \$35 million for training workers with disabilities and to reduce waiting lists in high-demand WTCS programs.<sup>9</sup>

Policymakers have also created short-term corporate training programs and expanded technical college programs in specific occupational areas with an overriding focus on cultivating technical skills. In contrast, state support for the UW System has declined \$500 million since 2011.

Additional state initiatives, including the 2015 Assembly Speaker's Task Force on Youth Workforce Readiness, are primarily focused on a

single occupational category (skilled trades) within a single industry (manufacturing). Approximately 53 percent of WFF training grants, for instance, have been allocated to manufacturing companies, followed by 12 percent to healthcare, 10 percent to transportation, and 6 percent to information technology.<sup>10</sup>

The skills gap narrative has proven influential in policymaking circles at the federal level as well. In announcing the Tech Hire Initiative that supports short-term “boot camps” in computer programming and software development, Obama administration officials echoed the arguments of skills gap proponents. “Employers across the United States are in critical need of talent with these skills,” they explained. “Many of these [jobs],” they continued, “do not require a four-year degree.”<sup>11</sup>

## Critiques and Questions

While the skills gap has proven influential in policymaking circles, academic researchers have been more circumspect. For instance, Peter Cappelli of the Wharton School of Business at the University of Pennsylvania observes that:

It is difficult to think of a labor market issue where research using standard academic techniques has played such a small role, where parties with a material interest in the outcomes have so dominated the discussion, where the quality of evidence and discussion has been so poor, and where the stakes are potentially so large.<sup>12</sup>

One limitation to the skills gap narrative is a lack of rigorous research on the specific types of skills that employers truly need. In addition, economist Mark Levine of UW–Milwaukee analyzed labor market data and failed to find increases in average weekly hours or rising wages in occupations experiencing a “skills shortage.” If indeed there was a causal link between the lack of skilled labor and the broader economy, one would expect to see these patterns in such occupations. Instead,



Levine argues the problem is “a sputtering job-creation machine, in both the quantity and quality of jobs created.”<sup>13</sup>

In response, Jim Morgan of the Wisconsin Manufacturers and Commerce (WMC) Foundation, the state’s Chamber of Commerce, argued that Levine’s conclusions were at odds with those of the executives with whom he had spoken. “How can you tell the manufacturers in this state that they don’t have a problem when you have never talked to a single one of them?” he asked. While the conclusions of numerous academic studies should be taken seriously, we agree with Morgan that it is important to talk to people in the field to better understand their experiences.

## Our Study

Between 2013 and 2015, we conducted an interview-based study on education-industry dynamics in two prominent industries in Wisconsin: biotechnology and advanced manufacturing. We interviewed 72 hiring managers, business owners, and supervisors at

Wisconsin companies as well as 69 instructors, administrators, and career counselors at Wisconsin two- and four-year public colleges and universities.<sup>14</sup> Our goal was to examine the experiences of employers and educators as they pertain to skills-related issues and education-industry relations.

Our research was guided by the following questions:

1. What skillsets do employers and educators consider essential for long-term success in their fields?
2. How, if at all, are these valued skillsets being cultivated in educational programs and workplace training?
3. What is the nature of education-industry relations, and to what degree do they impact how skills are valued and cultivated in both sectors?

## Results

### 1. Diverse skillsets are essential for success in the workplace.

During interviews we asked participants to list the words that immediately came to mind when they thought of the skills required for someone to succeed in their field. The results in Table 2 (next page) signify each term’s “salience,” or how frequently it was referenced, as well as its ordering across participant lists.<sup>15</sup> The higher the salience score, the more important the term was for that group.<sup>16</sup>

The data indicate that both employers and educators see diverse competencies as essential for success in the modern workplace. These include technical abilities and knowledge as well as personal traits such as work ethic (.309), cognitive abilities such as critical thinking (.256), and interpersonal skills including communication (.153) and teamwork

**Table 1: Study sample**

	Interviewees (n)
<b>Total</b>	141
<b>Sex</b>	
Male	83
Female	58
<b>Employers</b>	
All employers	72
Manufacturing	62
Biotechnology	10
<b>Educators</b>	
All educators	69
2-year	25
4-year	28
Career advisors	16



