

INTRODUCTION

Why Study the Skills Gap in Wisconsin?

Soon after the effects of the Great Recession of 2008 hit the nation and waves of the unemployed (and underemployed) hit the streets, newspapers and websites were inundated with reports about something called a “skills gap.” The basic idea behind these stories was that plenty of jobs existed, but skilled workers did not. At the height of the 2012 presidential campaign, even President Barack Obama and candidate Mitt Romney claimed that thousands of US employers yearned for skilled workers and that the nation should invest in more advanced vocational training. CNBC went further, claiming that this skills gap was “killing millions of jobs.”¹

Who or what was the primary culprit for the apparent paucity of sufficiently prepared job applicants? According to many proponents of the skills gap theory, it was US high schools’ focus on precollege academic curriculum over vocational, hands-on training; a societal dismissal of skilled trades and the value of two-year technical and community colleges; and four-year universities’ grounding in liberal arts programs that had no real worth in the labor market.²

But while some claimed that a skills gap was a real phenomenon plaguing companies across the country and even the world, others argued that it was a myth concocted by business interests to shift the burdens of employee training to the public sector.³ Furthermore, outside of statistical analyses of large datasets in the field of labor economics, there were few rigorous studies of people’s actual experiences in the field with these skills problems.

As an applied anthropologist originally intrigued by the complex issues implicated in people's food habits, which included the overlapping spheres of the economy, history, geography, culture, and politics, I had come to the University of Wisconsin–Madison to study a similarly complicated problem: how to improve teaching within research universities. When debates about the skills gap began to touch upon issues like the future of public higher education and which majors college students should pursue, it quickly became evident that here, too, was a “wicked” systemic problem that could whet my intellectual curiosity. As arguments about skilled workers and the role of public higher education in society became enveloped in many of the policy debates in my newly adopted home state, it also became clear that the skills gap debate was only the tip of the iceberg, and that a study on these issues could contribute some new insights and evidence to a topic that was becoming increasingly political, contentious, and influential around the United States and the world.

STUDYING EDUCATION-INDUSTRY RELATIONS IN POLITICALLY DIVIDED WISCONSIN

I didn't know much about Wisconsin growing up in southern California. There, everything east of the Colorado River was a bit of a wheat- and corn-soaked blur until you hit the Eastern Seaboard. If anything, I imagined the typical images of Wisconsin—Packer cheeseheads, Miller beer, and lots of cows. But in college I discovered something about the political history of the state: this is where the Republican Party was founded; where the Progressive movement began; where the Wisconsin Idea—about higher education's connection to public service—originated; where Aldo Leopold wrote his famous environmental works; and where the labor movement had many of its origins and first victories.

All of this history became impossible to ignore after newly elected Governor Scott Walker signed a piece of legislation called Act 10. The bill included a set of reforms to the state's collective bargaining laws, public employee benefits, and much more that ultimately led to the national media setting up camp in downtown Madison to cover the unfolding drama. Thousands of people filled the streets of Madison in protest, and neighbors and pundits alike discussed what these changes meant for the status of public employees, the future of public education, and whether

the public good was being protected and advanced by these new policies. No matter whose side you were on, it was clear that these were potentially watershed moments in the history of the Badger State. Upon close inspection, it was also evident that the skills gap was a centerpiece of the reformist agenda being advanced by the government, based on the notion that public higher education needed to be restructured in order to better meet workforce needs.

It was in this context that I began to explore the underlying issues behind the skills gap idea. Unlike other researchers, I wasn't attempting to prove or disprove the existence of skills gap; instead my goal was to offer a systemic analysis of the underlying issues based on the perspectives of people in the field. I visited manufacturing and biotechnology businesses in and around the Madison area, touring cavernous warehouses and tidy research labs, interviewing human resource directors, CEOs, and supervisors who regularly interacted with the company's production staff. I selected these sectors to study because they represented something of the "old" and "new" economies in Wisconsin, and in some cases, a combination of the two as manufacturing businesses are increasingly using high-tech robotics in their facilities.

