

## Workplace Training and Cognitive, Intra- and Inter-personal Skills: A Literature Review

Sophia Slocum & Matthew T. Hora

Center for Research on College-Workforce Transitions (CCWT)

University of Wisconsin Madison

### Literature Summary #1

This summary of the research literature on workplace training activities focused on cognitive, inter- and intrapersonal skills is the first in a series of literature reviews published by the Center for Research on College-Workforce Transitions (CCWT) at the University of Wisconsin-Madison. These brief summaries of the empirical literatures are intended to provide scholars and professionals engaged in research, policymaking and practice on college-work issues with insights into the nature and scope of research on topics central to contemporary college-workforce debates and strategies.

### Introduction

At the center of debates about college student employability and career-related skills are a group of competencies known variously as “soft,” “non-cognitive” or “employability” skills.<sup>1</sup> Viewed as essential for students to get a job in an increasingly knowledge-based economy (Kyllonen, 2013; Tomlinson & Holmes, 2016) and even for avoiding deleterious health and social outcomes (Heckman & Kautz, 2012), competencies such as communication, teamwork and critical thinking are playing an increasingly prominent role in shaping educational policy and practice. It is difficult to read about the skills considered essential for today’s college student to thrive in their careers without encountering the idea of “soft” skills, particularly in their hypothesized ability to make graduates and their long-term viability in the workforce to be “robot proof” (Aoun, 2017; Pellegrino & Hilton, 2002).

Whether or not these critical skills are being taught and/or trained in another critical venue central to individuals’ lifelong learning – that of workplace training hosted by employers – is rarely discussed and poorly understood.

1 Given the problematic nature of each of these terms, where “soft skills” implies easy and/or emotionally laden competencies and “non-cognitive” suggests the lack of engagement with cognitive properties, in the remainder of this paper we will refer to each competency on its own terms, such as communication or critical thinking, or as “cognitive,” “inter-personal” and “intra-personal” competencies, following the framework offered by Pellegrino and Hilton (2012). When terms such as “soft” or “non-cognitive” terms are used we are referring to popularly used terminology and not a group of specific skills.

One of the challenges facing scholars and policymakers interested in having teachers focus on teaching these skills in the classroom was the profusion of terms such as “soft,” “non-cognitive,” or “21st century skills” to refer to a wide array and sometimes completely different sets of competencies. In response, Pellegrino and Hilton (2012) led a multi-disciplinary panel to develop a skills framework grounded in psychological and educational research, resulting in the three categories we use in this report – cognitive, inter-personal, and intra-personal competencies. These skills are widely discussed with respect to curriculum and instruction in K-12 schools and at the postsecondary level, yet whether or not these competencies are being taught and/or trained in another critical venue central to individuals’ lifelong learning – that of workplace training hosted by employers – is rarely discussed and poorly understood.

In this report we address this gap in the literature by reporting the results from a brief review of the literature on the topic of workplace training of cognitive, inter- and intra-personal skills. The skills that we focus upon - problem solving, oral communication, written communication, teamwork, and self-directed learning – are the focus of a National Science Foundation supported study about these skills called the EMPOWER project (see <http://empower.wceruw.org>).

## **Brief Overview of the Literature**

Despite the widespread discussion of the need for “soft” or “21st century skills” in the workforce, only 20% of participants in a recent career development survey stated that their employer was providing training in necessary soft skills, including teamwork and communication (American Psychological Association, 2017). The current literature on workplace training of these competencies reflects this statistic, as there is limited empirical research about on- the- job skill-specific training. However, it is important to note that a considerable amount of “grey literature,” or non-peer reviewed practitioner articles and reports, does exist and the topic is regularly discussed in professional associations such as the Association for Talent Development (ATD), the National Association for Colleges and Employers (NACE), and the Australian Workforce Training Association (AWTA). Despite these robust professional conversations, however, we argue that there is a need to conduct more empirical research on this topic to see what types of trainings exist, the benefits of these trainings, and future suggestions for successful skill-focused training in the workplace.

There is limited empirical research about on- the- job skill-specific training.

The literature that does exist shows positive outcomes of certain training programs and approaches, where employees demonstrate an increase in their cognitive, inter- or intra-personal skills after receiving training. In our brief review, we identified 29 articles regarding workplace training programs, assessments, and systematic reviews. A majority of the articles were focused on communication, followed by teamwork, problem solving and finally self directed learning.