Table 2: Salience of skills for succeeding in the workplace

Total sample (n=115)		All employers (n=66)		All educators (n=49)	
Term	Salience	Term	Salience	Term	Salience
Technical ability	0.348	Work ethic	0.350	Technical ability	0.381
Work ethic	0.310	Technical ability	0.322	Work ethic	0.257
Technical knowledge	0.259	Technical knowledge	0.275	Technical knowledge	0.238
Problem solving	0.180	Lifelong learning	0.171	Problem solving	0.232
Communication	0.153	Problem solving	0.141	Teamwork	0.204
Teamwork	0.149	Communication	0.130	Communication	0.183
Lifelong learning	0.142	Adaptable	0.125	Critical thinking	0.156
Innovative	0.105	Self-motivated	0.116	Innovative	0.154
Detail-oriented	0.101	Interpersonal	0.109	Detail-oriented	0.145
Self-motivated	0.099	Teamwork	0.107	Lifelong learning	0.103
Adaptable	0.098	Experience	0.107	Troubleshoot	0.099

Table 3: Skills according to National Research Council Framework

Skills Category	Examples
Cognitive	Technical knowledge, problem-solving, critical thinking
Interpersonal	Collaboration, communication, adaptable
Intrapersonal	Work ethic, innovative, self-motivated

Note: These are our freelist terms mapped onto the NRC taxonomy for 21st century competencies. The terms used in the freelist are generally similar to those used in the NRC taxonomy. Pellegrino, J. W., & Hilton, M. L. (Eds.). (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. Washington, DC: National Academies Press.

[.149]. These results contradict the current focus among policymakers on technical or “hard” skills.

The findings are also consistent with extensive research on skills needed for success in school, work, and life completed by the National Research Council (NRC), among others.<sup>17</sup> Following the work of the Nobel-Prize winning economist James Heckman, in our study we use the term “cognitive competencies” to refer to technical expertise and “non-cognitive competencies” to refer to both interpersonal skills (e.g., collaboration) and intrapersonal skills (e.g., work ethic). Some employers claimed that non-cognitive competencies were even more important than technical skills for many positions (See Table 3).

**2. Many educators cultivate diverse skillsets through hands-on learning techniques.**

Upon being asked how valued skills are cultivated, many educators pointed to specific curriculum and instructional methods that emphasize hands-on learning. These techniques, sometimes called “active learning,” aim to integrate theory and real-world practice via approaches including teamwork-oriented instruction, problem-based learning, and communication-related assignments.



This finding is notable because active learning is known to cultivate technical skills as well as non-cognitive competencies, including communication and collaboration. However, this teaching approach requires considerable training to be used effectively in the classroom. Many educators in our study utilized some form of active learning. However, other evidence at the national level has shown significant room for improvement in using these techniques, with only 57 percent of postsecondary educators using “cooperative” learning techniques in one study.<sup>18</sup>

**3. General education courses play a key role in cultivating non-cognitive competencies.**

It is challenging for educators to integrate non-cognitive skills into content or technique-heavy courses. Consequently, many educators in our study at both two- and four-year institutions looked to general education courses such as English or art history to cultivate these competencies. As a WTCS instructor in an electronics course said, “I rely on those general education instructors to help me with those soft skills, especially communication.”

**4. Employers screen applicants for “fit” with company culture—relatively little training occurs.**

Employers spoke about skills cultivation primarily through the “gate-keeping” role of the hiring process, where people lacking desired skills were not hired in the first place. According to many employer participants, their over-arching criterion is to find trainable and committed employees. Employers expect educators to have already prepared job candidates with basic cognitive and non-cognitive competencies, so that training is limited to meeting specific company needs.

When it came to actual workplace training, only 13 percent of employers in our sample provided formal training, while 32 percent

relied on informal “shadowing” where new hires followed experienced staff for a period of time.

**5. Different types of education-industry collaboration cultivate skills in different ways.**

While the majority of the educational and industry study participants reported some form of communication with the other sector, this “alignment” between education and industry took many different forms. We identified six major vehicles for engagement, each of which had different effects on students, participating businesses, and educators (see Table 4 on the next page).

