TECHNOLOGY, INNOVATION, AND ADULT CAREER PATHWAYS

Jen Vanek
Ed Tech Center @ World Education
Mitch Rosin
AztecSoftware
Jen Hetzel Silbert
Opportunity@Work
Karisa Tashjian
Providence Public Library
Alison Ascher Webber
Ed Tech Center @ World Education

The Workforce Innovation and Opportunities Act (WIOA) not only legislated a collaborative structure crucial for implementing adult career pathways (ACP) programming, it also clarified the role of technology in Adult Basic Education (ABE). New language embedded in Title II, the Adult Education and Family Literacy Act (AEFLA), resolved any ambiguity around the necessity for ABE to strengthen efforts in technology integration and distance learning. This made it clear that the very legislation designed to support ACP programming also specifically called for the use of information and communication technologies (ICTs) for the improvement of teaching, learning, professional development, productivity, and system efficiencies (WIOA, 2014). This public affirmation followed years of the development of innovative ACP programing for career-minded ABE learners across the country (e.g., educational programming developed as part of the iBEST initiative in the state of Washington[1] and MN FastTRAC in Minnesota[2]). However, just as ABE practitioners began to better use ICTs and to support digital literacy skill development, ICT innovation in the world of work moved even more quickly. The result is that employers are increasingly looking for potential employees who not only possess digital literacy skills but those who can nimbly apply those skills as they take on tasks requiring problem solving in the workplace.

1 https://www.sbctc.edu/colleges-staff/programs-services/i-best/
2 http://literacyactionnetwork.org/sites/default/files/Minnesota%20FastTrac%20Handout.pdf

This technological reality demands that ACP programs provide access to, and require the use of, relevant technologies in educational programming. Toward this end, ABE must be present in policy discussions that shape the work, particularly concerning 1) innovation in ACP programming, 2) partnerships to support such innovation, and 3) strategies that extend programming options to learners not currently served in ACP programs. These issues, along with some exemplar initiatives showcasing how new technologies can support ACP, are discussed below.

INNOVATION IN THE ACP PROGRAMMING MUST MATCH INNOVATION IN THE WORKPLACE

21st century work is defined as much by its mutability as by any other characteristic. Consider this example: a bean picker at a canning facility was once part of a team of workers standing at a conveyor belt and picking off nonconforming beans, so they did not end up in the canned product. That position is now filled by a technician who monitors a computerized camera, which recognizes nonconforming beans and then triggers a blast of air to expel them from the conveyor belt. Will this same job be around in 10 years, when artificial intelligence (AI) has advanced to the point that the machine can monitor, reset, and perhaps even repair itself? There are already examples of AI reshaping similar work. For example, commercial cleaning services might now employ technicians to coordinate robotic vacuum cleaners rather than a crew of workers, and salespeople at a leading retail store now use handheld devices to receive instructions from AI-enabled robots on where to move or relabel products.

These examples suggest that for ACP programming to remain relevant, instruction in the use and application of ICTs is critical. A framework for creatively employing ICTs in ACP programming exists in current federal policy guiding ABE, the Integrated Education and Training (IET) model called for in WIOA and defined as

> …a service approach that provides adult *education and literacy activities concurrently and contextually with workforce preparation activities and workforce training* for a specific occupation or occupational cluster for the purpose of educational and career advancement [emphasis added]" (Final WIOA regulations at 34 CFR §463.35) (Mortrude, 2016, p 2).

Programs working with learners at all levels should integrate ICT use as part of the workforce preparation and training activities articulated in the IET approach. This differs depending on the students' levels.

EMBEDDING DIGITAL LITERACY SKILL DEVELOPMENT IN IEL/CIVICS PROGRAMMING

In Integrated English Literacy and Civics Education (IEL/Civics) programming, ICT use might fill the requirement of "workforce prep and training," where learners develop digital

literacy skills while engaging in English language learning and civics education. For example, in a bridge-level manufacturing program in Minneapolis,[3] students develop English language, literacy, and math skills relevant to employment in manufacturing. At the same time, they focus on digital literacy skills to support career exploration and job search activities.

Washington State Community and Technical Colleges' Integrated Digital English Acceleration (I-DEA) Program[4] is another example. In the 32-week program, students complete activities that simultaneously teach English language and literacy while learning relevant college and career-readiness skills such as information literacy, job exploration, and interview skills. In this flipped model, students also strengthen digital literacy skills; students complete online work to learn concepts before coming to class, where they engage in application and practice activities and have the opportunity to get help with technical challenges they encountered working online.

HIGHER LEVEL LEARNER APPLICATION OF DIGITAL LITERACY SKILLS

Learners with higher academic and language skills, who perhaps have already established proficiency with foundational digital literacy, should be given support to utilize their skills as they complete tasks in their ACP programming at the bridge or postsecondary level. This support might involve explicit instruction for determining how to effectively use technology for solving problems. Such a process is laid out in PIAAC's Problem Solving in Technology Rich Environments (PSTRE) framework.[5] Examples of classroom activities that teach the steps of this process can be found in *Using the PIAAC Framework for Problem Solving in Technology-Rich Environments to Guide Instruction: An Introduction for Adult Educators*.[6]

Along with receiving instruction for problem-solving, students benefit from instruction making use of technologies used in the actual work environments. Such relevant programming requires investment in ICT resources and infrastructure (Carter, 2017; Jacobson, 2012). ABE programs cannot do this work without close collaboration of postsecondary institutions involved with higher-level training and employers who might partner with them.

