



Reconsidering College Student Employability: A Cultural Analysis of Educator and Employer Conceptions of Essential Workplace Skills

WCER Working Paper No. 2018-5
March 2018

Ross J. Benbow

Wisconsin Center for Education Research
University of Wisconsin-Madison
email with link

Matthew T. Hora

Wisconsin Center for Education Research

Suggested citation: Benbow, R. J., & Hora, M. T. (2018). *Reconsidering college student employability: A cultural analysis of educator and employer conceptions of essential workplace skill* (WCER Working Paper No. 2018-5). Retrieved from University of Wisconsin-Madison, Wisconsin Center for Education Research website: <http://www.wcer.wisc.edu/publications/working-papers>

© 2018 by Ross J. Benbow and Matthew T. Hora. All rights reserved. Any opinions, findings, or conclusions expressed in this paper are those of the author and do not necessarily reflect the views of the funding agencies, WCER, or cooperating institutions. Readers may make verbatim copies of this document for noncommercial purposes by any means, provided that the above copyright notice appears on all copies. WCER working papers are available on the Internet at <https://wcer.wisc.edu/publications/working-papers>

Abstract

The belief that college students need to have gained “employability skills” by graduation increasingly dominates U.S. higher education policy and practice. However, critiques of this view abound, including its reliance on researcher-driven frameworks, focus on generic lists of skills divorced from occupational and disciplinary contexts, and the notion that the acquisition of skills alone will ensure students gainful employment. In this paper we report findings from a field study of educator and employer ($N=152$) conceptions of essential workplace skills in biotechnology and manufacturing fields. Using a cultural framework, we analyze interview data with free-list, inductive analytical, multidimensional scaling, and network affiliation techniques. Results indicate that considerable variation exists in how members of different disciplinary and occupational communities value and conceptualize important skills, though the competencies of work ethic, technical knowledge, and technical ability represent core competencies valued by all groups. Respondent conceptions of skills were also strongly tied to geography and organizational cultures. We conclude that skills are best viewed as multifaceted and situated assemblages of knowledge, skill, and disposition—what we call “cultural models.” With these results in mind, we argue that postsecondary educators should resist the perspective that the accumulation of discrete “skills” alone can guarantee employment, and we urge the adoption of a more nuanced view that takes into account the cultural and contextual forces that shape student disposition and success in the workplace.

Keywords: higher education, employability, skills, cultural models, cultural capital, context.

Reconsidering College Student Employability: A Cultural Analysis of Educator and Employer Conceptions of Essential Workplace Skills

Ross J. Benbow and Matthew T. Hora

A dominant narrative shaping discussions about the role and purpose of postsecondary education in the early 21st century focuses on graduates' "employability skills," and whether colleges and universities provide students with the skills, knowledge, and abilities that lead to productive employment. While this current discourse has its roots in 1980s-era concerns about national economic competitiveness and whether schools adequately prepare workers for the "new" economy (e.g., Olssen & Peters, 2005), accountability pressures in education and worries about the rising price tag of college in the wake of the 2008 recession have refocused scholars, analysts, and policymakers on graduates' place in the labor market. Like the closely related "skills gap" argument (Hora, Benbow, & Oleson, 2016), however, the employability narrative effectively frames the ability to get a job as dependent on the "supply" side of the labor market equation. In this frame, colleges are solely responsible for giving students skills that would satisfy employer needs, spur economic growth, and facilitate social mobility (Cleary, Kerrigan, & Van Noy, 2017; Moreau & Leathwood, 2006). This perspective on higher education's role in the labor market and in society, which has seen the concept of "employability" effectively embedded in coursework, graduation requirements, and accountability frameworks (Clarke, 2017; Holmes, 2013; Tomlinson, 2017), has become one of the most influential narratives shaping postsecondary policy and practice around the world today.

Informing much of the discourse and attendant changes in postsecondary instruction and assessment is a panoply of lists of valuable skills that college students should acquire in order to achieve success in the labor market. Some of these skills frameworks and related policy initiatives have proven to be highly influential, such as the framework for 21st century competencies (i.e., cognitive, inter- and intrapersonal competencies) in the United States (Pellegrino & Hilton, 2012), the Mayer Report in Australia that focused on intellectual abilities, basic skills, and personal attributes (Curtis & MacKenzie, 2001), and the Dearing Report in the United Kingdom that emphasized numeracy, communication, information technology, and learning how to learn (Dearing, 1997). These skills frameworks and lists are deliberately generic and not tailored to specific disciplines, occupations, or sociocultural contexts, based on the aim to develop a "shared language" so that policymakers, educators, employers, and students can avoid disjunctures or "misalignments" between postsecondary education and employer expectations (Clarke, 2017; Rowan-Kenyon, Savitz-Romer, Ott, Swan, & Liu, 2017).

But critiques of the graduate employability narrative in higher education, and the skills frameworks that inform them, are increasing on both conceptual and methodological grounds. Scholars argue that many skills frameworks, given their origins in panels of academic experts, lack ecological validity and provide little insight into how actual educators, employers, and students value and define skills in practice (Collett, Hine, & du Plessis, 2014; Tomlinson, 2008).

Reconsidering College Student Employability

Others view the focus on universal lists of skills to be especially problematic for educators preparing students for specific fields, given that graduates invariably seek to gain entry into new, discipline-specific occupational communities (Jackson, 2016; Van Maanen & Barley, 1984). Insights from cognitive science, furthermore, demonstrate that mental representations are not individualistic, isolated bits of knowledge or skill but are interconnected networks with unique structures linked to specific situations and sociocultural contexts (Barsalou, 1999; Strauss & Quinn, 1997). Finally, researchers have pointed out that the employability narrative portrays job acquisition as a simple matter of a college student “possessing” the right skills (or not), which ignores the roles that social networks, labor market structure, and institutionalized inequality play in employment (Holmes, 2013; Moreau & Leathwood, 2006).

In this paper we address critiques of the influential employability narrative by integrating two theories—cultural models theory from cognitive anthropology and cultural capital theory from sociology—to conceptualize skills, knowledge, and abilities as cultural artifacts internalized from one’s social (and educational) environment that can then be used to gain position, power, and prestige (Bourdieu, 1986; Lizardo, 2004; Strauss & Quinn, 1997). With this framework, we investigate how 152 educators and employers in particular disciplinary, industrial, and geographic contexts—biotechnology and manufacturing postsecondary and business organizations in the state of Wisconsin—perceived valuable workplace competencies. Using free lists, inductive thematic analysis, multidimensional scaling (MDS), and network affiliation techniques, we documented respondents’ insider views—what anthropologists call an “emic” approach—about skills, their underlying structure and interconnections, and how contextual factors shaped the way skills were conceptualized.

While the results confirm some aspects of extant skills frameworks, we found that study participants did not discuss skills in generic terms, nor as distinct, unrelated competencies. Instead, they viewed skills as exhibiting “core” and “peripheral” structures and as being inextricably linked to one another and to specific occupational contexts and cultural communities. Based on these findings, as well as the reported prevalence of personality-driven hiring processes based on assessing applicants’ “cultural fit,” the data raise questions about how useful generic skills lists and frameworks are for realigning postsecondary curricula with employer needs and for explaining graduate employability. With these results in mind, we argue that postsecondary educators should resist the simplistic perspective that the accumulation of discrete “skills” alone can guarantee employment, and adopt a more nuanced view that takes into account the cultural and contextual forces that shape student disposition and success in the workplace.

Background

In this section we review the concept of employability and related skills frameworks. We also review the cultural orientation we adopt to study how insider groups conceptualize workplace skills.

Employability Narrative and Skills Lists

While the notion that higher education should primarily focus on workforce development has long been a part of the postsecondary landscape via professional schools and technical and community colleges (Grubb & Lazerson, 2009), the construct of employability is a more recent development (Moreau & Leathwood, 2006; Urciuoli, 2008). Several trends coincided in the 1980s that led to a growing focus on college student employability across the entire postsecondary spectrum: the massification of higher education, the growth of market-oriented governing ideologies, and the rise of a knowledge- and technology-driven economy that placed new demands on graduates and workers (Tomlinson, 2012). Perhaps the most important factor driving the graduate employability narrative, however, was a steady drumbeat of employer complaints regarding the skills, knowledge, and abilities of college graduates, a deficiency, some argued, that would ultimately slow economic growth (i.e., the “skills gap” narrative) (Hora et al., 2016; Cappelli, 2015). The authors of the U.S. Department of Labor’s Secretary’s Commission on Achieving Necessary Skills (SCANS) report (U.S. Department of Labor, 1991), for instance, ominously warned that teaching would need to change at all levels. Unless it does, they wrote, “neither our schools, our students, nor our businesses can prosper” (p. vii). The argument that educational systems had not caught up to workplace skills demands was echoed in reports in the United Kingdom (the Dearing Report, 1997) and Australia (the Mayer Report, 2001), resulting in a worldwide discourse of student employability (Moore & Morton, 2017).

But what precisely does “employability” mean? To answer, one must consider how the term has been conceptualized and measured. In early discussions, the construct was often conceptualized as a binary—one was either employable or not—that could be captured by a measurement of employment status (Williams, Dodd, Steele, & Randall, 2016). Later scholars argued that employability was a far more complex phenomenon representing the continuous process of personal development rather than whether one had a job. A widely cited definition, for example, emphasizes,

A set of achievements, skills, understandings and personal attributes, that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy. (Yorke, 2005, p. 410)

While this definition illustrates the widespread view that employability is a multidimensional construct implicating a person’s skills, knowledge, and personality traits (Fugate, Kinicki, & Ashforth, 2004; Holmes, 2006; Jackson, 2016), researchers have increasingly argued that the ability to get a job is also shaped by factors beyond an individual applicant’s skills and personality, including her/his social networks, the structure of the labor market, and structural discrimination in educational opportunity and hiring (Holmes, 2013; Tomlinson, 2017; Wilton, 2011). Consequently, some suggest that the notion that employability depends on whether one “possesses” important “bundles of skills” not only overlooks varied and complex structural and sociocultural factors shaping job acquisition, but is also dehumanizing (Urciuoli, 2008).

Reconsidering College Student Employability

Table 1. Selection of Skills Frameworks Informing Discussions of Student Employability

Framework for 21 st Century Learning (Partnership for 21 st Century Learning, 2016)	21 st Century Competencies* (Pellegrino & Hilton, 2012)	Social, Emotional & Affective (SEA) Factors (Savitz-Romer et al., 2017)	Forms of Graduate Capital (Tomlinson, 2017)	Characteristics of Employability Frameworks (Williams, Dodd, Steele, & Randall, 2016)
Learning Skills Creativity Critical thinking Problem solving	Cognitive Competencies Cognitive processes Knowledge Creativity	Approach to Learning Attention control Growth mindset Metacognition	Human Capital Knowledge Job performance Social Capital Networks & contacts	Capital Components Human capital Social capital Cultural capital Psychological capital
Information Skills Information literacy Media literacy	Intrapersonal Intellectual openness Work ethic Positive core self-eval	Intrapersonal Skills Adaptability Conscientiousness Self-efficacy	Cultural Capital Cultural knowledge Cultural awareness	Career Management Signal management Self-management skills
Life and Career Skills Adaptability Self-direction	Interpersonal Teamwork Leadership	Social Skills Active listening Collaborative skills Empathy	Identity Capital Work identity Career insights Psychological Capital Resilience Adaptability	Contextual Factors Labor market structure Personal circumstances
21st Century Themes Global awareness Civic literacy				

* Note: Citing both terminological confusion as well as the view among cognitive scientists that skills, knowledge, and abilities are often intertwined, Pellegrino and Hilton (2012) purposefully use the term “competencies” instead of skills. The example competencies listed here are “clusters” for each competency group.

Reconsidering College Student Employability

One defining feature of discussions about employability is that they are invariably accompanied by lists of skills that researchers and/or employers consider valuable in the workplace. To the credit of their authors, many skills frameworks contain an implicit view that “skills” are more complex and varied than the dictionary definition of “the ability to use one’s knowledge effectively and readily in execution or performance” (Merriam-Webster, 2018). Instead, scholars have long made distinctions between different types of skills, such as “general” (useful in all workplaces) and “specific” (useful in specific firms) skills (Schultz, 1961), “soft” and “hard” skills (Andrews & Higson, 2008), and “cognitive” and “non-cognitive” skills (Farkas, 2003). A selection of skills frameworks often featured in discussions about employability is included in Table 1 above.