While some collaborative activities, such as curriculum advisory boards, provide important conduits for educators and employers to share information, others have a more direct impact on developing student and/or employee competencies. These include collaboratively run employee training programs and student pathways programs, including internships or co-constructed classroom activities. These latter examples are particularly effective for leveraging the strengths of both educators and employers to create rich learning opportunities, yet they remain relatively uncommon.

## Policy Recommendations

Based on these data and our analysis of the research literature on skills-related issues, we conclude that Wisconsin policymakers have relied on a skills gap narrative that provides a limited account of the complex issues facing higher education and the economy. The current focus on creating short-term programs to cultivate technical skills in just a handful of industries represents an overly narrow approach that will not adequately prepare students and workers for



**Table 4: Types of education-industry collaborations and their impacts**

Type of Education-Industry Collaboration	Example/Notes	Impacts
<b>Training for employees</b>		
At educational organization	Company sends employees to local college or university for courses	Employee develops new skills and competencies
Internal workplace training	Employer and local educational organization collaborate to design company training program	Employee develops new skills and competencies/Company acquires new training curricula
<b>Guiding programmatic directions</b>		
Policy-driven curriculum advisory boards	Regular meetings between educators and local employers/ Mandated by WTCS and engineering programs	Direct communication of industry needs and developments to education/Conduit for feedback/Mostly “tips” and recommendations for curriculum and instruction
<b>Developing student competencies/resources</b>		
Student pathway programs		
<i>Multi-contact programs</i>	Internships and apprenticeships with extended student involvement with work and school	Provides students in-depth hands-on training and social capital (i.e., networks)
<i>One-time contact programs</i>	Industry field trips or tours/ Classroom visits from local companies	Provides cursory exposure of students to careers and industries
Job readiness programs	Career fairs, mock interviews, networking sessions	Provides students with cultural capital (i.e., employability skills) and tips about jobs
Curricular co-construction	Class projects suggested by industry	Provides students with hands-on training in real-world problems, cultural capital (i.e., knowledge of industry needs)
<b>Miscellaneous</b>		
Third-party organizations	Chamber of Commerce, industry clusters, government boards	Provides educators and employers with a structured venue for interacting
Informal personal relationships	Individual educators and employers know one another’s prior work or have done projects together	Provides conduit for feedback and communications/Potential for sharing of materials and job openings



success in the 21st century economy.

Instead, a more comprehensive and multi-faceted set of strategies is required that focuses on cultivating diversified competencies via teaching, training, and cross-sector collaboration. Our specific recommendations follow.

**1. Adopt a broader sense of valuable skills—focus on non-cognitive competencies.**

Employers in Wisconsin want graduates who possess a combination of technical, cognitive, and non-cognitive (i.e., interpersonal, and intrapersonal) competencies, and the scientific evidence regarding the importance of these skills is clear.<sup>19</sup> James Heckman notes that “soft skills predict success in life, that they causally produce that success, and that programs that enhance soft skills have an important place in an effective portfolio of public policies.”<sup>20</sup>

“Soft skills predict success in life . . . they causally produce that success, and . . . programs that enhance soft skills have an important place in an effective portfolio of public policies.”

Policies such as WFF focus almost exclusively on technical skillsets with no attention to the cultivation of other desired competencies. Of the 145 WFF grants made between 2013 and 2015, only 22 (15 percent) could be designated as targeting non-technical skills. In addition, attention to these competencies (or how they will be taught) is not required by WFF applicants, nor are they discussed by policymakers in their frequent statements about the skills gap.

We recommend that policymakers broaden their view of skills so that it becomes consistent with the actual views of Wisconsin employers and empirical evidence.<sup>21</sup> Additionally, we recommend that in future rounds of WFF and federal

workforce development grant-making, applicants be required to articulate a plan for how their programs will cultivate both technical and non-technical competencies.