While I certainly heard about the lack of applicants in certain occupations, primarily middle-skill (and middle-pay) jobs such as welding and machining, a so-called more common complaint from business owners pertained to the lack of "soft" skills across *all* job categories. For example, a biotechnology executive spoke of the importance of communication in the firm's team-based work, observing that, "Just simple communication is an unbelievable problem." In fact, the company had some brilliant scientists on staff, but one in particular was "virtually impossible to work with in a team and that's just not conducive to the work we do."

At a company that manufactured pumps for industrial engines, in a cleanly scrubbed and well-lit warehouse that belied the common perception of manufacturing as a smoky Dickensian nightmare, a supervisor described how the changing nature of the industry had led to a shift in the competencies required in its workforce. "A diesel technician ten years ago would work on the same pump every day for years and become an expert on it," he said, but now because the work is more contract-based, the company is making new products on a more rapid schedule. In short, it now needs people "that can handle change and adapt," or what some call

lifelong learners. Why the focus on this ability and willingness to learn? Given people with some basic core competencies like a strong work ethic, this employer felt he could train them on their specialized machinery and procedures to fit the company's specific needs. The more factories and labs I visited, the clearer it became that the problems (and subsequent solutions) about skills were not as straightforward as they at first seemed. It wasn't just a lack of technical training that was plaguing the business community.

Jim Morgan from Wisconsin Manufacturers and Commerce (WMC), which represents the state's manufacturing industry and is often referred to as the largest business lobby in Wisconsin, shared something he repeatedly heard in a series of focus groups he had held with manufacturing executives:

About halfway through, one of the folks said, "You know, what we measure when we're trying to hire somebody is YOTF." And I said, "What is YOTF?" And the guy said, "Years off the farm." And if I could summarize the skill set that's missing, I think that's it. If you think of kids who grew up on a farm in terms of work ethic—I mean you're getting up at six o'clock in the morning, you're working every night, you never get a day off—they get that, and they get the problem-solving part because if something breaks down on the back forty, you've got to figure out how to fix it.

This idea—combined with what I was hearing in the field—helped to reframe the issue. Addressing the apparent challenges facing employers as they sought qualified employees was not a simple issue of making higher education more responsive to workforce needs or convincing more high school students to study welding instead of French literature. While there were certainly difficulties with educational pathways and academic programming, they were not the only factors shaping the types of skills and aptitudes that students developed and then took into the labor market as job applicants.

What Jim captured and what I was seeing in the field was a far more complicated *cultural* issue that had much to do with how (and where) someone was raised, and the beliefs, habits of mind, and values instilled in them by role models and peers in school, sports, and work. This fact implicated parents, employers, workplace trainers, soccer coaches, and

the broader society itself that lay far outside the mandate or reach of post-secondary educators, who were nonetheless being singled out as the primary cause of the skills gap problem.

THE PURPOSE OF HIGHER EDUCATION

Further complicating matters was a big question: What is the purpose of higher education in today's society? Is it to prepare students to get a job (the "vocationalist" perspective) or to develop their moral character, sense of civic responsibility, and intellectual skills more generally (the "liberal arts" perspective)? Is its purpose to contribute to the public good by addressing issues and challenges that face all of society—such as climate change, income inequality, and a sluggish economy—or to provide students and other well-placed individuals with increased wealth and privilege for their own private gain? Or is the purpose of college somewhere between these polar opposites—to teach *both* the "practical arts" and classical subjects, as envisioned by the developers of the land-grant universities in the United States, support the intellectual and moral development of students, and contribute to a more democratic society and vibrant economy?

Of course, these questions are not new, and the relative value of a vocational versus a liberal arts education, as well as the ultimate mission of US higher education, have been debated since the late 1800s. But in this digitally interconnected world, these questions and the skills gap idea had become ubiquitous in the mass media and policy makers' rhetoric. As the idea expanded from a simple explanation of slow economic growth to encompass these bigger questions about the purpose of higher education, the topic demanded a more extensive analysis than my small pilot study was able to offer.