Such lists of valuable workplace skills play an increasingly influential role in shaping higher education policy and practice through labor-market oriented performance schemes, skills- and competency-based curricula, and requirements for work-based learning (Clarke, 2017; Holmes, 2013; Moore & Morton, 2017). The influence of these lists, and the broader employability narrative, however, has opened up the discourse to considerable critique.

Critiques of the Employability Narrative and Skills Lists

The first critique pertains to the methods used to create lists of employability skills. In many cases, these lists are developed by panels of scholars and experts with little input from stakeholders with firsthand experience of education and workforce development. Depending on one’s role (whether policymaker, employer, educator, or student), perspectives on which skills graduates need may vary considerably (Collett, Hine, & duPlessis, 2014; Tymon, 2013). It is likely that members of each group will have a unique perspective on skills and educational issues, given that different groups function in distinct sociocultural and organizational contexts (Jackson, 2016). While a considerable body of research outlines different groups’ skills needs in order to ascertain the degree of “mismatch” between occupational requirements and graduate competencies (Livingstone, 2010; Savitz-Romer et al., 2017), another reason to document emic views is to uncover idiosyncratic conceptions of skills. This observation, in turn, raises questions about the most common method used to study employability skills: surveys with a priori lists of skills that respondents rank in order of importance (Suleman, 2017). In part to capture new perspectives on this issue, some scholars use interview and other field methods to allow employers, educators, and students to articulate skills needs in their own language and voice, thereby enhancing the ecological validity of resulting data (Andrews & Higson, 2008; Tomlinson, 2008).

Another critique of employability and skills frameworks is that they tend to feature generic and decontextualized accounts of competencies. In other words, lists of skills are typically divorced from the occupational, organizational, and sociocultural contexts in which such competencies are cultivated, assigned value, and deployed (Clarke, 2017; Jackson, 2016). This is especially problematic when one considers the unique norms, language, and practices that differentiate disciplinary and professional groups, entry into which involves complex and time-consuming processes of enculturation (Lave & Wenger, 1991). Given this fact, the notion of “pre-professional identity” has been applied to employability discourses, with Jackson (2016) in

Reconsidering College Student Employability

particular arguing that overly “narrow skills-list” approaches fail to address the role that discipline-specific curricula and professional norms play in socializing young people into unique occupational cultures (p. 927). Indeed, research in a number of different contexts has shown that competencies cannot be adequately understood or cultivated outside specific disciplinary settings. Communication scholars, for example, have studied the contextual nature of communicative competencies (Dannels, Palmer, & Gaffney, 2017), while experts on teamwork have investigated how collaborative competencies link to cohesiveness in aviation or business environments (Gibson & Zellmer-Bruhn, 2001). Research in multicultural and transnational contexts also shows that conceptions and expressions of important skills vary between social and cultural settings (Fanta-Vagenshtein, 2013; Golden, 2015;) and that well-tested modes of skill assessment are context-specific and subject to cultural bias (Greenfield, 1997).

A third critique of skills lists is that treating skills as distinct, individualistic traits conveys an inaccurate picture of how skills, knowledge, and abilities are valued in practice and internalized via cognitive processes. In practice, both students and employers view skills as “synergistic compilations” of competencies (Andrews & Higson, 2008, p. 419), which, research suggests, mirrors how information is stored in human memory as interconnected neural networks that encode particular memories, sensations, and information. As the saying goes, “neurons that fire together wire together,” such that repeated activations of these neural networks become strong, habituated forms of thought and behavior. An important idea in cognitive psychology is that the particular environmental and sociocultural contexts in which the information or skill was originally encoded becomes perennially associated with it, such that certain stimuli become triggers for specific neural networks (Barsalou, 1999; Brown, Collins & duGuid, 1989). When such cognitive networks are either associated with or internalized through specific communities or socially sanctioned practices, they can be considered “cultural models,” or socially distributed mental representations of particular knowledge, norms, or behaviors (Strauss & Quinn, 1997).

Finally, the employability discourse has been critiqued for equating employment with students’ possession of the “right” skills, thereby ignoring the role business cycles, corporate hiring practices, social networks, cultural capital, and structural inequalities play in influencing people’s access to education and job opportunities (Holmes, 2013; McQuaid & Lindsay, 2005). A singular focus on the “supply” side of the education-workforce equation assumes the “demand” side is unproblematic, despite ample evidence regarding wage stagnation and hiring discrimination (Rivera & Tilcsik, 2016; Wisman, 2013). In response to this critique, some have linked the employability narrative not only to growing vocationalist and corporate-oriented perspectives in higher education, but also to the dehumanizing view that people are simply “bundles of skills” to sell on the job market (Moreau & Leathwood, 2006; Urciuoli, 2008). In response, alternative views of employability have incorporated elements both of the labor market and personal development (e.g., Williams et al., 2016); these views emphasize that entering a profession involves a series of intellectual and social development phases (Fugate, Kinicki, & Ashforth, 2004; Jackson, 2016).

A Cultural Framework Accounting for Skill Internalization and Use As a Resource

In light of these critiques, we examine how different disciplinary and role groups—specifically educators and employers in biotechnology and manufacturing fields—define and value important workplace competencies. We also investigate how, if at all, context influences the ways these competencies are viewed and practiced. In so doing we draw upon two distinct yet related cultural theories from cognitive anthropology and sociology.

First, we view skills as knowledge and abilities acquired from one's sociocultural environment, modeled after caregivers and role models from the community, and cognitively internalized through education. Consequently, this perspective asserts a claim on both the origins and the location of "skills" within a person. As previously mentioned, a key idea in cultural models theory is that these cognitive structures are complex neural networks embedded in the situations from which they derive (Strauss & Quinn, 1997). As such, cognitive activity is viewed not solely as an "in the head" phenomena but one that is "distributed—stretched over, not divided among—mind, body, activity and culturally organized settings" (Lave, 1988, p. 1). There are a variety of ways to study culturally shaped competencies, such as free-listing and pile-sorting exercises that can be used to study the content and underlying structure of cultural domains (Borgatti, 1994). In this study, we view conceptions of essential workplace skills as distinct cultural domains for particular role groups (i.e., educators and employers).

Second, a core idea in sociology is that status attainment is dictated not only by credentials or academic knowledge, but also by social capital, structural forces, and personal characteristics (e.g., race or class) that can act as a "signal" to employers and lead to job opportunities (Bills, 2003; Farkas, 2003). Bourdieu (1986, p. 46), in particular, argued that the influential theory of human capital reduced these complex interactions in the social world to an ahistorical "mercantile exchange." Instead, he focused on how the transmission of cultural capital, especially as it is embodied in individual dispositions and competencies, acts as a form of "social currency" in the labor market, a focus that has been embraced by some scholars of employability (e.g., Clarke, 2017; Tomlinson, 2017). With the view that skills are internalized forms of culturally-bounded competence that can be deployed as cultural capital in the labor market (Lizardo, 2004), we sought to answer three questions in reference to specific education and employment subgroups in Wisconsin: (1) What skills are valued and how are they conceptualized? (2) How are these valued skills structured? (3) What contextual factors, if any, impact how skills are conceptualized, structured, and used?

Methods

The qualitative case study reported in this paper was part of a larger research project examining how postsecondary educators and employers in similar fields conceptualized valued workplace competencies (Yin, 2013). Seeking to describe emic perspectives about these skills, we regarded respondent views as comprising unique domains of cultural knowledge for a group, the distinctiveness, content, and structure of which was an open empirical question. In this study we focused on two role groups (i.e., educators and employers) within two disciplinary and industrial sectors (i.e., advanced manufacturing and biotechnology). We selected these fields

Reconsidering College Student Employability

because they encompass science, technology, engineering, and mathematics (STEM) occupations that analysts consider to be important drivers of the U.S. economy (Carnevale, Smith, & Melton, 2011; Rothwell, 2013), and also because they represent a traditional cornerstone of Wisconsin’s economy as well a rapidly growing industry. In the manufacturing sector we focused exclusively on machinery, electrical equipment, and fabricated metal product manufacturing (i.e., North American Industry Classification System [NAICS] codes 332, 333, 335 and 336; U.S. Census Bureau, 2016), while in biotechnology we focused exclusively on research and development laboratories or services in bacteriology, biology, and the chemical sciences (i.e., NAICS codes 541714 and 541715; U.S. Census Bureau, 2016).

Table 2. Description of Sample

	Interview <i>n</i>	Percentage %	Free-list <i>n</i>	Percentage %
Total	152	100.0	128	100.0
Employers				
All employers	75	49.3	65	50.8
Manufacturing	64	42.1	56	43.8
Biotechnology	11	7.2	9	7.0
Educators				
All educators	77	50.7	63	49.2
2-year	38	25.0	35	27.3
2-year manufacturing	18	11.8	27	21.1
2-year biotechnology	17	11.2	8	6.2
2-year no subgroup affiliation	3	2.0	-	-
4-year	39	25.7	28	21.9
4-year manufacturing	14	9.2	13	10.2
4-year biotechnology	19	12.5	15	11.7
4-year no subgroup affiliation	6	4.0	-	-

Using Wisconsin’s Economic Development Corporation’s regional categories, we focused on “hub” cities within each of the six regions that had high concentrations of firms in the two sectors as well as 2- and 4-year college and university programs channeling students into these fields. For manufacturing, the latter included programs in the applied sciences, electronic systems, mechanical and industrial engineering, and industrial automation; for biotechnology, programs in biochemistry, biology, microbiology, and biotechnology were included. Using a non-random purposive sampling technique, we created sampling frames for employers and educators in each of the six hub cities from state and industry-specific lists of firms and higher educational institution webpages. Educators were included in the sample that were engaged in

Reconsidering College Student Employability

either curriculum design or classroom instruction for the target program. Employers included in the sample were individuals listed on firm websites or public listings. We contacted educators and employers via telephone or email to request participation, with examples of educator roles for those self-selecting into the study being tenure-track faculty, contingent faculty, and associate deans, and employer roles being human resource coordinators, chief executive officers, supervisors, and workplace trainers. Ultimately, 75 employers representing 52 companies and 77 educators representing 17 postsecondary education institutions participated in the study ($N=152$). Of these, 143 employer and educator participants were affiliated with manufacturing or biotechnology subgroups while nine educators were affiliated with neither field. (See Table 2 above.)

Data Collection

A team of three researchers (including the authors) collected data between late 2013 and early 2015. All researchers participated in training with the research protocols and followed appropriate procedures for human subjects research. The interview protocol included a free-list exercise and several open-ended questions. To avoid respondent utterances regarding administrative, professional, and non-technical occupations not germane to our topic, respondents were instructed to answer questions with respect to non-managerial, entry-level positions within a firm in their field. Free-list exercises elicit words, terms, or phrases that individuals and groups use to refer to a specific conceptual sphere or cultural domain (Borgatti, 1998; Weller & Romney, 1988). Respondents were asked to verbally provide, in single words or short phrases, the skills that immediately came to mind that were necessary for people to succeed in their sector's workplace. Following this free-list exercise, respondents were asked 13 questions that focused on views and conceptions of valuable workplace skills, teaching and training practices, procedures for recruiting and hiring, and so on. Given the semi-structured interview approach, interviewers pursued emergent lines of inquiry (e.g., elaborations on organizational culture). Interviews lasted approximately 45 minutes and were recorded and transcribed for analysis.

Data Analysis

First, we analyzed free-list data using Anthropic (Borgatti, 1996) to identify the skills considered most salient by respondents. Analyses of free-list data began with a review of the raw data, which revealed that 24 respondents had provided information in unusable form, resulting in a final count of 128 free lists for analysis. Then, because respondents listed terms that were closely related but phrased differently (e.g., work ethic, hard worker, dependable worker), two analysts reviewed the raw data independently to develop lists of standardized terms, whereupon a final list of 94 standardized terms was collaboratively developed (Miles, Huberman, & Saldana, 2014; Quinlan, 2005). Next, data were analyzed to derive term salience, a measure used in cognitive anthropology that reflects the average percentile rank of a term across all respondent lists while weighting terms by the order each respondent reported them (Smith & Borgatti, 1997). Salience is computed as:

Reconsidering College Student Employability

$$s_j = 1 \frac{r_j I}{nI}$$
$$s_j = \frac{n r_j}{nI}$$

where r_j = position of item j in the list, and n = number of items per list (see Smith, 1993). To identify the overall saliency index, the average s_j across respondents is calculated. The free-list analysis was conducted for respondents in different role groups as a whole (e.g., educators and employers) and then for role groups within disciplines (e.g., manufacturing educators and employers), the results of which are presented in three ways: first, we report saliency scores for each role group and disciplinary subgroup; second, we provide selected raw data or unstandardized terms uttered by respondents; and third, graphs where the x-axis includes terms ordered by salience for the entire study sample and the y-axis depicts saliency scores, are reported for each of the subgroups (Borgatti, 1998; Libertino, Ferraris, Osornio, & Hough, 2012).