Interestingly, some of the U.S.’ competitors in the global economy such as China and Japan are moving in the opposite direction by focusing entirely on high-demand technical competencies while de-emphasizing liberal arts and general education programming.<sup>22</sup> This raises

the question: Will Wisconsin and the U.S. acknowledge the scientific evidence, change course, and begin developing educational policies that cultivate well-rounded citizens and workers, or will

we join other nations in a race to train a generation of narrowly educated workers whose long-term success in the 21st century economy is questionable?

**2. Provide funding to train postsecondary teachers and workplace trainers in hands-on, active learning techniques.**

Wisconsin students and workers need more opportunities to participate in educational and workplace training programs that cultivate both cognitive and non-cognitive competencies. However, teaching is a challenging craft that is made more difficult when curricular and program goals are expanded to include the cultivation of these additional skillsets. Enacting high-quality instruction in classrooms throughout Wisconsin is also complicated by the fact that most postsecondary teachers and workplace trainers have not been formally trained themselves in how to teach, much less use, these techniques.



Current policy focuses entirely on creating new programs in “high-demand” fields but is silent on the critical issue of curriculum and instruction. Additionally, declining state support for public higher education, particularly for the UW System, has resulted in growing class sizes and the downsizing of promising programs, which makes instruction that truly cultivates diverse competencies more difficult to achieve.<sup>23</sup> This is unfortunate, as a considerable amount of research in the learning sciences, digital learning, and STEM education is providing educators and trainers with increasing examples of curricula and instructional techniques that could be adopted throughout Wisconsin.<sup>24</sup>

Instead of cutting funds for K-12 and public higher education, policymakers should allocate considerable resources to support the professional development of educators to learn new, cutting-edge teaching methods. Furthermore, workplace trainers should also receive professional development in these methods. Ultimately, an investment in the skills of educators will yield benefits to students, workers, and the economy for generations to come.

**3. Support general education and the liberal arts.**

The educational model that was championed by Thomas Jefferson to cultivate diverse competencies—that of general education and liberal arts programs—is currently being challenged by policymakers. Yet courses in the liberal arts are critical for cultivating well-rounded individuals with skills in critical thinking, communication, and collaboration, which

“ . . . policymakers should allocate considerable resources to support the professional development of educators to learn new, cutting-edge teaching methods.”

businesses value greatly.<sup>25</sup>

It is clear that certain certificate and degree programs lead to higher wages upon graduation, particularly in the STEM disciplines. However, if liberal arts requirements are de-emphasized or removed from certificate or degree programs, business owners and the

broader economy will ultimately suffer.<sup>26</sup> As the economists Frank Levy and Richard Murnane argue, “An emphasis on education for earning a good living does not necessarily conflict with the education

needed to be a contributing citizen in a democracy.”<sup>27</sup>

**4. Continue work to de-stigmatize skilled trades, but not at the expense of other industries and occupations.**

While programs in the skilled trades should certainly be encouraged, given the decline in vocational education in high school and the College for All movement,<sup>28</sup> it is essential to recognize that other types of occupations and industries are also crucial for a healthy Wisconsin economy.

Yet current policy is focused almost entirely on the skilled trades and other middle-skill occupations that require some college but not a four-year degree (1,070,000 projected jobs by 2018). While the focus on these occupations may be motivated as a corrective to societal preference for white-collar jobs and four-year degrees, it is short-sighted to ignore the projected 855,000 jobs requiring four-year and graduate degrees that will be added to the Wisconsin economy.

This is particularly true when the higher wages and lower levels of unemployment



that come with a four-year degree are taken into account. Consider that the average post-training wage after the first round of WFF grants was \$17.19 an hour, and \$12.17 after the second round. If these do not seem like the “family supporting wages” often talked about in workforce policy circles, that’s because they aren’t.<sup>29</sup>

Further, many Wisconsin initiatives are focused on a single industry—manufacturing. Given the growing prominence of sectors such as health care, business, and information technology in terms of the state’s GDP and projected job growth, it makes little sense to allocate over 50 percent of WFF funds to an industry that comprises only 11 percent of state GDP and 15 percent of the workforce.