So I proposed to the National Science Foundation a larger study on education-workforce alignment issues where, in addition to business owners, I would also talk to a group of people who were largely invisible in the skills gap debate: professional educators. To me they played a crucial role in any productive and comprehensive accounting of the skills gap because they were on the front lines designing the curriculum and teaching the employees of tomorrow. Since they were apparently doing a poor job of preparing students for work, shouldn't we find out what skills they

thought were important for student success and what they were doing to cultivate them? With a PhD in the learning sciences and hundreds of hours spent observing college-level classes, I thought I could bring some useful perspectives to these issues.

So I gathered a team at the Wisconsin Center for Education Research at UW-Madison to examine these issues across the entire state, from the traditional manufacturing powerhouse of Milwaukee to the less well-known industrial hub of Superior in the north, and from the flagship university in Madison to the smaller technical colleges in the state's rural midsection. I found two colleagues who would embark on this ambitious project with me. The first was Amanda Oleson, who hailed from Wisconsin Rapids, Wisconsin, and whose sharp eye, keen wit, and skills in interviewing random people were a perfect fit for the study. The second was Ross Benbow, who was born in Neenah, Wisconsin, and raised in Madison, and whose experience conducting international fieldwork, natural sense of story, and grasp of social theory rounded out the team.

A side note: As employees of UW-Madison with careers invested in the educational enterprise—whether through teaching and/or conducting research on the topic—we certainly have “a dog in the fight” of the skills gap debate. Our university, of course, is the subject of many critiques and budget cuts. But, we are professionally trained researchers who engage in empirical research with a diligent objectivity, which for us meant entering the field with no predetermined conclusions. While some social scientists adopt a more advocacy-based approach when designing their studies, we have focused all along on documenting and describing the systems implicated in the skills gap debate in as rigorous and detailed a manner as possible, and not on advancing any particular agenda. Once the evidence was in hand, however, it became clear that we had a responsibility to communicate how our findings contradicted the dominant narrative being advanced in Wisconsin and abroad about higher education's role in workforce development and society itself.⁴

From the end of 2013 through 2015 we fanned out across the state and talked with seventy educators in two- and four-year colleges and universities. We asked them about their curriculum, their goals for students, and how, if at all, they interacted with industry. We also met with seventy-five HR directors, CEOs, and shift supervisors in nearby companies,

speaking with them about their experiences with the labor market, the types of skills they valued, their training programs, and how, if at all, they interacted with colleges and universities in their regions.

To better understand the complex interplay among individual behavior, cultural factors, and the educational, business, and political sectors, we utilized a theoretical framework that integrated perspectives from three different disciplinary traditions: cultural models theory from anthropology, field theory from relational sociology, and systems perspectives from engineering and organizational studies. With this framework we focused on the way in which students acquire—via education and training—new competencies and habits of mind, which they then take into the labor market as a form of “cultural currency” that ideally results in job offers and promotions. Importantly, a systemic account offered us a way to discuss the myriad interconnected factors that shape learners’ identities and development, instead of the more dominant way of thinking about these issues: in linear terms where one cause (i.e., educators) leads to one effect (i.e., a skills gap).

THE CENTRALITY OF CULTURE: CULTIVATING TWENTY-FIRST-CENTURY HABITS OF MIND

Through our analysis we made some discoveries about the types of competencies that educators and employers found valuable, strategies for cultivating them in college and university classrooms, and forms of partnership that appear to bridge the gap between the two sectors so that students are prepared to succeed in life and work.