Second, we analyzed responses to interview questions using an inductive approach to qualitative data analysis (Bernard, 2011). Through multiple group readings of several transcripts, we began by segmenting the data into smaller units. Codes were developed through a priori research interests (e.g., valued skills) and emergent themes from the data (Charmaz, 2014). After discussing multiple versions of the preliminary code list, three analysts applied 27 codes in nine thematic categories (Saldaña, 2013). Next, we began second cycle coding focused on text coded as “valued skillsets,” “contextual factors,” and “hiring practices” that we analyzed using a combination of a priori codes (e.g., the five most salient skills) and inductively derived codes. Instances of respondent statements were assigned to each code, with successive instances of an idea compared to previous instances to confirm or alter code definitions (i.e., the constant comparative method; Glaser & Strauss, 1967). After independently coding 10% of the data, analysts met to discuss differences, and then collaboratively arrived at a final code list that one analyst used to code the remainder of the text fragments (Ryan & Bernard, 2003).

Third, we also developed a participant-by-skill code matrix in which each cell indicates whether participant i spoke to skill j (1) or not (0) in her/his free list. We then used MDS, an exploratory data reduction technique for graphically representing the proximities (i.e., [dis]similarities) between objects (e.g., skills) as distances, to further explore the dimensions underlying the relationships within and between skills. In nonmetric MDS, distance is conceptualized as Euclidean distance and an optimal solution is one in which the distances closely approximate the proximities (Borg & Groenen, 2005). To assess the fit between the disparities and the distances, we evaluated the “stress” value, a non-statistical measure of badness-of-fit. Kruskal’s Stress is most appropriate for ordinal MDS, where a range for acceptable stress lies between 0.00 (perfect) and 0.2 (poor) (Kruskal & Wish, 1978). The resulting MDS graphs, compiled for each respondent subgroup, depict skill term (dis)similarities. We documented clusters of skills in the center of each group that represent skills that were frequently referenced in the same free list across multiple individuals. With reference to salience

Reconsidering College Student Employability

scores and these MDS analyses, we identified “core” and “peripheral” workplace skills exhibited for each subgroup (Borgatti, 1998).

Finally, during the coding process, analysts unexpectedly discovered a number of respondent reports regarding what we refer to as “skill-skill connections,” and a process of coding explicit references to these statements was also conducted. Here, we marked instances of specific skills being connected, counted the number of respondents by subgroup making references to connections between particular skills (i.e., teamwork and communication), then developed a skill-by-skill similarity matrix in which each cell represents instances of skills not being connected (0) or the number of respondents speaking to the connection (from 1 respondent to 22 respondents). We then used NetDraw (Borgatti, 2002) to create network graphs from these similarity matrices for each educator and employer subgroup. Each graph shows skills, as nodes, linked by lines of varying thickness that represent how many respondents referred to the particular skills being connected (DeJordy, Borgatti, Roussin, & Halgin, 2007).

Study Limitations

Several limitations to this study should be taken into account when weighing our evidence. First, the industry sample is weighted heavily towards manufacturing employers over biotechnology employers, as the biotechnology industry is much smaller proportionally in the state than manufacturing. Second, the small and self-selected nature of the sample precludes a generalization of the results to the larger population of employers and educators within the selected fields and in Wisconsin. Third, the interview protocol directed respondents to consider entry-level positions while answering, but did not indicate the specific experience or education required for these positions. While the occupations commonly referenced by participants included those requiring some postsecondary training but not a bachelor’s degree—such as machinists, welders, or computer numeric controlled machine operators—some respondents could have answered the interview questions thinking of positions requiring a bachelor’s degree while others considered positions requiring other credentials. Fourth, this data reflects self-reported behavior, so the lack of independent verification means that it is possible that the specific instructional or hiring behaviors described by respondents are not consistent with actual behaviors. Finally, it is important to point out that these data do not include the perspectives of those who have perhaps the most unique and significant perspective on the issues addressed in this paper—students and employees.

Results and Analysis

In this section we report findings that include data regarding how essential workplace competencies are valued and conceptualized across different roles and disciplinary groups.

Reconsidering College Student Employability

Table 3. Employer and Educator Free List Saliency Results

All employers (n=65)			Manufacturing employers (n=56)			Biotechnology employers (n=9)		
Term	Saliency	Freq. %	Term	Saliency	Freq. %	Term	Saliency	Freq. %
Work ethic	.350	55.4	Work ethic	.374	58.9	Experience	.422	44.4
Technical ability	.322	53.8	Technical ability	.333	53.6	Lifelong learning	.368	44.4
Technical knowledge	.275	36.9	Technical knowledge	.305	41.1	Technical ability	.255	55.6
Lifelong learning	.175	26.2	Lifelong learning	.139	23.2	Problem solving	.222	22.2
Problem solving	.141	20.0	Problem solving	.128	19.6	Communication	.221	44.4
Communication	.131	24.6	Adaptable	.127	19.6	Work ethic	.199	33.3
Self-motivated	.117	21.5	Interpersonal	.126	21.4	Detail-oriented	.187	33.3
Adaptable	.115	20.0	Communication	.115	19.6	Self-motivated	.183	33.3
Interpersonal	.109	20.0	Teamwork	.108	17.9	Background	.116	33.3
Teamwork	.109	20.0	Attitude	.108	16.1	Adaptable	.111	22.2
Experience	.108	13.8	Self-motivated	.105	17.9	Intelligent	.111	11.1
Attitude	.105	16.9	Hands on	.069	12.5	Teamwork	.106	22.2
Detail-oriented	.073	12.3	Innovative	.065	14.3	Innovative	.093	11.1
Innovative	.067	13.8	Experience	.057	7.1	Attitude	.083	11.1

All educators (n=63)			Manufacturing educators (n=40)			Biotechnology educators (n=23)		
Term	Saliency	Freq. %	Term	Saliency	Freq. %	Term	Saliency	Freq. %
Technical ability	.364	55.6	Technical ability	.301	52.5	Technical ability	.473	60.9
Technical knowledge	.250	38.1	Problem solving	.281	37.5	Technical knowledge	.272	43.5
Problem solving	.238	34.9	Technical knowledge	.237	35.0	Work ethic	.239	39.1
Work ethic	.233	38.1	Work ethic	.230	37.5	Critical thinking	.239	34.8
Teamwork	.199	33.3	Teamwork	.203	35.0	Detail-oriented	.222	34.8
Communication	.189	33.3	Communication	.180	32.5	Communication	.206	34.8
Innovative	.148	22.2	Self-motivated	.128	22.5	Teamwork	.191	30.4
Detail-oriented	.141	20.6	Innovative	.127	20.0	Innovative	.184	26.1
Critical thinking	.132	17.5	Hands on	.100	10.0	Problem solving	.164	30.4
Self-motivated	.097	19.0	Detail-oriented	.094	12.5	Lifelong learning	.093	17.4
Troubleshoot	.086	14.3	Troubleshoot	.090	12.5	Troubleshoot	.078	17.4
Lifelong learning	.080	14.3	Adaptable	.079	17.5	Interpersonal	.047	8.7
Hands on	.079	7.9	Efficient	.074	12.5	Self-motivated	.045	13.0
Adaptable	.064	14.3	Lifelong learning	.073	12.5	Hands on	.043	4.3

1. Role and Disciplinary Groups Differentially Assign Value to and Conceptualize Skills

First, we report findings demonstrating that study respondents valued and conceptualized essential workplace competencies in unique ways depending on their role and occupational affiliations. We report data from the free-list exercise for the 128 respondents who provided useable terms using the saliency scores for the top 14 standardized terms in each subgroup. Saliency is a measure that can be viewed as representing the content of each group’s cultural domains for essential workplace competencies (Borgatti, 1994; Quinlan, 2005). These accounts reveal complex and nuanced perceptions of skills that are not captured in most employability frameworks and corresponding lists of workplace skills.

The data in Table 3 above indicate that each subgroup considered a delimited group of competencies as especially essential for the workplace. For the two larger role groups (i.e., educators and employers), three skills were viewed as particularly essential—work ethic, technical ability, and technical knowledge—with educators also viewing problem solving as a highly salient skill. Each subgroup, however, varied in the composition and ordering of skills in their collective free lists. For the manufacturing employers, three skills were viewed as highly salient with scores of .30 or higher (i.e., work ethic, technical ability, and technical knowledge), while biotechnology employers had five mostly different skills in their high salience group (i.e., experience, lifelong learning, technical ability, problem solving, and communication). Similar variability is evident in the two educator subgroups.

The variability between and among subgroups is also evident using line graphing techniques. Here, for ease of comparison, we order the 14 most salient skills across the entire sample on the x-axis (from highest saliency to lowest) with term saliency scores for each subgroup on the y-axis (Figures 1 and 2).

Figure 1. Skill Saliency Analyses by Employer Subgroup Domain

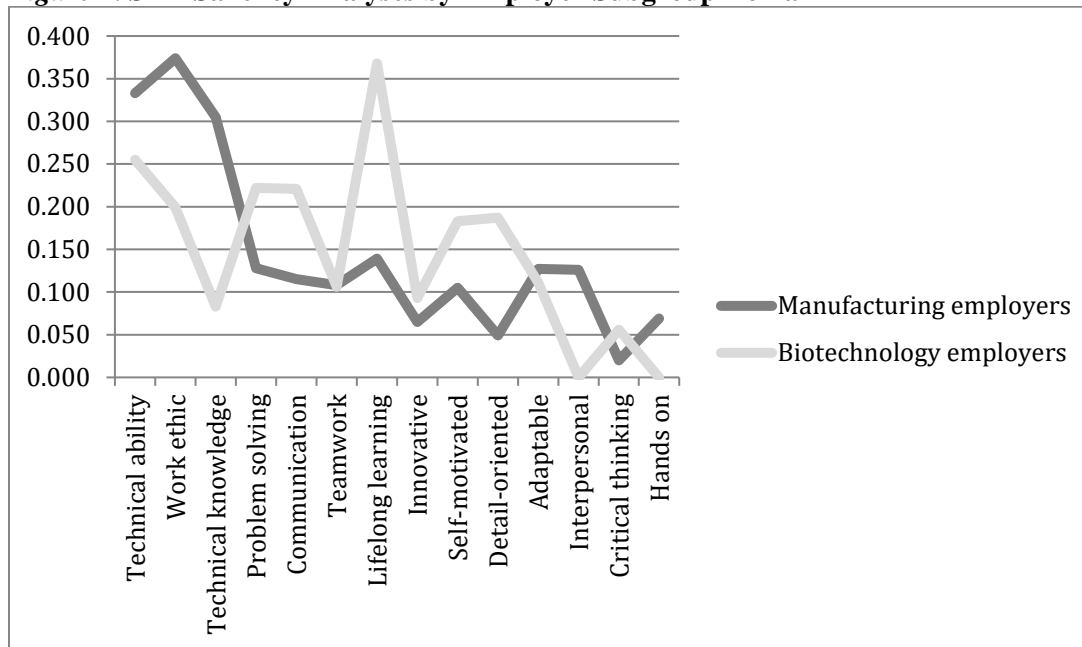
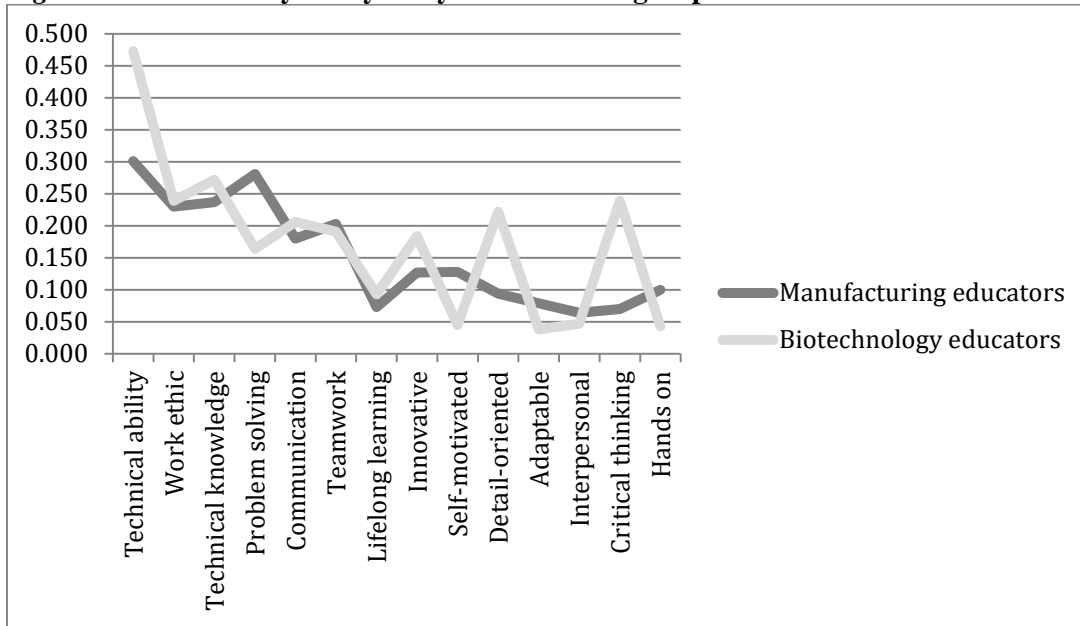


Figure 2. Skill Saliency Analyses by Educator Subgroup Domain



As we can see, there exists considerable variation across the four subgroups as evidenced by spikes in the line graphs where skills considered to be low-saliency by the entire sample were considered highly-salient by one or more of the subgroups. Here, for instance, we can see that “lifelong learning” was considered a much more salient term among biotechnology employers (.368) than among manufacturing employers (.139).