Policymakers should recognize there are many types of jobs and industries that Wisconsin youth can pursue when making career decisions. Manufacturing jobs that do not require a four-year degree will certainly play an important role in Wisconsin’s economic future, particularly as the costs of attending college become prohibitive for many families. However, other educational pathways and career opportunities are also important to our state’s future.<sup>30</sup>

#### 5. Encourage education-industry collaborations that foster diversified competencies.

Current policy is focused on ensuring “alignment” between workforce needs and the postsecondary system through the creation of new programs that are considered to be in-demand. However, policymakers are overlooking the fact that education and industry interact with one another in multiple ways. Other forms of collaboration may have a greater impact on cultivating students’ skillsets.

First, student pathway programs such as internships provide students with new social networks and opportunities while also offering a real-world education. Less expensive and time-consuming than apprenticeships, internships represent a productive and cooperative form of cross-sector partnership that works in a variety of fields.

Second, co-development of curriculum, in which industry representatives provide authentic problems for educators to transform into classroom activities, represents a way to ensure the “real-world” nature of students’ education. Examples of such cooperation, including undergraduate research projects or problem-based learning, also have the benefit of cultivating critical thinking, communication, and collaboration skills.

Finally, while venues that provide educators with up-to-date information regarding the types of jobs and competencies currently desired by employers should indeed be encouraged (e.g., curricular advisory boards), educators must ultimately retain autonomy to design learning environments for their students based on their disciplinary expertise and commitment to ensuring student success throughout their entire careers.<sup>31</sup>

#### 6. Re-frame the debate: Recognize that educators, employers, parents and the broader culture all play a critical role in cultivating young people’s competencies.

The debate about jobs and education must be reframed. Instead of vilifying the educational sector and singling teachers out as the sole cause of the “skills gap,” policymakers must recognize that educators are but one of the parties responsible for cultivating the skillsets of the state’s youth and adult workers. However, in the past several years we have witnessed an increase in rhetoric casting



aspersion on the educational sector in general, and the teaching profession in particular. Much of this is due to the overly simplistic view that education is the primary, if not the sole, cause of slow economic growth.<sup>32</sup>

Employers, parents, the broader culture also play a critical role in shaping students' skills and dispositions. In particular, the business community could play a more proactive role. Research by the Manpower Group, for example, found that only one in five employers provide formal training to their staff, and in our research only 12 percent of employer respondents said they offer formal training. As one technical college instructor familiar with the German model of apprenticeships observed, "It's going to take more companies taking on the responsibility [of training]" before any skills-related crises are adequately addressed. This is why we include workplace trainers in each of our recommendations—though whether public funds should be allocated to the private sector to develop training programs is a matter for serious debate.

The current atmosphere that pins responsibility on a single party—educators—is counterproductive. It is important for educators, business owners, families, and policymakers to work together in a productive and collaborative fashion to successfully address the disconnect between academic studies and professional preparation for the labor market. Future policy and rhetoric should be more inclusive if the goal is truly to prepare students for success in school, life, and work.

### **Acknowledgement**

This study is supported by the National Science Foundation (DGE #1348648). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.