These valued competencies, what we call *twenty-first-century habits of mind*, include skills, knowledge, and aptitudes such as technical knowledge and abilities, critical thinking, teamwork, communication, and work ethic. These competencies are invaluable because they are necessary to perform the nonroutinized, creative tasks that are increasingly the hallmark of many workplace tasks and problems.⁵ The term *habit of mind* conveys that we are not speaking of discrete skills or knowledge alone, but of a more comprehensive way of thinking, acting, and being in the world. For example, the habit of mind that was perhaps the most commonly discussed throughout our study was the ability to engage in the kind of complex problem-solving tasks that inevitably (and regularly)

arise in the workplace. This competency is remarkably similar to the critical, open-minded, and flexible way of investigating and understanding oneself and the world that is the hallmark of a liberal education.⁶

To foster these habits of mind, however, is no small feat. Instead of being a simple matter of quickly conveying skills or abilities in a two-week bootcamp or short course, educators and trainers must design curricula and learning activities that enable students to actively cultivate new habits of mind over longer periods of time. Furthermore, to facilitate learners' abilities to transfer newly acquired skills or knowledge to the novel situations they will face in the workplace, classroom activities need to actively engage students in problems that combine rigorous disciplinary concepts with authenticity, such that other newly acquired knowledge can be mapped onto real-world settings. Such an approach is not dissimilar to traditional apprenticeship, where contextualized learning is overseen by experts who gradually "fade out" their mentoring over time as learners acquire more and more experience, which has led some to call this new approach to instruction a "cognitive apprenticeship."⁷ Unfortunately, the overly didactic lecture with students sitting passively in their seats for fifty minutes remains all too common in college classrooms.

Still, while a more enlivened postsecondary classroom is certainly an important venue for cultivating students' habits of mind, it is not the only one. Employers also have a considerable amount of responsibility for supporting their employees in acquiring valued competencies throughout their careers via training and professional development opportunities. Yet here, too, there exists room for improvement. Workplace training is rarely brought up in discussions about the skills gap and, in our study, relatively few business owners provided formal training for their staff. Further complicating the skills gap narrative, in which technical skills in "high-demand" disciplines will get you a job, we often heard hiring described as an issue of "screening for cultural fit." Even with the right technical credentials, a qualified candidate still may not get the job if their personality and other intangibles do not match the organizational culture.

With these results in mind we argue that the quandary facing higher education and the workforce is a decidedly cultural issue, in that it is not simply "skills" that many educators strive to cultivate or that employers desire, but ways of thinking and acting that are acquired through a long-term immersion in a cultural milieu, whether it be a physics classroom,

a biotechnology company's lab, or the family dairy farm. In this way, it is not only educators who are implicated in these issues, but also family, places of worship, and business owners, whose practices play a not inconsiderable role in who gets hired and how, if at all, employees' competencies are cultivated throughout their careers.

Based on the evidence, we also conclude that the skills gap narrative should be rejected and replaced with a more comprehensive and nuanced perspective on the relationships among higher education, the workforce, and society. While localized skills shortages do exist for certain occupations, the narrative misses the far more important fact that there is a widespread need for twenty-first-century habits of mind across all occupational groups and throughout people's entire working lives, and that the teaching profession is central in cultivating these competencies in college students. The skills gap argument also ignores discussions of classroom teaching and curriculum design, focuses on technical skills alone, assigns blame to only one party (i.e., education), overlooks multidisciplinary education (i.e., the liberal arts), ignores the cultural aspects of teaching and hiring, and most importantly, fuels an overly narrow vision of higher education and public policy that places much greater value on private gain rather than the public good. Unfortunately, in states such as Wisconsin, skills gap proponents' impatience with a purportedly out-of-touch professoriate has led to the systematic defunding of public higher education, which ironically undermines the educational sector's ability to cultivate in students the very competencies needed to address the economic and societal challenges of the twenty-first century.