Next, to explore how respondents conceptualized essential workplace skills, we examine in greater depth four of the competencies that were highly salient across the sample: work ethic, technical knowledge, technical ability, and problem solving. To provide a more fine-grained account of how these skills are viewed in practice, we report some of the “raw” terms provided in the free-list exercise that were subsumed under standardized terms, then follow with illustrative quotes and recurrent themes from the interview data.

Work Ethic. As the skill considered most salient by all employers (.350) and the fourth most salient by all educators (.233), work ethic plays an important role in how respondents in both sectors think about and define success in workplace fields. In the following analyses, we discuss terms other than “work ethic” (reported verbatim by 20 respondents) that were subsumed under the standardized term for the purposes of the free-list analysis.

For manufacturing employers, the most frequently mentioned terms related to work ethic included prompt (referenced by 7 participants), attendance (6), quality considerations (6), dedicated (5), and hard work (4). Biotechnology employers discussed work ethic with less frequency, using terms such as prompt (1), responsible (1), reliable (1) and integrity (1). For manufacturing educators, free-list terms subsumed under work ethic included getting your hands dirty (2), prompt (2), productive (2), and performing quality work (2). Biotechnology educators mentioned terms such as punctual (2), integrity (2), quality work (1), and being reliable (1).

Reconsidering College Student Employability

Analyses of interview text where respondents elaborated on the nature of work ethic revealed that the term referred not to a single idea (e.g., hard work), but instead was a multidimensional construct, a perspective echoed in research on work ethic (Wentworth & Chell, 1997). Here, we briefly outline two recurring themes from the data.

Work ethic as promptness and punctuality. One of the most recurring themes in the interview data with respect to work ethic was the importance of arriving to work on time. Punctuality was a particular issue for manufacturing employers, one of whom reported having to let go of “12 of 46” recent entry-level hires due to problems with staff arriving late or missing entire shifts. An element of responsibility and self-regulation was thus implicated in these views of work ethic.

Work ethic as an ingrained character trait. Significantly, many employers and educators in both sectors described work ethic more as an ingrained character trait than a malleable, learned competency, a finding that ties closely to conceptions of the moral value of work in the Protestant tradition (Furnham, 1984). In particular, many respondents tied work ethic to employees’ background and upbringing, like this biotechnology employer:

The difference between [a good and great employee] is work ethic, hands down. They can be as brilliant as a person can be, but the one employee will do the job that they’re assigned and then that’s it, [and] the next one will do that same job and ask for more.... [T]hat’s work ethic and it’s too late to learn that at university.

Among manufacturing employers, a background in farming was often considered a harbinger of work ethic. As one manufacturing supervisor said, “If they grew up on farm, generally they’re hard workers, they work from dawn to dusk.” The respondent’s colleague agreed, referring to the work ethic acquired from a rural upbringing as “internal values.”

Technical Knowledge. The third most salient skill among all employers (.275) and the second most salient among all educators (.250) was technical knowledge. The actual phrase “technical knowledge” was not uttered by any respondents. Instead, more content-specific or descriptive terms were used to denote the importance of having familiarity with a particular subject (e.g., math, metrology, or engineering). For manufacturing employers, mathematics (10) was the most frequently mentioned term in the technical knowledge category, followed by the phrase technical skills (e.g., technical know-how), and knowledge of tools (2). For one biotechnology employer, the native term used in reference to this category was basic science principles (1). Manufacturing educators also frequently mentioned mathematics (10) with respect to technical knowledge, followed by a number of terms reported only once, including sequencing (1) and electronics (1). For biotechnology educators, the original terms mentioned for this category included mathematics (3), biology (4), and fundamentals of science (2). Next, we briefly outline two recurring themes in interview data on technical knowledge.

Basic STEM knowledge. Respondents across all subgroups discussed the importance of basic competencies in STEM fields. In manufacturing and engineering contexts, proficiency in math and the principles of manufacturing systems were particularly important. In biotechnology, participants reported that a solid grounding in molecular biology, the scientific method, and chemistry were critical. For employers, proficiency in what was considered “basic” technical

Reconsidering College Student Employability

knowledge was highly valued. A continuing problem, many employers reported, was that job applicants lacked basic competencies in math, science, and writing.

Technical knowledge is not enough. One of the most common themes among respondents was that technical knowledge alone would not allow graduates and employees to thrive over the long term. Instead, employers in both industries reported that they needed well-rounded employees that had a variety of skills. One manufacturer said, “Anybody can be taught how to run a machine, but being cooperative and a good listener, that’s hard to find.” Beyond interpersonal competencies, employers also discussed a desire for applicants who could apply their technical training (i.e., “book” knowledge) to real-world problems and workplace tasks. Additionally, several respondents noted that strong technical skills were sufficient to get entry-level positions, but that more diverse skills were needed to advance into positions of more responsibility. “It’s the technical skills that will get you the job,” one manufacturing educator observed, “but it’s the soft skills that will get you to keep the job.” Technical knowledge, in this way, was widely viewed as a necessary but insufficient condition for succeeding in the workplace.

Technical Ability. Technical ability was considered the second most salient skill for all employers (.322) and the most salient for all educators (.364). Widely discussed in terms of the ability to perform procedures or tasks that were specific to particular occupations, disciplines, or workplaces, the term “technical ability” was only directly referenced in one respondent free list, with most respondents discussing more specific technical subjects or areas.

For manufacturing employers, the most frequently reported term that was subsumed under “technical ability” was mechanical aptitude (13), followed by computer skills (11), and technical skills (8). Specific technical skills discussed by manufacturers included “machining CNC” (i.e., the ability to run computer numerical control equipment) and reading blueprints. For biotechnology employers, terms reported for technical ability included the tolerance for tedious bench work (2), bench lab skills (1), and good note taking (1). For manufacturing educators, technical abilities included mechanical aptitude (5), technical skills (4), computer skills (4), and data analysis (2), while for biotechnology educators important abilities included computer skills (4), data analysis (2), and laboratory technique (2).

Ability to apply technical knowledge in real-world settings. For employers in both fields, a pressing issue with respect to technical abilities was that employees were able to apply their knowledge in real-world situations. In a biotechnology firm, this meant knowing how and when to apply basic scientific knowledge to workplace responsibilities, not the least of which were tedious laboratory tasks. The skills—and patience—one needed was evident in one employer’s observation: “In biotechnology, often you’re working with very, very small quantities for instance, typically of liquid solutes ... you have to be able to pipette very precise amounts.” For manufacturers, proficiencies in working with tools and applying technical knowledge to real-world problems (e.g., improving systems efficiencies) was also viewed as highly important.

Technical ability as state of mind. Another theme related to technical ability was how respondents described it as much as an identity or a *state of mind* as a set of specific manual capacities. This state of mind, some suggested, allowed individuals to either understand (and

Reconsidering College Student Employability

enjoy) technical work or not. Several manufacturing employers, for example, said an individual's particular sociocultural background and interests outside of work indicated whether an individual had technical ability or not. One manufacturing employer said, "The guy who's a welder, in one sense, may go home and work on his truck at night ... just as a piece of who they are." Echoing the view that an agricultural background was synonymous with a strong work ethic, several respondents suggested that individuals who had worked on farms or were interested in cars—usually men with a mechanical "style of life" (Bidwell, 1989, pp. 129 and 130)—were perceived as being most encultured into a milieu of mechanical aptitude.

Problem solving. For the employers in the study, problem solving was the fifth most salient term (.141), whereas the skill was considered the third most salient for educators (.238). The term "problem solving" was mentioned verbatim by 27 respondents, indicating its ubiquity as a skill across group cultural domains. For manufacturing employers, terms referenced besides problem solving included "analytic thinking" (2), "thinking on one's feet" (2), and "investigation" (1), while biotechnology employers used phrases such as "analytic" (2) and "strategic thinking" (1). Manufacturing educators also discussed "thinking on one's feet" (3), "asking the right questions" (1) and "mechanical thinking" (1), while a biotechnology educator discussed "clear thinking on the job" (1).

Problem framing. The most pervasive theme regarding problem solving identified in the interview data pertained to the notion of adequately framing a problem in ways that made detecting root causes and identifying solutions tenable. A manufacturing employer spoke of this ability in terms of situational recognition and of perceiving "the unobvious," whether in a broken machine or a dysfunctional system. Respondents emphasized that this type of problem solving was not about applying calculations or predetermined "fixes" to a situation. Instead, it entailed "thinking outside of the box" to determine the types of information required to find potential solutions and ultimately solve the problem. In this way, our respondents' discussions of this skill are consistent with prior research on the nature of problem solving in the engineering workplace (Jonassen, Strobel, & Lee, 2006). Here, ill-defined problems require the ability to diagnose situations and select optimal solutions. Some respondents also noted the importance of visualization, such that effective problem solving requires employees to "see processes in their head, almost like a vision." This observation was not dissimilar to views of troubleshooting, where visualizing systems and identifying where breakdowns could be occurring was an essential aspect of solving problems.

2. Structure of Respondents' Valued Workplace Competencies

Next, we analyzed the data to ascertain whether skills, as the content of cultural domains, have an inherent structure, particularly in relation to "core" and "peripheral" items among subgroups (Borgatti, 1994; Quinlan, 2005). To examine the structure of free-list data on skill terms, we revisited the free-list saliency results (Table 3 above) and line graphs (Figures 1 and 2) to ascertain structures across subgroup data, identifying core workplace skills for each subgroup as terms with salience scores of .200 and peripheral terms as terms with salience scores of .199 or lower (Table 4).

Reconsidering College Student Employability

Table 4. Core and Peripheral Skills from Salience and MDS Analyses

Manufacturing Employers		Biotechnology Employers		Manufacturing Educators		Biotechnology Educators	
<i>Core</i>	<i>Peripheral</i>	<i>Core</i>	<i>Peripheral</i>	<i>Core</i>	<i>Peripheral</i>	<i>Core</i>	<i>Peripheral</i>
Technical ability		Technical ability	Innovative	Problem solving	Detail-oriented	Detail-oriented	Teamwork
Technical knowledge	Communication	Technical knowledge	Efficient	Communication	Work ethic	Work ethic	Innovative
Work ethic	Teamwork	Problem solving	Self-motivated	Technical ability	Self-motivated	Critical thinking	
	Lifelong learning	Work ethic	Quality standards	Lifelong learning		Communication	
	Innovative	Teamwork	Troubleshoot	Experience		Technical knowledge	
	Attitude					Technical ability	
	Interpersonal						
	Problem solving						
	Safety						
	Adaptable						
	Athletic						

Reconsidering College Student Employability

MDS analyses help us depict these structural similarities and differences between the skills referenced by each subgroup. The skills that are more similar to one another are grouped more tightly toward the center of the graph, and those that are less similar are arranged around the periphery (Borgatti, 1998). Such clusters can be interpreted as further evidence of distinct structural properties among workplace competencies for each subgroup (Figures 3–6).