**Table 1.**

Competency	Number of empirical studies
Communication	9
Teamwork	5
Problem Solving	3
Self Directed Learning	3
General "Soft Skills"	4

**Context-specificity of the literature.** Of the articles we reviewed, 80% of the trainings were conducted in the specific context of a workplace environment, while the other 20% emphasized these skills in the broader life context of employees. The majority of the contex-specific trainings were based in healthcare settings with many focused on oral and written communication, while a few focused on teamwork skills. Other workplace settings included banking, hospitality, library services, and information technology organizations. The disciplinary specificity of the literature was evident in the journals where we found these articles, such as the Journal of Advanced Nursing, Information Technology and Libraries, and the Journal of Occupational Health.

**Workplace training methods used to promote skills.** Regarding the methodology of the trainings reviewed, many different methods were used to teach employees these skills such as on-the-job coaching (Deshpande & Munshi, 2018), information sessions on skill improvement and use (Quinney, Smith & Galbraith, 2010), and online training modules (Shimazu, Kawakami, Irimajiri, Sakamoto & Amano, 2005). The methods with the most prevalence across the articles were role-playing scenarios for participants to practice real life situations, videotaping the participants while they work and then play it back for them, group discussion, lectures, online material/modules, and giving feedback. Instructor modeling, focus groups, simulation labs, and providing a rewards system were also methods used in at least one study. In fields such as medical education, role-playing simulations are by far the most widely discussed and deeply studied method for training current and future healthcare workers in skills such as oral communication and teamwork (e.g., Murdoch, Bottorff & McCullough, 2014).

The most prevalent method of teaching employees cognitive, inter- and intra-personal skills found in the literature is role-playing simulations grounded in authentic workplace problems or situations.

**Outcomes of skills-specific training programs.** With respect to outcome measures, researchers have used a variety of concepts and instruments to evaluate the impacts of workplace training programs and interventions. The majority of the communication trainings took place in hospitals, and outcomes included an increase in quality of verbal interactions for nurses (Boscart, 2009); an increase in empathy and individualized responses (Moore et al., 2018); less staff turnover and sick leave, as well as fewer patient complaints, assaults on staff, and overall cost savings (Smoot & Gonzales, 1995); and increase in patient satisfaction (Ammentorp et al., 2011).

All but one of the articles focused on teamwork outcomes took place in a healthcare setting. The hospital-based articles found that engaging in teamwork training led to higher quality of team behavior (Shapiro et al., 2004) and decreased patient fall rate and lower staff turnover (Kalisch et al., 2007). One of the studies did mention that the only factor that decreased teamwork skills was when feedback was involved, but other articles found feedback to be a helpful part of their trainings (Hughes et al., 2016). Another study looked at teamwork training in an automotive supply setting and their major finding was that social support enhances transfer motivation at both the team and individual level, and once transfer motivation is increased then training transfer increases. Therefore, social support and motivation to transfer are related with higher teamwork skills (Massenberg et al., 2015).

Only three articles focused on problem solving training, and only two of those had applicable findings. One article found that the training did increase problem solving skills, problem solving self-efficacy, greater positive affect, and higher job and life satisfaction, while the other article did not find a significant effect on problem solving behavior (Ayres & Malouff, 2007) (Shimazu et al., 2005).

As with problem solving, there were only three articles that pertained to self-directed learning. One focused on the feasibility of implementing a self-directed learning program into job settings based on employer perspectives, and they found that employers were interested in holding such trainings. The factors that related to whether this type of training would be feasible or not included available time, perceived skills of supervisors, and types of learning networks encouraged at each workplace (Smith et al., 2007). The other study that had applicable findings found that a self-directed learning training actually promoted lifelong learning in employees at a library (Quinney et al., 2010).

## **Recommendations from Researchers about Skills-Based Workplace Training**

Considering the positive outcomes documented after implementing skills training in the workplace, researchers in our review offered many suggestions for how such training programs should be organized and implemented. Below are specific suggestions from some of the research articles in this review for future researchers, employers, and employees to keep in mind when designing skills training programs:

- “Soft” skills training should be implemented mindfully, which includes coaching the managers to ensure transfer of training, and conducting a comprehensive reassessment follow-up after the training (Tuleja & Roberts, 2011).
- Employers may find it more beneficial to provide face-to-face training— if this is not possible, then to at least provide high interactivity within online courses. The researchers on this study emphasize that

employees need to understand the value of training and have to be personally motivated (Charoensap-Kelly et al., 2016).

- One study strongly recommends utilizing role-play and feedback on video recordings for communication trainings with healthcare professionals (Ammentorp et al., 2011).
- Companies can benefit from consulting outside business communication experts to do communication trainings. Additionally, business communication educators should collaborate with companies (Hynes, 2012).
- The SoftSkills for IT (SSIT) assessment is recommended to help experienced IT workers develop practical intelligence (Joseph et al., 2010).
- It is important to work to support individuals within teams and build a motivational climate after training interventions (Massenberg et al., 2015).
- Medical simulations are recommended as a promising method for enhancing teamwork training because it is more representative of clinical care (Shapiro et al., 2004).
- Teamwork interventions that include experiential activities for participants are recommended to promote active learning and produce the best outcomes (McEwan et al., 2017).