However, we do not suggest that change is unnecessary in the higher education sector. The evidence suggests that the adoption of active learning teaching methods is slow and spotty at best.⁸ The student debt crisis and the rising price tag of a college education also make ignoring students' future job prospects—a not uncommon practice in some non-professional programs in four-year institutions—an untenable stance. Instead, we conclude that the most propitious course of action for higher education in the early twenty-first century is a “new vocationalism,” or a program based on the liberal arts tradition of cultivating well-rounded students via a multidisciplinary education, but with careful attention to students' career prospects and needs. UW-Madison has belatedly figured this out: in 2012 it launched a Career Initiative in the liberal arts-based

College of Letters and Sciences, designed to help students “connect the dots between the liberal arts and a career” by offering career counseling, résumé development services, and tips on internship opportunities.⁹ Through integrating a more concerted focus on career counseling into a robust liberal arts education, the university is addressing key elements of what we call the *skills infrastructure*, or the policies, programs, and people that most support the development of graduates with twenty-first-century habits of mind. The other components of this skills infrastructure, which implicate noneducational entities such as government and business, include supporting teachers (and workplace trainers) who are adept at using active learning techniques, investments in company-based training, and education-workplace partnerships that create the conditions for collaborations between educators and employers.

Ultimately, our analysis revealed that no “silver bullet” solution exists to the challenges facing higher education and the labor market. Instead, each aspect of the skills infrastructure must be engaged and leveraged in order to truly prepare college students for life and work. Unfortunately, the exclusively vocational conception of higher education that is sweeping the globe, transforming the ways colleges and universities are funded and operated leaves no room for such nuance, such as the notion that the liberal arts model has a viable role to play in the twenty-first-century college or that the business sector itself shares responsibility for skills-related problems. This approach, which was being promulgated in Wisconsin during our study, is a tragic error, particularly when translated to fiscal policy. Coupled with the elimination of government revenue through tax cuts and a refusal to generate additional funds, the neoliberal vision has led to massive budget cuts in public higher education throughout the United States in order to “balance” budgets—a draconian response to a self-imposed problem.

Our conclusion is that this market-first vision of higher education is leading the state, nation, and the world down the wrong path, and our data clearly indicate that such an approach actively harms educators’ ability to cultivate the creative, rigorous thinkers that the business community needs and that have made the US higher education system the envy of the world. The focus on education as workforce development above all else also undermines the notion of collective responsibility and public service encapsulated by the Wisconsin Idea, raising questions about who

precisely will be looking out for the interests of the public and advancing knowledge for the benefit of the many and not the few. The neoliberal view that the logic and goals of the market should be inseparable from public education is doing real, lasting damage—whether through the layoff of 10 percent of the county extension workforce that has provided technical assistance to Wisconsin farmers for over a century, or through arguments that art history departments have no role to play in today’s public institutions. Ultimately, the ideology, whether adopted by policy makers from the left or right of the political spectrum, impairs postsecondary educators’ ability to prepare students to deal with the pressing social, environmental, and economic issues affecting the world today, tomorrow, and for generations to come.¹⁰

ORGANIZATION OF THE BOOK

The purpose of this book is to recount our experiences studying higher education-workforce systems amidst the political drama that took place between 2011 and 2015 in Wisconsin, while also advancing a vision for a different way to think about higher education–workforce relations, for what postsecondary teaching can and should look like, and for reframing the debate about the future of higher education in society. This vision includes a systems-oriented roadmap for cultivating students’ twenty-first-century habits of mind based on the expertise and insights of practitioners and scholars in the field, all of which point to the necessity of having a highly skilled and institutionally supported instructor in every college and university classroom.

As we interviewed teachers in both university and technical college classrooms, the way in which several of our study respondents approached teaching struck us as particularly promising. They talked about their classrooms as venues for cultivating technical skills as well as other competencies such as teamwork and communication. Their perspectives on the purposes of education, the role of formal schooling *and* industry in addressing workforce issues, the relationships they shared with the community (including local businesses), and above all, the way they structured their classrooms around best practices from current learning theory led us to closely examine their lives, perspectives, and approaches to the profession of teaching.

We were familiar with these theories based on our experience in the learning sciences and the growing movement in STEM (science, technology, engineering, and mathematics) education to encourage faculty to adopt interactive, hands-on approaches to teaching. After our initial interviews, we followed up with several individuals and returned to their colleges, speaking more extensively about how they approached their courses. We also sat in on some classes to observe their teaching practice firsthand.