Figure 3. Manufacturing Employers (Stress 0.117)

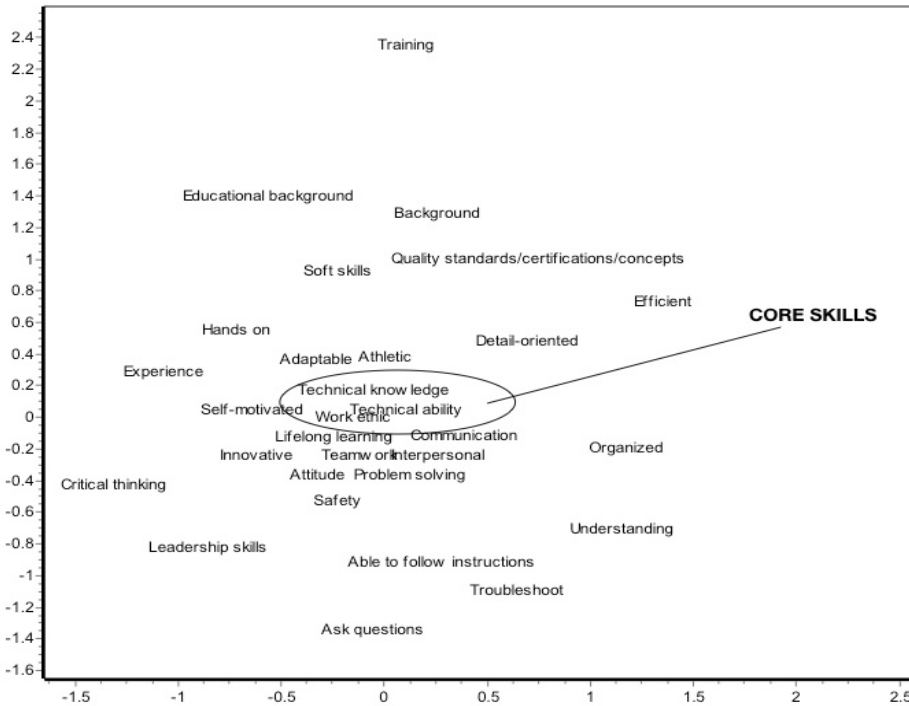
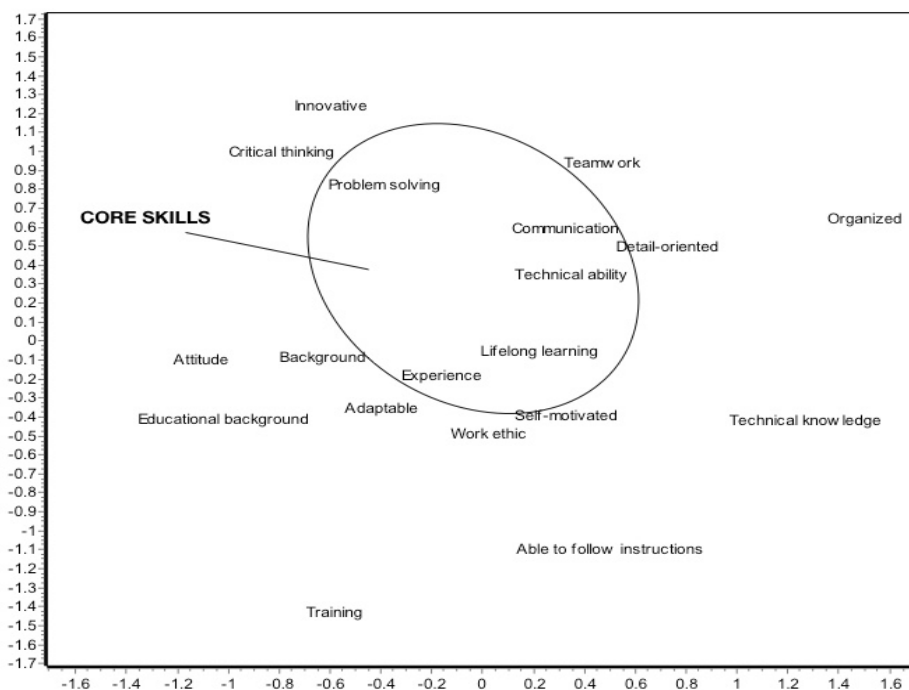


Figure 4. Biotechnology Employers (Stress 0.060)



Reconsidering College Student Employability

Figure 5. Manufacturing Educators (Stress 0.105)

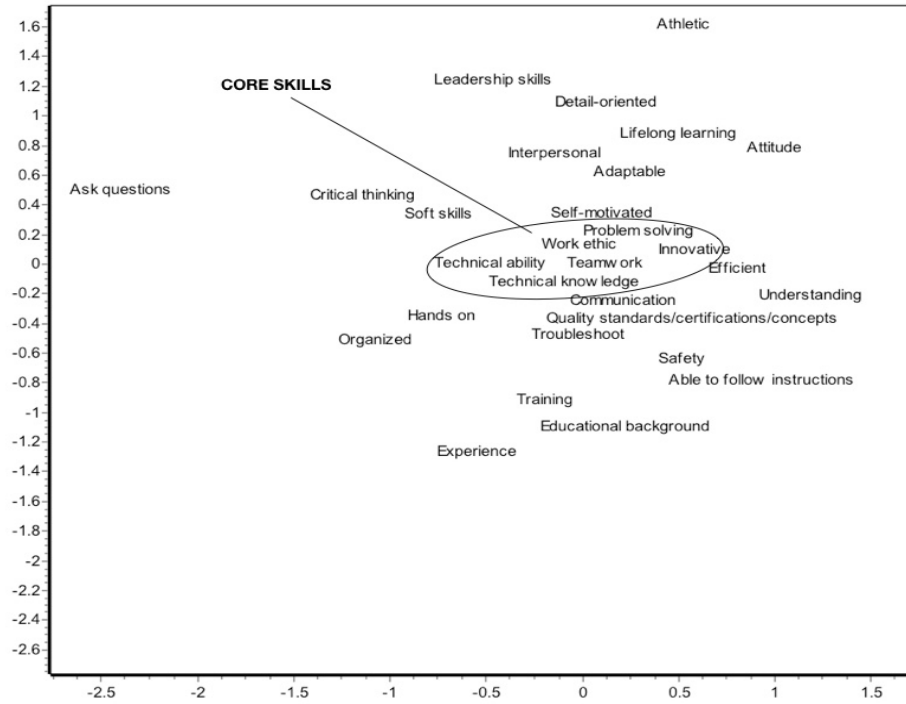
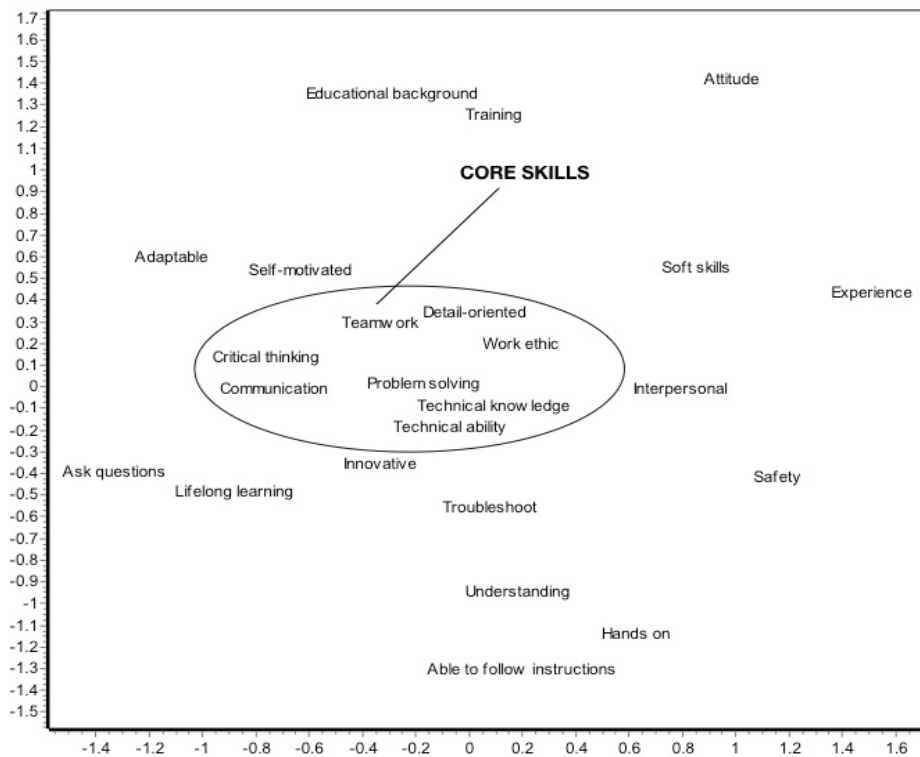


Figure 6. Biotechnology Educators (Stress 0.086)



Reconsidering College Student Employability

Table 5. Skills Explicitly Linked by Number and Percentage of Educator and Employer Subgroup Respondents

Skill	Skill	Mfg employers (n=64)	Biotech employers (n=11)	Mfg educators (n=32)	Biotech educators (n=36)	Total (n=143)
Communication	Teamwork	10 (.16)	0 (.00)	3 (.09)	9 (.25)	22 (.15)
Problem solving	Technical knowledge	4 (.06)	0 (.00)	5 (.16)	2 (.06)	11 (.08)
Lifelong learning	Technical knowledge	2 (.03)	2 (.18)	3 (.09)	3 (.08)	10 (.07)
Adaptable	Lifelong learning	3 (.05)	2 (.18)	3 (.09)	0 (.00)	8 (.06)
Detail-oriented	Technical ability	1 (.02)	1 (.09)	2 (.06)	4 (.11)	8 (.06)
Technical ability	Technical knowledge	3 (.05)	1 (.09)	4 (.13)	0 (.00)	8 (.06)
Critical thinking	Problem solving	1 (.02)	0 (.00)	3 (.09)	3 (.08)	7 (.05)
Adaptable	Teamwork	6 (.09)	0 (.00)	0 (.00)	0 (.00)	6 (.04)
Lifelong learning	Technical ability	1 (.02)	1 (.09)	3 (.09)	1 (.03)	6 (.04)
Communication	Problem solving	0 (.00)	0 (.00)	2 (.06)	3 (.08)	5 (.03)
Innovation	Problem solving	0 (.00)	0 (.00)	1 (.03)	4 (.11)	5 (.03)

Note: Skills in each dyad are listed from left to right in alphabetical order.

Much like distinct social groups perceive certain foods (Libertino et al., 2012) or plants (Quinlan, 2005) as more salient than others, these data suggest that a core set of workplace competencies (i.e., technical ability, technical knowledge, and work ethic) are seen as being particularly critical for workplace success. Consequently, we propose that these groupings of workplace skills can be considered cultural models (i.e., socially distributed neural networks storing knowledge, skill, and ability) for each subgroup. Peripheral skills should not be viewed as irrelevant but simply as less salient to the cultural domain of valued workplace competencies for each group. In contrast, the core skills can be viewed as cultural models that are essential for that group. Given variation in how different role and disciplinary groups conceptualize and prioritize specific competencies, these data illustrate the inherent limitations of workplace skills lists that treat skills as discrete and individualized units similarly valued across cultural domains.

Based on the discovery during data collection that respondents often spoke of skills as linked or interconnected, we also analyzed interview text to examine the degree to which respondents explicitly named connections between and among specific skills, another measure of the underlying structure of valued competencies. The analysis demonstrated that respondents often linked specific skills to one another, such that they could not be considered in isolation. Ultimately, 43 educators and 37 employers explicitly mentioned connections between competencies. Here we report skill-to-skill links discussed by five or more respondents, separated by employer and educator subgroups (Table 5 above).

With tallies of all the explicit skill-to-skill connections, we also use network affiliation graphs to visually represent and then compare how members of the different role and disciplinary subgroups connected or did not connect valued skills (DeJordy, Borgatti, Roussin, & Halgin, 2007). Here, each node represents a skill, while lines between skills represent explicit statements

Reconsidering College Student Employability

by participants connecting skills to one another. Thicker lines between skills represent skills that were said to connect to one another by greater numbers of participants (Figures 7–10).