## Conclusions & Next Steps

It appears that interest in the so-called “soft skills” that characterized discussions about higher education, student employability, and workplace skills needs in the late 20th century is continuing unabated in the early 21st century. In fact, with growing concerns about automation and its potential for displacing millions of workers, interest in how to best teach and train these skills is becoming more and more pronounced (e.g., Aoun, 2017). In considering the venues where skills such as communication, teamwork and problem-solving can be taught, while too many focus exclusively on K-12 and postsecondary classrooms, it is apparent that the workplace is one of the most important and prevalent places where skills-based instruction can and should take place.

However, while research on workplace-based skills training is robust in specific professions and disciplines – especially healthcare – the empirical research on the efficacy of different types of programs and interventions is relatively sparse. Ideally, future scholarship will focus on the nature and quality of workplace training with the same resources and attention that is currently placed on teaching and learning in formal K-12 and postsecondary venues. In advancing such scholarship, researchers would be well advised to build upon work in continuing education (e.g., Eraut, 2010), workplace learning and work-based learning (e.g., Boud & Middleton, 2003; Lester & Costley, 2010).

Furthermore, there is a considerable amount of activity among professional associations such as ATD and NACE that likely holds a wealth of ideas, experiences, and strategies for workplace training professionals. Thus, we encourage researchers and policymakers to conduct and support more research on the effectiveness of workplace-based skills instruction across different industrial sectors and professions, while also tapping into the rich experiences of professional groups focused on workplace training and employee professional development.

**Works Cited**

- American Psychological Association Center for Organization Excellence. (2017). *American Psychological Association reports: 2017 Job Skills Training and Career Development Survey*. Retrieved from <http://www.apaexcellence.org/assets/general/2017-training-survey-results.pdf>
- Ammertorp, J., Kofoed, P.-E., & Laulund, L. W. (2011). Impact of communication skills training on parents perceptions of care: Intervention study. *Journal of Advanced Nursing*, 67(2), 394–400. <https://doi.org/10.1111/j.1365-2648.2010.05475.x>
- Aoun, J.E. (2017). *Robot proof: Higher education in the age of artificial intelligence*. Cambridge, MA: MIT Press.
- Ayres, J., & Malouff, J. M. (2007). Problem-solving training to help workers increase positive affect, job satisfaction, and life satisfaction. *European Journal of Work and Organizational Psychology*, 16(3), 279–294. <https://doi.org/10.1080/13594320701391804>
- Boscart, V. M. (2009). A communication intervention for nursing staff in chronic care. *Journal of Advanced Nursing*, 65(9), 1823–1832. <https://doi.org/10.1111/j.1365-2648.2009.05035.x>
- Boud, D., & Middleton, H. (2003). Learning from others at work: communities of practice and informal learning. *Journal of Workplace Learning*, 15(5), 194-202.
- Deshpande, S. K., & Munshi, M. M. (2018). A study on soft skill training as an intervention to reinforce employee performance in the contemporary banking sector. Proceedings of the 9th Annual International Conference on 4Cs - Communication, Commerce, Connectivity, Culture, SISMAR 2018.
- Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education*, 26(2), 247-273.
- Heckman, J. J., & Kautz, T. (2012). Hard evidence on soft skills. *Labour Economics*, 19(4), 451-464.
- Hughes, A. M., Gregory, M. E., Joseph, D. L., Sonesh, S. C., Marlow, S. L., Lacerenza, C. N., Benishek, L. E., King, H. B., & Salas, E. (2016). Saving lives: A meta-analysis of team training in healthcare. *Journal of Applied Psychology*, 101(9), 1266–1304. <https://doi.org/10.1037/apl0000120>
- Hynes, G. E. (2012). Improving Employees' Interpersonal Communication Competencies: A Qualitative Study. *Business Communication Quarterly*, 75(4), 466–475. <https://doi.org/10.1177/1080569912458965>
- Joseph, D., Ang, S., Chang, R. H. L., & Slaughter, S. A. (2010). Practical intelligence in IT: Assessing soft skills of IT professionals. *Communications of the ACM*, 53(2), 149–154. <https://doi.org/10.1145/1646353.1646391>
- Kalisch, B. J., Curley, M., & Stefanov, S. (2007). An Intervention to Enhance Nursing Staff Teamwork and Engagement. *JONA: The Journal of Nursing Administration*, 37(2), 77.
- Kyllonen, P. C. (2013). Soft skills for the workplace. *Change: The Magazine of Higher Learning*, 45(6), 16-23.
- Lester, S., & Costley, C. (2010). Work-based learning at higher education level: Value, practice and critique. *Studies in Higher Education*, 35(5), 561-575.
- Massenberg, A.-C., Spurr, D., & Kauffeld, S. (2015). Social support at the workplace, motivation to transfer and training transfer: A multilevel indirect effects model. *International Journal of Training and Development*, 19(3), 161–178. <https://doi.org/10.1111/ijtd.12054>
- McEwan, D., Ruissen, G. R., Eys, M. A., Zumbo, B. D., & Beauchamp, M. R. (2017). The Effectiveness of Teamwork Training on Teamwork Behaviors and Team Performance: A Systematic Review and Meta-Analysis of Controlled Interventions. *PLoS ONE*, 12(1). <https://doi.org/10.1371/journal.pone.0169604>