## Endnotes

- 1 Additionally, the industries contributing to the state's \$292.9 billion gross domestic product include the "all others" category (39 percent); finance, insurance, and real estate (20 percent); government (12 percent); durable goods manufacturing (11 percent); educational services and health care (10 percent); and professional and business services (9 percent). Source: U.S. Bureau of Economic Analysis.
- 2 See presentation by Department of Workforce Development Chief Economist Dennis Winters 2015: <http://districtboards.org/documents/Quarterly%20Meeting/415/EconomicsWinters2015web.pdf>; also see data from the Wisconsin Department of Workforce Development, Office of Economic Advisors: Industry Employment Projections and Occupation Projections 2012-2022.
- 3 While some see manufacturing-related industries as being the primary driver of economic growth, there are questions about the ability of some manufacturing sectors (e.g., paper printing) to thrive in a technologically advanced global economy.
- 4 Carnevale, A. P. and Smith, N. (2011). *The Midwest Challenge*. Georgetown University Center on Education and the Workforce.
- 5 Of course, educational attainment has significant implications for earnings and unemployment over one's lifetime.
- 6 See Sullivan, T. (2012). *The road ahead: Restoring Wisconsin's workforce development*. Prepared for Wisconsin Governor Scott Walker. Retrieved from: <http://doa.wi.gov/secy/documents/sullivanreport.pdf>
- 7 Content, T., & Herzog, K. (2012, August 21). Effort seeks to close gap between jobs and workers' skills. *Milwaukee Journal Sentinel*. Accessed at: <http://www.jsonline.com/business/effort-seeks-to-close-gap-between-jobs-and-workers-skills-2i6irg3-166927906.html>
- 8 Wisconsin Legislature, 2013; One such training grant was a \$238,471 award to Stoughton Trailers to train 395 new production workers and 195 incumbent employees in lean manufacturing and welding skills.
- 9 See: <http://wisconsinfastforward.com/prosperity>
- 10 See: <http://wisconsinfastforward.com/reports.htm>
- 11 See: <https://www.whitehouse.gov/the-press-office/2015/03/09/fact-sheet-president-obama-launches-new-techhire-initiative>
- 12 Capelli, P. H. (2015). Skills gaps, skill shortages, and skill mismatches: Evidence and arguments for the United States. *ILR Review*, 68 (20, 251-290).
- 13 Levine, M. (2013). *The skills gap and unemployment in Wisconsin*. Center for Economic Development Working Paper. Retrieved at: [http://www4.uwm.edu/ced/publications/skillsgap\\_2013-2.pdf](http://www4.uwm.edu/ced/publications/skillsgap_2013-2.pdf)
- 14 Data analyses took place using two methods, evaluating the salience of terms from the freelist exercise and thematic analysis of the interview transcripts.
- 15 The respondent's term list was translated into the standardized term list, then a salience measure (developed by Smith 1993) is used to calculate a mean percentile rank for each term across all respondent lists.
- 16 Note that the sample in this analysis is smaller than our total study sample. That is because not all participants provided useable data for the analysis. The data for this exercise, called a freelist, needs to be in the form of single words or short phrases, but some participants were unable to answer the prompt in this way and instead provided lengthy expositions.
- 17 See Pellegrino J.W. & Hilton, M.L. (Eds.) (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. Washington, DC: National Research Council; see also Heckman, J.J. & Kautz, T. (2012). *Hard evidence on soft skills*. *Labour Economics*, 19 (4), 451-464.
- 18 See the 2013-2014 Faculty Survey conducted by the Higher Education Research Institute at the University of California, Los Angeles (<http://www.heri.ucla.edu/facoverview.php>).
- 19 This is not dissimilar to the idea of a "T-shaped professional," or someone who has depth in a particular technical or academic area, and breadth in a variety of competency areas that often include communication, collaboration, and creativity.



20 We prefer the terms used in the NRC report (cognitive, interpersonal, intrapersonal) to “soft skills,” which are ambiguous and connote less important and less rigorous competencies. However, there remains considerable disagreement in the field regarding what to call the various types of competencies. See Heckman and Kautz (2012) for the quote.

21 There is a national push in the U.S. to integrate non-cognitive skills into educational curricula and assessment. For an example see The National Academies of Sciences, Engineering, and Medicine efforts on assessing 21st century skills (<http://www.nap.edu/catalog/13215/assessing-21st-century-skills-summary-of-a-workshop>).

22 See Obe, M. (Aug. 2, 2015). Japan rethinks higher education in skills push. *Wall Street Journal*. Retrieved at: <http://www.wsj.com/articles/japan-rethinks-higher-education-in-skills-push-1438571119>, and Chan, J. (2015). Is China creating a workforce with no soft skills? British Council. Retrieved at: <http://www.britishcouncil.org/voices-magazine/china-creating-workforce-no-soft-skills>

23 One of the most effective programs for cultivating diversified skillsets that we identified in our study—that of the undergraduate research experience—lost up to \$40,000 in funds due to recent budget cuts at UW–La Crosse alone. In this program, local businesses offered ideas for research, students engaged in a semester-long research project from start to finish, and the “client” was presented with the results.

24 See the following for an introduction to the science behind teaching methods that focus on hands-on, active learning experiences: Bransford, J.D., Brown, A.L., & Cocking, R.R. (Eds.) (1999). *How people learn: Brain, mind, experience, and school*. Washington DC: National Academy Press.