Figure 7. Manufacturing Employers Skill-Skill Connections

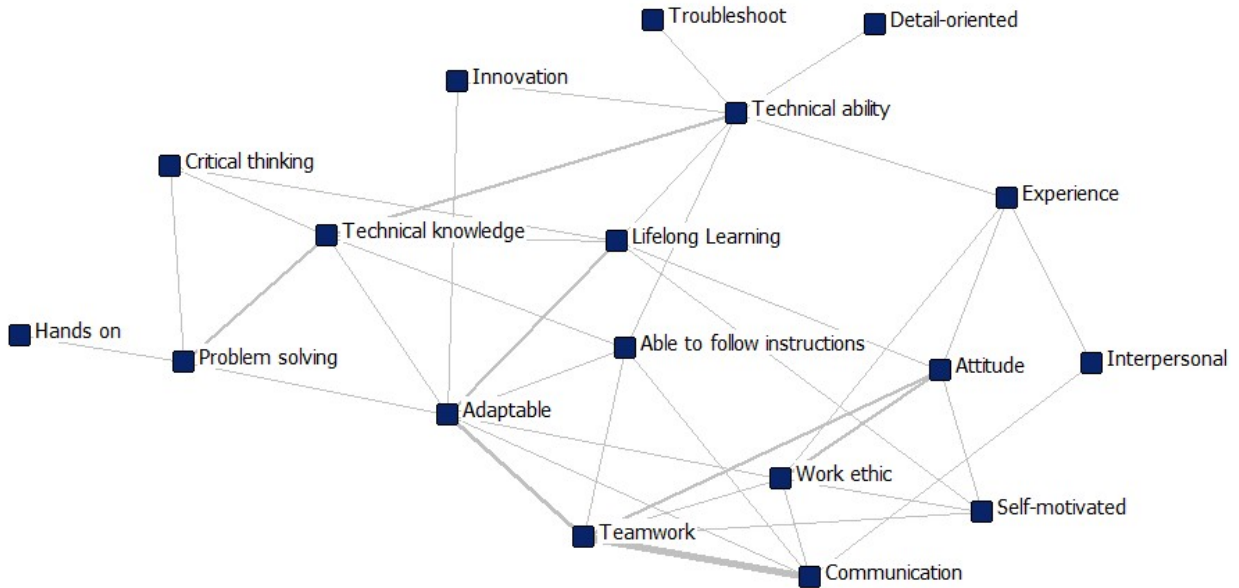
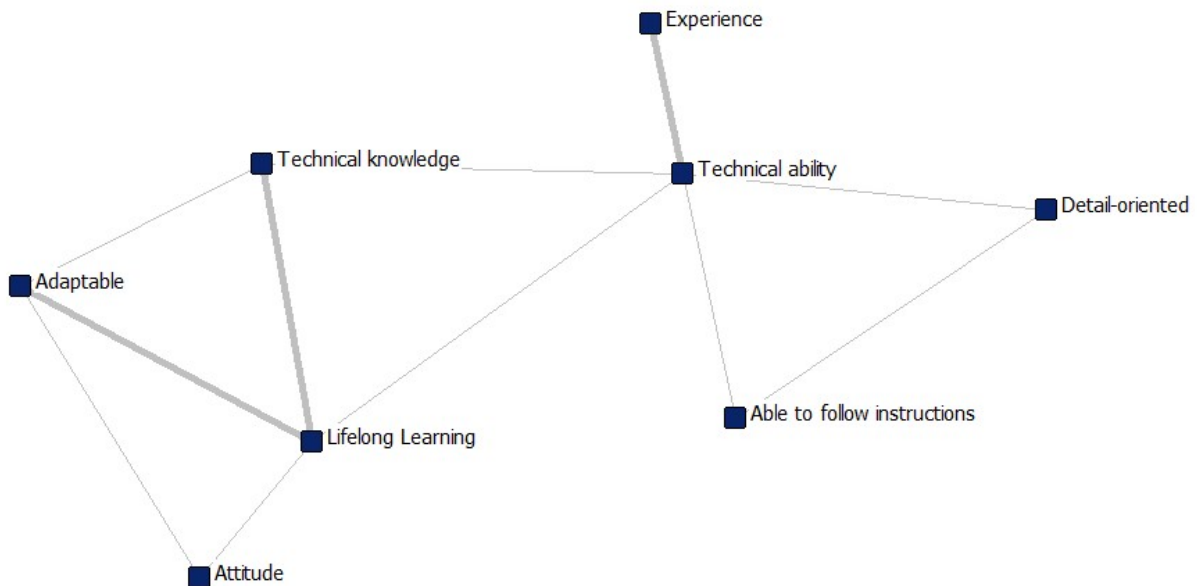


Figure 8. Biotechnology Employers Skill-Skill Connections



Reconsidering College Student Employability

Figure 9. Manufacturing Educators Skill-Skill Connections

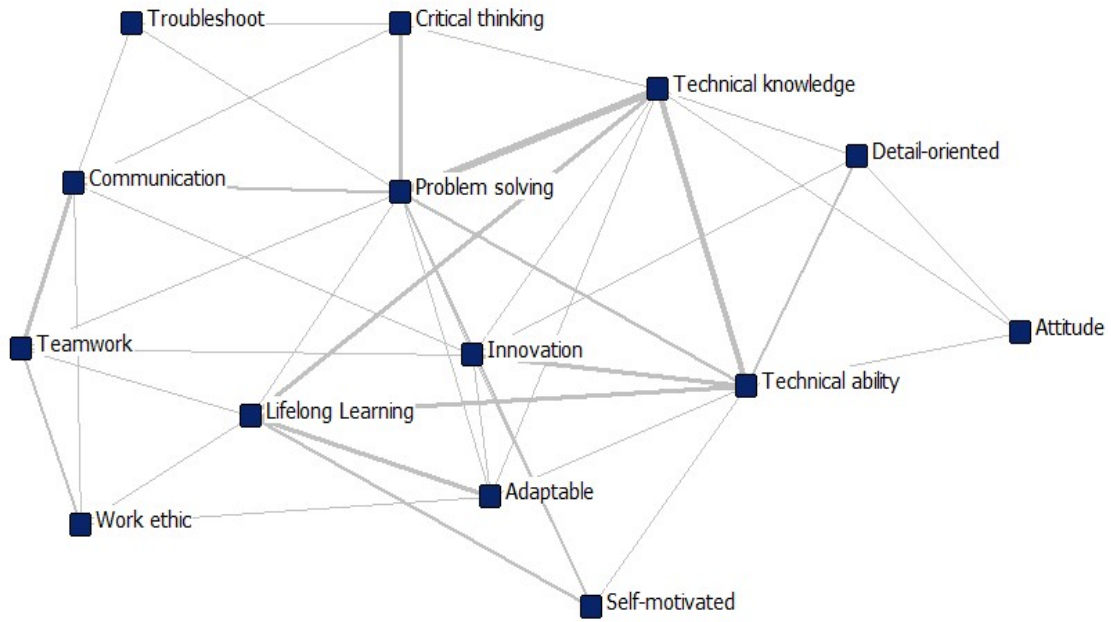
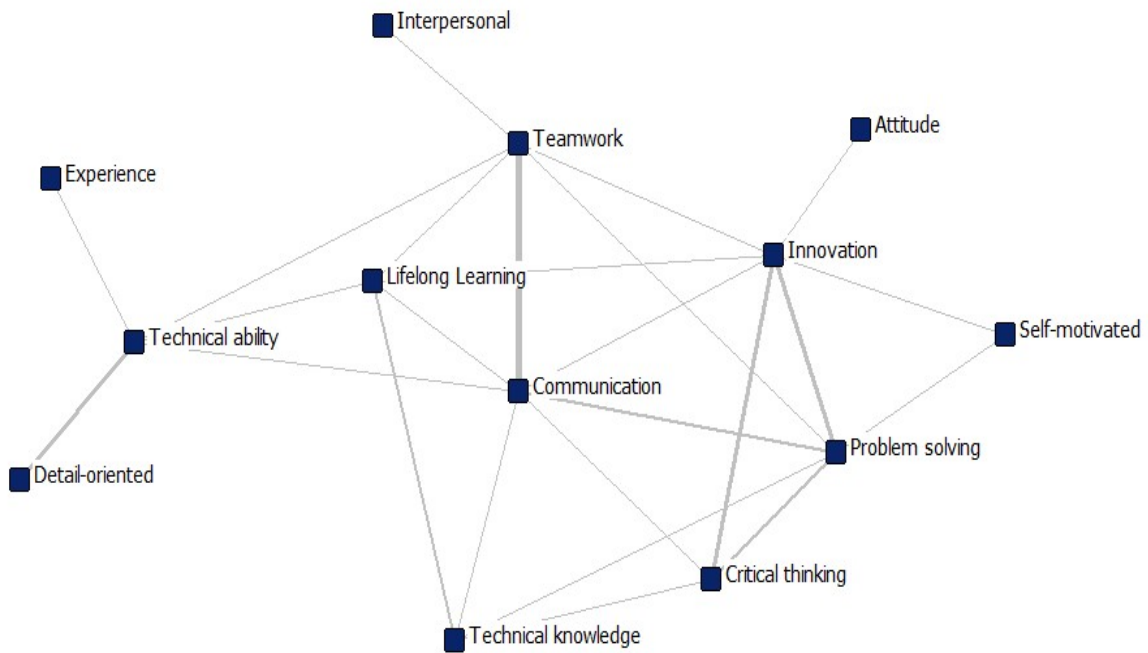


Figure 10. Biotechnology Educators Skill-Skill Connections



Reconsidering College Student Employability

Data and visualizations indicate that participants often described valuable competencies as inextricably bound, in some cases closely enough that it made little sense to discuss one skill without the other. This was particularly the case with teamwork and communication, which were explicitly linked by 22 respondents—with both educators and employers believing that working well with coworkers depended on effective communication. Two different manufacturing employers, for example, emphasized how cross-functional teams were becoming more common in the engineering workplace, such that engineers had to communicate effectively with personnel from sales, production, and business administration. The value of communication skills in these workplaces was inextricably linked to their specific work contexts, suggesting in these cases that communication across disciplinary and professional boundaries is particularly important.

Another set of linked competencies was adaptability and teamwork, which six manufacturing employers explicitly tied together during interviews. For these employers, this combination of adaptability and teamwork was often linked to the number of employees in their firm. “We are a small company, we only have 30 employees,” one manufacturing employer told us, “so learning to adjust to who you’re working with at any given time is a necessity.” These data indicate, again, that better understanding contextual factors (e.g., discipline, workplace tasks, or company size) can give us a unique perspective on how respondents conceptualize competencies.

Table 6. Contextual Factors Linked to How Skills Are Valued and Conceptualized by Subgroup

Contextual Factor	Description	Mfg employers (n=64)	Biotech employers (n=11)	Mfg Educators (n=32)	Biotech Educators (n=36)	Total (n=143)
Personal background	Skill perspectives based on life experiences, family background, etc.	20 (.31)	1 (.09)	9 (.28)	3 (.08)	33 (.23)
Generational status	Age and time period one is raised and schooled	16 (.25)	3 (.27)	6 (.19)	4 (.11)	29 (.20)
Organizational culture	Peer and management norms and customs in particular work units and firms	21 (.33)	5 (.45)	0 (.00)	1 (.03)	27 (.19)
Public governance	Local, state, and federal K-20 education and workforce policies and priorities	9 (.14)	0 (.00)	11 (.34)	4 (.11)	24 (.17)
Geographic location	Locale seen to instill certain competencies and/or draw skilled individuals	10 (.16)	0 (.00)	8 (.25)	4 (.11)	22 (.15)
Occupational category	Differences in job requirements and work activities between positions	9 (.14)	2 (.18)	6 (.19)	3 (.08)	20 (.14)

3. How Skills Conceptualizations Are Shaped by Contexts and Situations

Finally, we report findings regarding how respondents discussed workplace skills in relation to particular places, events, or situations. Instead of embracing the implicit contention in employability narratives that skills are context-independent, we examined the data based on the idea that educators and employers, operating in unique contexts, may differentially conceptualize or assign value to certain skills. Here we report contexts influencing skill conceptualization or valuation discussed by five or more respondents, once again separated by employer and educator subgroups (Table 6 above).

Two recurring themes suggest that how one defines (and deploys) skills-related cultural models depends on contextual factors. We discuss these below.