These educators acted as our guides through the educational system of Wisconsin, where students are being prepared for careers in manufacturing and biotechnology:

- Tim Wright, a composites instructor at the Wisconsin Indianhead Technical College in Superior;
- Lisa Seidman and Mary Ellen Kraus, instructors in a biotechnology program at Madison College;
- Peter Dettmer, an instructor of automated manufacturing at Madison College;
- Tom Heraly, an electronics instructor at the Milwaukee Area Technical College;
- Ron Petersen, an electronics systems and maintenance instructor at Western Technical College in La Crosse;
- Scott Cooper, a professor of cellular and molecular biology at the University of Wisconsin–La Crosse; and
- Janet Batzli, the associate director of the University of Wisconsin–Madison’s Biology Core Curriculum (Biocore) program.

In each region of Wisconsin they walked us through the nuances of labor market dynamics and educational issues in their particular industry and locale. We heard about their colleges’ challenges and successes and were given a front-row seat to the skills gap issue as it unfolded in the state’s classrooms. Their insights brought to life the often-abstract debate about the skills gap, and we were fortunate to have been granted an insider’s perspective that complemented our own findings and that of other academic researchers.

We have organized the book to tell the unfolding story of the political developments surrounding public higher education in Wisconsin as a backdrop to our discussions of the skills gap debate, the importance

of twenty-first-century habits of mind, strategies for improving teaching and student support services, and ultimately, our vision for the future of higher education.

First, we review the context of our study, including the political environment of Wisconsin and the historical debates about the purpose of higher education in the United States (chapter 1). Then, we introduce the primary aspects of the skills gap argument that is motivating a considerable amount of public policy on higher education (chapter 2), followed by alternative accounts of the relationships among education, the labor market, and society (chapter 3). We then discuss the theoretical framework used in our study and the centrality of cognition, culture, and context to these debates about higher education and the workforce (chapter 4). Next, we take a close look at the types of competencies that employers and educators in our study and the research literature argue are essential for students if they wish to succeed in school, life, and work (chapter 5). Then we shift gears and focus on the classroom and strategies for change. Based on our fieldwork and the research literature, we describe some of the teaching strategies we observed in the field that target communication, teamwork, self-regulated learning, and critical thinking (chapter 6). Then we introduce our systems-oriented analysis of the factors that most support (and impede) progress toward enacting these teaching practices in every college classroom (chapter 7). These include a well-trained teaching workforce that is adequately compensated and supported by organizational and political leadership (chapter 8), career and academic support services for students (chapter 9), and education-industry partnerships that facilitate the development of new programs, school-to-work pathways, and high-quality curricula for both academic courses and training programs (chapter 10). Finally, in our conclusion we offer a new way of thinking about the tension between liberal arts and professional preparation, and ways that policy makers can make this vision a reality.¹¹

Individual stories show us, in stark relief, that no one is a caricature—neither of the ivory tower liberal nor the community college technician. As debates rage in Wisconsin and across the nation over the best way to invest taxpayer resources in higher education and economic revitalization, educators like Tom Heraly are quietly but deliberately thinking about how best to give those they teach the opportunity to improve themselves and their lives.

“That’s what you have to wrestle with,” Tom told us, as we sat in an empty, nondescript classroom in the old downtown Milwaukee building that houses his electronics program. Programs at the technical college where he teaches are a last chance, in many ways, for nontraditional students in the Milwaukee area to get an education and a better job. Tom had spent many years in industry, but asked himself one question constantly: “Am I training or am I educating?” After a thoughtful pause, he said, “A manufacturer wants training, and they want them to know it now—they need it immediately.” But was that best for the student? Society? Industry? “If I train you how to use this [specific] software, that’s training, the short term,” he observed, concluding that despite pressures from industry, this was not his ultimate goal. Instead, Tom’s vision extended beyond that first job to students’ entire working lives, where they likely would change jobs and even careers multiple times. Ultimately, he decided, “I want the educational part of it.”