- Moore, P. M., Rivera, S., Bravo-Soto, G. A., Olivares, C., & Lawrie, T. A. (2018). Communication skills training for healthcare professionals working with people who have cancer. *Cochrane Database of Systematic Reviews*, 7. <https://doi.org/10.1002/14651858.CD003751.pub4>
- Murdoch, N. L., Bottorff, J. L., & McCullough, D. (2014). Simulation education approaches to enhance collaborative healthcare: A best practices review. *International Journal of Nursing Education Scholarship*, 10(1), 307-321.
- Pellegrino, J. W., & Hilton, M. L. (2012). *Education for life and work: Transferable knowledge and skills for the 21st century*. Committee on defining deeper learning and 21st century skills. Washington, DC: National Academies Press.
- Quinney, K. L., Smith, S. D., & Galbraith, Q. (2010). Bridging the Gap: Self-Directed Staff Technology Training. *Information Technology and Libraries*, 29(4), 205–213. <https://doi.org/10.6017/ital.v29i4.3131>
- Shapiro, M., Morey, J., Small, S., Langford, V., Kaylor, C., Jagminas, L., Suner, S., Salisbury, M., Simon, R., & Jay, G. (2004). Simulation based teamwork training for emergency department staff: Does it improve clinical team performance when added to an existing didactic teamwork curriculum? *Quality & Safety in Health Care*, 13(6), 417–421. <https://doi.org/10.1136/qshc.2003.005447>
- Shimazu, A., Kawakami, N., Irimajiri, H., Sakamoto, M., & Amano, S. (2005). Effects of Web-Based Psychoeducation on Self-Efficacy, Problem Solving Behavior, Stress Responses and Job Satisfaction among Workers: A Controlled Clinical Trial. *Journal of Occupational Health*, 47(5), 405–413. <https://doi.org/10.1539/joh.47.405>
- Smith, P. J., Sadler-Smith, E., Robertson, I., & Wakefield, L. (2007). Leadership and learning: Facilitating self-directed learning in enterprises. *Journal of European Industrial Training*, 31(5), 324–335. <https://doi.org/10.1108/03090590710756783>
- Smoot, S. L., & Gonzales, J. L. (1995). Cost-effective communication skills training for state hospital employees. *Psychiatric Services*, 46(8), 819–822. <https://doi.org/10.1176/ps.46.8.819>
- Tomlinson, M., & Holmes, L.(Eds.) (2017). *Graduate employability in context: Theory, research and debate*. London, UK: Palgrave Macmillan.
- Tuleja, E. A., & Roberts, E. (2011). An Analysis of a Communication Training Program for Chinese Managers. *IEEE Transactions on Professional Communication*, 54(2), 185–200. <https://doi.org/10.1109/TPC.2011.2121730>



**Wisconsin Center for  
Education Research**  
SCHOOL OF EDUCATION  
UNIVERSITY OF WISCONSIN-MADISON

The mission of The Center for Research on College-Workforce Transitions (CCWT) is to conduct and support research, critical policy analysis, and public dialogue on student experiences with the transition from college to the workforce in order to inform policies, programs, and practices that promote academic and career success for all learners.

This literature review was supported by the EMPOWER project, which is an NSF-supported study (DGE#1561686) housed at the Center for Research on College-Workforce Transitions and the Wisconsin Center for Education Research at UW-Madison.

---

Center for Research on College to Workforce Transitions (CCWT)  
1025 West Johnson Street, Madison, WI 53706  
For more information contact Center Director Matthew T. Hora ([hora@wisc.edu](mailto:hora@wisc.edu))  
[ccwt.wceruw.org](http://ccwt.wceruw.org)