Organizational Culture. Many employers in the study spoke of the importance of job applicants matching an organization's "culture," which they reported as a major influence on which skills were valued and prioritized during the hiring process. While varying definitions were offered, which is consistent with the variety of interpretations of the construct in the literature (Lizardo, 2017; Martin, 2002), organizational culture was generally viewed as a combination of the norms and practices that exist within particular departments (see Hora, 2018). Seventy-four percent of employers in the sample reported that cultural fit was a critical element in their hiring practices. One employer, for instance, spoke about the "strong personalities" of staff within the department where one job opening existed, saying this aspect of organizational culture impacted her approach to hiring because she would need to find applicants who "fit" this unique culture. Another employer called the last phase of employment vetting the "cultural phase," and told us his hiring team consistently asked if applicants would "interact well with the people that they'll be asked to interact with." In particular, hiring managers told us they sought to match specific applicant dispositions (e.g., tastes, personality traits), knowledge and reasoning, and various interpersonal and intrapersonal skills to their organization's culture.

The competencies that were most frequently reported as playing a key role in estimations of cultural fit included personality (e.g., a "good" or "respectful" personality matching existing staff), communication and teamwork, and a strong work ethic. While technical knowledge and ability were generally highly valued, educational credentials and technical background took a backseat to estimations of cultural fit for positions in which a person could be trained to perform a routinized task or use a particular machine. Thus, the unique customs, workplace tasks, and personalities of existing staff largely dictated which attributes and competencies employers valued during the hiring process, a finding that confirms prior research on the subjective aspects of hiring, where cultural capital acts as a strategic resource that shapes a person's acquisition (or not) of position and prestige (Moss & Tilly, 1996; Rivera, 2012).

Geographic Location. Educators and employers also reported that geographic location was an important factor influencing their views on workplace competencies. According to respondents, different regions of the state were strongly associated with distinct skills and attributes. Work ethic, for instance, was associated not only with rural areas but also with manufacturing centers in the Fox Valley and Milwaukee. Others pinned a strong work ethic to

Reconsidering College Student Employability

Wisconsin people more generally. “I think a lot of the history of people who’ve lived in Wisconsin have tended to have good work habits, whatever those are,” one engineering professor explained. Such regional and state contrasts in valued (and prevalent) competencies support research showing the ways conceptions of skill can vary according to geographic space (e.g., Holt, 2008; Patterson, 2008), how complex social, economic, and environmental realities are often intertwined (e.g., Berkes, Folke, & Colding, 1998), as well as how space may bestow prestige on certain individuals over others.

Some employers and educators also told us that the nature of local industry—whether it was biotechnology in Madison or metal manufacturing in the southeastern part of state—was an important determinant both of skill *privation*, or whether local workers did not have certain competencies, and skill *profusion*, or whether local workers had certain competencies. In regard to the latter, one manufacturing human resources director in eastern Wisconsin told us, “We’ve been a region ... because of that core metal manufacturing, machining, metal fabrication skill set, [where] work has come here from companies that require those ... skills.” Other participants indicated that the perceived shallowness of the local worker pool forced them either to bring on people lacking technical competencies (but with the capacity to learn quickly) or hire from other parts of the state. “We just had a technician accept an offer ... but he’s from Madison,” one central Wisconsin biotechnology employer told us. Madison is in the southern part of the state. “The ones we interviewed in [this] area just didn’t have the skills.” According to educators, these kinds of local industry needs directly shaped curriculum and instruction via company advisory boards and student demand in technical colleges, in particular. Cultural models for workplace skills, consequently, can be viewed as strongly tied to place.

Conclusions and Implications

In this paper, our goal has been to problematize the employability skills discourse, along with ubiquitous lists of valuable workplace skills college students should acquire, using a culturally oriented analysis of the way insiders actually think about and use these skills in real-world settings. While the employability narrative conceives of higher education as a venue in which discrete, generic attributes should be instilled for employment purposes, our data raise questions about this worldview and the widespread notion that getting a job is simply a matter of a student possessing (or not) the “right” skills. Instead, we argue that skills are best thought of as culturally framed and determined assemblages of abilities, knowledge, and dispositions that are reproduced and rewarded within specific disciplinary and professional communities of practice (Lave & Wenger, 1991; Van Maanen & Barley, 1984). These culturally bound and determined skillsets can then be used as a type of “social currency” as the student moves from the field of education to the field of employment, with the hopes that the cultural models acquired in college will “purchase” her/him a position in a firm or organization. While advancing no claims of generalizability beyond our sample of Wisconsin-based educators and employers, we highlight in the remainder of this paper implications of the study for research, policy, and practice.

Reconceptualizing Skills as Multifaceted and Situated Cultural Models

The evidence presented in this paper demonstrates that workplace competencies are more nuanced, value-based, contextual, and *cultural* than the employability skills discourse acknowledges. Indeed, the postsecondary and workforce stakeholders with whom we spoke discussed “skills” in ways that offer two objections to this narrative: first, that they are not stand-alone bits of individualized aptitude but instead are interconnected assemblages of skill, knowledge, and ability; and second, that they cannot be adequately understood if divorced from specific geographic, professional, and cultural contexts. The concept of cultural models from cognitive anthropology offers a productive way to speak about skills that are attentive to these findings, as cognitive and embodied theories of relationships among people, ideas, and events that are developed through the repeated activation of unique neural networks in relation to specific situations (Ferrare & Hora, 2014; Strauss & Quinn, 1997). These models do not necessarily dictate behavior but instead act to “frame experience, supplying interpretations of that experience and inferences about it, and goals for action” (Quinn & Holland, 1987, p. 6). To this interpretation we add that when combined with internalized declarative (knowing *what*) and procedural knowledge (knowing *how*)—two elements commonly associated with the idea of “skill” (Merriam-Webster, 2018)—cultural models can translate into habituated action as a form of practical reason (Bourdieu, 1990). Instead of acting as fixed rules or scripts for behavior, however, cultural models and the cognitive schemata that comprise them can take on different configurations or causal forms depending on the situation or “trigger” that leads to particular models being activated. In this way, viewing skills as multifaceted and situated cultural models links an individual’s knowledge and abilities inextricably with their historic *and* contemporary social and cultural environments.

Work ethic, a competency rooted in cultural, social, and dispositional factors, is a prime example of this complexity. Though there were subtle differences in how “work ethic” was described among biotechnology or manufacturing educators and employers, the term has a special cache among many of the Wisconsinites we spoke to stemming from the state’s blue collar, agricultural traditions that defies easy categorization. Indeed, some have argued that work ethic may not even be a fixed attribute at all, but instead a multidimensional trait that evolves over time and changes with the individual and situation (Wentworth & Chell, 1997). Technical ability, lifelong learning, communication, and teamwork, we believe, are similarly complex competencies as unworthy of the simple, mechanical meaning “skills” has taken on in the employability skills discourse; they deserve more careful, nuanced, and contextualized analysis.

With this in mind, it is important to recognize that conceptions of whether one possesses or does not possess certain competencies are tied very closely to another situational factor—occupational and disciplinary communities. In such communities, which are not dissimilar from “communities of practice” (Lave & Wenger, 1991) or “occupational communities” (Van Maanen & Barley, 1984), particular cultural models for and about work are honed through repeated practice and passed down through the generations. Furthermore, these communities define the criterion for entrance into the profession, such that cultural models can act as a form of internalized and embodied cultural capital that can “purchase” one position and prestige

Reconsidering College Student Employability

(Lizardo, 2004). While the employability skills discourse has usually portrayed the judgment of skills, knowledge, and ability in acultural, technocratic terms, this study suggests such assessment would be more accurately defined by a fundamental arbitrariness equating subjective judgment to common sense (Bourdieu & Passeron, 1977). By deconstructing and evaluating competencies in this way, the employability discourse advances a narrative devoid of human context or cultural meaning (see, for instance, Kirchgasser, 2018).

Power, Equity, and Neoliberalism in Postsecondary and Workforce Fields

Of course, the role that much wider historical, political, and economic realities play in the daily conception of valued competencies figures prominently in the employability discourse. Postsecondary policy reforms geared towards “skills” can partly be understood as the result of market-driven movements and discourses that have been influential in the United States since the late 1970s (Grubb & Lazerson, 2009; Harvey, 2005). By means financial and rhetorical, these market-centered norms have led to growing pressure on public colleges and universities to align their values and practices more closely with the needs of the business community which, as Urciuoli (2008) argues, most stands to benefit from “socially embedded [‘skills’] discourses in which workers become ... entrepreneurial agents responsible for company success” (p. 213). According to this logic, individual, contextualized, and culturally determined traits and dispositions are reconceived as commodified, testable units, objective “‘things’ that can be acquired and measured and possess an inherent capacity to bring about desired outcomes ... that can be measured in dollars” (ibid, p. 212). The implication of this discourse for higher education is simple. While participants in this study told us it took practice, support, and time to truly develop the valued and complex skills discussed above, the discrete, testable “skills” imagined in recent market-oriented discourses seem more amenable to the shorter-term, and cheaper, kinds of training programs supported by many policymakers and businesses (Hora et al., 2016).

With this in mind, we believe practitioners, scholars, and administrators in colleges and universities should be skeptical of the notion of employment—and, more generally, the role that higher education can play in helping students succeed in the job market—offered by the employability discourse. Further field research on occupation- and discipline-specific views of valuable skills, as well as the perceived mutability of personality traits, will be vital in this regard, as will discussions about how to better provide students with the kind of social and cultural capital they need not only to lead satisfying careers, but also to make a difference in the lives of others. Particular attention must also be paid to evidence-based forms of curriculum and instruction, especially through active learning that cultivates informed inquiry, creativity, and *transfer*, that can enhance students’ learned acumen as well as their ability to continue learning and growing as they move between and among any number of social and cultural spaces through their lives. Culture and context, simply put, should be our focus.

This point, ultimately, reminds us of the stakes involved. One of the core ideas animating Pierre Bourdieu’s work on education is that schooling is a prominent venue for the reproduction of cultural, social, and economic inequality (Bourdieu & Passeron, 1977). Those who control the curriculum and thus the valued forms of cultural capital in a course of study, he noted,

Reconsidering College Student Employability

effectively manage the “logic of its transmission” to the next generation, usually in ways that favor those with power (Bourdieu, 1986, p. 249). In thinking about how different competencies are internalized by students via formal schooling and then transferred into employment fields, we believe it is useful—and deeply democratic—to think of competencies such as work ethic, communication, and lifelong learning not as unassailable measures of an individual’s capability or merit, but as habituated cultural resources necessarily defined and valued by particular groups, at particular times, for particular reasons. In so doing, we begin to utilize a language for talking about processes of student socialization and education that emphasizes not only the role that culture plays in shaping success, but also the essential capriciousness of the employability skills narrative. Considering the narrative’s profound influence on education policy as well as how we look at the goals of higher education, this, in and of itself, is a meaningful feat.

References

- Andrews, J., & Higson, H. (2008). Graduate employability, 'soft skills' versus 'hard' business knowledge: A European study. *Higher Education in Europe*, 33(4), 411–422.
- Barsalou, L. W. (1999). Perceptions of perceptual symbols. *Behavioral and Brain Sciences*, 22(4), 637–660.
- Berkes, F., Folke, C., & Colding, J. (2000). *Linking social and ecological systems: Management practices and social mechanisms for building resilience*. Cambridge, UK: Cambridge University Press.
- Bernard, H. R. (2011). *Research methods in anthropology*. Lanham, MD: Rowman Altamira.
- Bidwell, C. E. (1989). The meaning of educational attainment. *Research in the Sociology of Education and Socialization* 8, 117–138.
- Bills, D. B. (2003). Credentials, signals, and screens: Explaining the relationship between schooling and job assignment. *Review of Educational Research*, 73(4), 441–449.
- Borg, I., & Groenen, P. J. (2005). *Modern multidimensional scaling: Theory and applications*. New York, NY: Springer.
- Borgatti, S. P. (1994). Cultural domain analysis. *Journal of Quantitative Anthropology*, 4(4), 261–278.
- Borgatti, S. P. (1996). *Anthropac 4*. Natick, MA: Analytic Technologies.
- Borgatti, S. P. (1998). Elicitation techniques for cultural domain analysis. In J. Schensul & M. LeCompte (Eds.), *The ethnographers toolkit* (Vol. 3). Walnut Creek, CA: Altimira Press.
- Borgatti, S. P. (2002). *NetDraw: Graph visualization software*. Natick, MA: Analytic Technologies.
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). New York, NY: Greenwood.
- Bourdieu, P., & Passeron, J. C. (1977). *Reproduction in education, culture and society*. Thousand Oaks, CA: Sage Publications.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32–42.
- Cappelli, P. H. (2015). Skill gaps, skill shortages, and skill mismatches: Evidence and arguments for the United States. *ILR Review* 68(2), 251–290.
- Carnevale, A. P., Smith, N., & Melton, M. (2011). *Science, technology, engineering, mathematics*. Washington, D.C.: Georgetown University Center on Education and the Workforce.
- Charmaz, K. (2014). *Constructing grounded theory*. Thousand Oaks, CA: Sage.
- Clarke, M. (2017). Rethinking graduate employability: The role of capital, individual attributes and context. *Studies in Higher Education*, 1–15.