25 We are not suggesting that no problems exist with the current model of liberal arts education. As data from a recent report by the UW-Madison College of Letters and Science demonstrates, careers services could be improved and 9.7 percent of graduates feel that their education is “irrelevant” to their current work. However, this data and the fact that only 64 percent of employed, liberal arts graduates are in jobs that require a BA/BS may speak to employer hiring practices (i.e., upskilling) as well as the market value of these degrees. See UW-Madison College of Letters and Sciences (2015). *Career initiative alumni survey 2012/2013 graduates*. Madison, WI: College of Letters and Sciences.

26 See Carnevale, A.P., Cheah, B., & Hanson, A.R. (2015). *The economic value of college majors*. Center on Education and the Workforce. Washington, DC: Georgetown University.

27 See Levy, F. and Murnane, R. J. (2004). *The new division of labor*. Princeton, NJ: Princeton University Press.

28 “College for All” is the name given to the push for all secondary students to attend some form of postsecondary institution.

29 WFF grants are made to individual companies and/or collaborations among trainers, companies, and technical colleges. According to the MIT Living Wage calculator, a living wage for a family of four in Green Bay, Wisconsin, is \$21.95 an hour. However, the average hourly wage for employees of Fast Forward grantees was barely above the hourly poverty wage of \$11.00 an hour. The proposed average post-training wage was an optimistic \$17.19/hour in Round One, however fell to an average of \$12.17/hour in Round Two of the grants. No explanation for this drop in post-training wages was provided in the WFF annual report.

30 Of the 6.6 million jobs added by the national economy since 2010, 2.9 million can be considered “good” jobs (in the upper 1/3 of median wages by occupation) and college graduates took 2.8 million of these positions. See Carnevale, A.P., Jayasundera, T. & Gulish, A. (2015). *Good jobs are back: College graduates are first in line*. Washington, DC: Georgetown University Center on Education and the Workforce.

31 One approach that balances the autonomy of educators with the needs of industry is that of the Accreditation Board for Engineering and Technology (ABET). The ABET criteria for program accreditation mandates the articulation of certain program learning outcomes that are competencies required by industry (e.g., students will have effective communication skills). However, each institution and department has the autonomy to determine how learning outcomes will be measured at the program and course levels. See: <http://www.abet.org/accreditation>

32 As Tim Sullivan said in 2011, “We don’t have a jobs crisis in Milwaukee, we have an education crisis.” See: <http://www.jsonline.com/news/education/mmac-pushes-plan-to-close-education-gap-in-milwaukee-v42usqa-133415153.html>



---

# POLICY BRIEF

---

University of Wisconsin–Madison  
353 Education Building  
1000 Bascom Mall  
Madison, WI 53706-1326

Telephone: 608-265-6342  
Fax: 608-262-4881  
Email: [www.wiscap-info@education.edu](mailto:www.wiscap-info@education.edu)  
Website: [www.wiscap.wisc.edu](http://www.wiscap.wisc.edu)

The Wisconsin Center for the Advancement of Postsecondary Education (WISCAPE) promotes the creation and sharing of ideas for addressing Wisconsin’s postsecondary education challenges. The production and dissemination of publications are a major part of this effort.

WISCAPE Policy Briefs are succinct analyses that provide policymakers, practitioners, and others with knowledge and recommendations based on the latest research and best practices in the field.

#### Credits

Editing and Layout: Kari Dickinson

Send questions about WISCAPE publications to:

Kari Dickinson, Communications Manager, 608-265-6636, [kadickinson@wisc.edu](mailto:kadickinson@wisc.edu)

Recommended citation for this publication:

Hora, Matthew T; Benbow, Ross J; Oleson, Amanda K; and Wang, Yimin (2015). *A different take on the “skills gap”: Why cultivating diverse competencies is essential for success in the 21st century economy* (WISCAPE POLICY BRIEF). Madison, WI: University of Wisconsin–Madison, Wisconsin Center for the Advancement of Postsecondary Education (WISCAPE).