Reconsidering College Student Employability

- Cleary, J. L., Kerrigan, M. R., & Van Noy, M. (2017). Towards a new understanding of labor market alignment. In M. B. Paulsen (ed.), *Higher education: Handbook of theory and research volume 32* (pp. 577–629). New York, NY: Springer International Publishing.
- Collet, C., Hine, D., & du Plessis, K. (2015). Employability skills: Perspectives from a knowledge-intensive industry. *Education+ Training, 57*(5), 532–559.
- Curtis, D., & McKenzie, P. (2001). *Employability skills for Australian industry: Literature review and framework development*. Melbourne, AU: Australian Council for Educational Research.
- Dannels, D. P., Palmerton, P. R., & Gaffney, A. L. (2017). *Oral communication in the disciplines: A resource for teacher development and training*. Anderson, SC: Parlor Press.
- Dearing, R. (1997). *Higher education in the learning society*. London, UK: National Committee of Inquiry into Higher Education.
- DeJordy, R., Borgatti, S. P., Roussin, C., & Halgin, D. S. (2007). Visualizing proximity data. *Field Methods, 19*(3), 239–263.
- Fanta-Vagenshtein, Y. (2013). Culture in context: The role of culture on cognitive skills expression. *Journal of Cognition and Culture, 13*(3-4), 313–327.
- Farkas, G. (2003). Cognitive skills and noncognitive traits and behaviors in stratification processes. *Annual Review of Sociology, 29*(1), 541–562.
- Ferrare, J. J., & Hora, M. T. (2014). Cultural models of teaching and learning in math and science: Exploring the intersections of culture, cognition, and pedagogical situations. *Journal of Higher Education, 85*(6), 792–825.
- Fugate, M., Kinicki, A. J., & Ashforth, B. E. (2004). Employability: A psycho-social construct, its dimensions, and applications. *Journal of Vocational Behavior, 65*(1), 14–38.
- Furnham, A. (1984). The Protestant work ethic: A review of the psychological literature. *European Journal of Social Psychology, 14*(1), 87–104.
- Gallagher, K. M., & Updegraff, J. A. (2012). Health message framing effects on attitudes, intentions, and behavior: A meta-analytic review. *Annals of Behavioral Medicine, 43*(1), 101–116.
- Gibson, C. B., & Zellmer-Bruhn, M. E. (2001). Metaphors and meaning: An intercultural analysis of the concept of teamwork. *Administrative Science Quarterly, 46*(2), 274–303.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine Publishing Company.
- Golden, N. A. (2015). “There’s still that window that’s open”: The problem with ‘grit.’ *Urban Education, 1*–28.
- Greenfield, P. M. (1997). You can’t take it with you: Why ability assessments don’t cross cultures. *American Psychologist, 52*, 1115–1124.
- Grubb, W. N., & Lazerson, M. (2009). *The education gospel*. Cambridge, MA: Harvard University Press.

Reconsidering College Student Employability

- Harvey, D. (2005). *A brief history of neoliberalism*. Oxford, UK: Oxford University Press.
- Holmes, L. (2006, May). Reconsidering graduate employability: Beyond possessive-instrumentalism. Paper presented at the *7th International Conference on HRD Research and Practice Across Europe, University of Tilburg*.
- Holmes, L. (2013). Competing perspectives on graduate employability: Possession, position or process? *Studies in Higher Education*, 38(4), 538–554.
- Holt, L. (2008). Embodied social capital and geographic perspectives: Performing the habitus. *Progress in Human Geography* 32(2), 227–246.
- Hora, M. T. (2018). Hiring as cultural gatekeeping into occupational communities: Implications for college students, faculty, and career advisors. *WCER Working Paper 2018-1*. Madison, WI: Wisconsin Center for Education Research.
- Hora, M. T., Benbow, R. J., & Oleson, A. (2016). *Beyond the skills gap: Preparing college students for life and work*. Cambridge, MA: Harvard Education Press.
- Jackson, D. (2016). Re-conceptualising graduate employability: The importance of pre-professional identity. *Higher Education Research & Development*, 35(5), 925–939.
- Jonassen, D., Strobel, J., & Lee, C. B. (2006). Everyday problem solving in engineering: Lessons for engineering educators. *Journal of Engineering Education*, 95(2), 139–151.
- Kirchgasler, C. (2018). True grit? Making a scientific object and pedagogical tool. *American Educational Research Journal*, 1–28.
- Kruskal, J. B., & Wish, M. (1978). *Multidimensional scaling*. Thousand Oaks, CA: Sage.
- Lave, J. (1988). *Cognition in practice: Mind, mathematics and culture in everyday life*. Cambridge, UK: Cambridge University Press.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.
- Libertino, L., Ferraris, D., Osornio, M. L., & Hough, G. (2012). Analysis of data from a free-listing study of menus by different income-level populations. *Food Quality and Preference*, 24(2), 269–275.
- Livingstone, D. W. (2010). Job requirements and workers' learning: formal gaps, informal closure, systemic limits. *Journal of Education and Work*, 23(3), 207–231.
- Lizardo, O. (2004). The cognitive origins of Bourdieu's habitus. *Journal for the Theory of Social Behavior*, 34(4), 375–401.
- Lizardo, O. (2017). Improving cultural analysis: Considering personal culture in its declarative and nondeclarative modes. *American Sociological Review*, 82(1), 88–115.
- Martin, J. (2002). Organizational culture: Pieces of the puzzle. *Classics of Organization Theory*, 6, 393–414.
- McQuaid, R. W., & Lindsay, C. (2005). The concept of employability. *Urban Studies*, 42(2), 197–219.

Reconsidering College Student Employability

- Merriam-Webster (2018). *Merriam-Webster's dictionary*. Springfield, MA: Merriam-Webster Incorporated. Retrieved on January 22, 2018 at <https://www.merriam-webster.com/dictionary/skills>.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2013). *Qualitative data analysis*. Thousand Oaks, CA: Sage.
- Moore, T., & Morton, J. (2017). The myth of job readiness? Written communication, employability, and the 'skills gap' in higher education. *Studies in Higher Education*, 42(3), 591–609.
- Moreau, M. P., & Leathwood, C. (2006). Graduates' employment and the discourse of employability: A critical analysis. *Journal of Education and Work*, 19(4), 305–324.
- Moss, P., & Tilly, C. (1996). "Soft" skills and race: An investigation of black men's employment problems. *Work and Occupations*, 23(3), 252–276.
- Olssen, M., & Peters, M. A. (2005). Neoliberalism, higher education and the knowledge economy: From the free market to knowledge capitalism. *Journal of Education Policy*, 20(3), 313–345.
- Partnership for 21st Century Learning (2015). *P21 framework definitions*. Retrieved July 17, 2017 from http://www.p21.org/storage/documents/docs/P21_Framework_Definitions_New_Logo_2015.pdf.
- Patterson, C. (2008). Cultural capital and place: Coles Bay and the Freycinet Peninsula, Tasmania. *Geographical Research*, 46(3), 350–360.
- Pellegrino, J. W., & Hilton, M. L. (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. Washington D.C.: National Academies Press.
- Quinlan, M. (2005). Considerations for collecting freelists in the field: Examples from ethobotany. *Field Methods*, 17(3), 219–234.
- Quinn, N., & Holland, D. (1987). Culture and cognition. In D. Holland & N. Quinn (Eds.), *Cultural models in language and thought* (pp. 3–42). New York, NY: Cambridge University Press.
- Rivera, L. A. (2012). Hiring as cultural matching: The case of elite professional service firms. *American Sociological Review*, 77(6): 999–1022.
- Rivera, L. A., & Tilcsik, A. (2016). Class advantage, commitment penalty: The gendered effect of social class signals in an elite labor market. *American Sociological Review*, 81(6), 1097–1131.
- Rowan-Kenyon, H. T., Savitz-Romer, M., Weilundemo Ott, M., Swan, A. K., & Liu, P. P. (2017). Finding conceptual coherence: Trends and alignment in the scholarship on noncognitive skills and their role in college success and career readiness. In M. B. Paulsen (ed.), *Higher Education: Handbook of Theory and Research Volume 32* (pp. 141–179). New York, NY: Springer International Publishing.
- Rothwell, J. (2013). *The hidden STEM economy*. Washington D.C.: Brookings Institute.

Reconsidering College Student Employability

- Ryan, G. W., & Bernard, H. R. (2003). Techniques to identify themes. *Field Methods*, 15(1), 85–109.
- Schultz, T. W. (1961). Investment in human capital. *American Economic Review*, 51(1), 1–17.
- Smith, J. J. (1993). Using ANTHOPAC 3.5 and a spreadsheet to compute a free-list salience index. *Field Methods* 5(3), 1–3.
- Smith, J. J., & Borgatti, S. P. (1997). Salience counts-and so does accuracy: Correcting and updating a measure for free-list-item salience. *Journal of Linguistic Anthropology*, 7, 208–209.
- Spitzberg, B. H. (2013). (Re)introducing communication competence to the health professions. *Journal of Public Health Research*, 2(3), 126–135.
- Strauss, C., & Quinn, N. (1997). *A cognitive theory of cultural meaning*. Cambridge, UK: Cambridge University Press.
- Suleman, F. (2017). The employability skills of higher education graduates: Insights into conceptual frameworks and methodological options. *Higher Education*, 1–16.
- Tomlinson, M. (2008). ‘The degree is not enough’: Students’ perceptions of the role of higher education credentials for graduate work and employability. *British Journal of Sociology of Education*, 29(1), 49–61.
- Tomlinson, M. (2012). Graduate employability: A review of conceptual and empirical themes. *Higher Education Policy*, 25(4), 407–431.
- Tomlinson, M. (2017). Forms of graduate capital and their relationship to graduate employability. *Education+ Training*, 59(4), 338–352.
- Tymon, A. (2013). The student perspective on employability. *Studies in Higher Education*, 38(6), 841–856.
- United States Census Bureau. (2016). North American Industry Classification System: Introduction to NAICS [Webpage]. Retrieved from <https://www.census.gov/eos/www/naics/>
- United States Department of Labor (1991). *What work requires of schools: A SCANS report for America 2000*. Washington, D.C.: U.S. Government Printing Office.
- Urciuoli, B. (2008). Skills and selves in the new workplace. *American Ethnologist* 35(2), 211–228.
- Van den Bossche, P., Gijssels, W. H., Segers, M., & Kirschner, P. A. (2006). Social and cognitive factors driving teamwork in collaborative learning environments: Team learning beliefs and behaviors. *Small Group Research*, 37(5), 490–521.
- Van Maanen, J., & Barley, S. (1984). Occupational communities: Culture and control in organizations. In *Research in Organizational Behavior* (Eds.), Research in Organizational Behavior (pp. 287–365). London, UK: JAI Press.
- Weller, S. C., & Romney, A. K. (1988). *Systematic data collection*. Thousand Oaks, CA: Sage.
- Wentworth, D. K., & Chell, R. M. (1997). American college students and the protestant work ethic. *Journal of Social Psychology*, 137(3), 284–296.

Reconsidering College Student Employability

- Williams, S., Dodd, L. J., Steele, C., & Randall, R. (2016). A systematic review of current understandings of employability. *Journal of Education and Work, 29*(8), 877–901.
- Wilton, N. (2011). Do employability skills really matter in the UK graduate labour market? The case of business and management graduates. *Work, Employment and Society, 25*(1), 85–100.
- Wisman, J. D. (2013). Wage stagnation, rising inequality and the financial crisis of 2008. *Cambridge Journal of Economics, 37*(4), 921–945.
- Yorke, M. (2005). *Employability in higher education: What it is, what it is not*. York, UK: Higher Education Academy.
- Yin, R. K. (2013). *Case study research: Design and methods*. Thousand Oaks, CA: Sage.