ABE AS A PARTNER IN ACP WORK

To be sure that relevant technologically-rich ACP programming is available, ABE leaders need to be present and in dialogue with 1) WIOA partners who can advise on how to align no-

3 http://atlasabe.org/resources/adult-career-pathways/technical-fields/english-for-manufacturing-and-trades
4 https://www.sbctc.edu/colleges-staff/programs-services/i-dea/default.aspx
5 http://www.oecd-ilibrary.org/education/literacy-numeracy-and-problem-solving-in-technology-rich-environments_9789264128859-en
6 https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/589a3d3c1e5b6cd7b42cddcb/1486503229769/PSTRE_Guide_Vanek_2017.pdf

cost to the participant instructional programming with labor market and employer needs and 2) developers of learning technologies with the capacity to create the resources and learning tools needed by adult learners.

COLLABORATION TO ALIGN PROGRAMMING WITH DEMAND

One example of successful alignment of educational opportunities with labor market demand is found in Rhode Island, where an employer intermediary informed the development of a new career pathway program. The Rhode Coder and Data Navigator programs at the Providence Public Library[7] allow adults to explore coding and data analytics, build skills, and provide next steps to more advanced training. Findings from initial implementation suggest that, ideally, such programming offers open admission, is free to the public, and begins with on-ramp classes followed by employment a little further in the future. This allows participants to explore new career fields before committing resources and time.

Clark County, NV, is creating new partnerships by relocating services traditionally provided through the Workforce Development Board's American Job Center (AJC) to the public library system. Currently, three Clark County libraries have co-located services to offer both adult education and workforce training services to everyone in the county. Co-location models such as these illustrate the potential benefit of sharing student data, accommodating the needs of students who change locations, and meeting the needs of all adult learners on a single curriculum delivery platform (i.e., an online curriculum that includes a robust reporting system to monitor student academic progress).

COLLABORATION ON SCREEN-IN HIRING

New tech-enabled assessments allow employers to screen job applicants based on simulated performance of relevant tasks rather than screening only credentials. ACP programs can assist employers in developing relevant assessments, just like the Northstar Digital Literacy Assessment[8] has for measuring job applicants' computer skills. ACP programs can also inform participants of what competency-based assessments to take to qualify for jobs that may have previously required credentials.

Through TalentABQ,[9] the City of Albuquerque, the New Mexico Department of Workforce Solutions, and Central New Mexico Community College partner to advance Albuquerque's workforce and help employers find talent using skills-based hiring. TalentABQ assesses and builds job seekers' qualifications and the credibility required to access a new job by measuring core foundational skills that are found across 95 percent of all jobs in the U.S. Leveraging

7 http://www.provlib.org/rhode-coders-clubs-data-navigators
8 https://www.digitalliteracyassessment.org/
9 https://www.talentabq.org/about/

the Core Score online technology for assessing soft skills, non-traditional job candidates demonstrate their job readiness to employers who may otherwise have overlooked them. Employers identify new talent through a "screen-in" process, rather than missing a great candidate through a traditional, degree-oriented "screen-out" method.

Technology algorithms can also assist job seekers in understanding what degrees may be worth pursuing. An open source database called Credential Engine[10] allows job seekers, employers, and educators to easily search, aggregate, and compare over 1,500 employment credentials (Trumka & Dimon, 2017). The registry details which employers accept certain credentials, what type of education and training is needed to receive the credential, and where job seekers can get them. ACP program providers, minimally, should understand and introduce these "screen-in" technologies to learners and work to build partnership with their developers to ensure that ACP programming includes, or at least leads up to, recognized credentials.

COLLABORATION TO DEVELOP ICTS FOR LEARNING

Finding relevant online learning resources for learners to use in ACP programming can be a challenge. Online environments might be confusing for learners new to computers; content, language, and graphics developed for younger students might be off-putting to adult learners; or literacy levels required for successful use might be too high. Working with developers to overcome these issues is critical. Partnering with developers can help solve this problem.

In Minnesota, Pine Technical Community College, in partnership with Johnson Center for Simulation[11] and Health Force MN,[12] collaborated to meet the need for Certified Nursing Assistant (CNA) students to build soft skills required to provide quality patient care. As soft skill development was not a component of the CNA exam, many ACP programs did not offer direct instruction. The result of this collaboration is the CNA Game,[13] a virtual reality (VR) where CNA students are walked through a series of scenarios that push them to address affective and non-technical aspects of CNA work. The game is accessible to learners with basic computer skills and includes scaffolding for learners with lower literacy proficiency. A glossary of terms is presented at the beginning of each scenario, which employs audio, text, and semiotic cues that reflect the real world (e.g., spaces and objects commonly found in care facilities depicted in the VR). Programs can use the game to ensure that ELL/ASE learners develop soft skills as they build academic and English language skills.

MAKE THE MOST OF ICTS TO EXPAND COMMUNITY OF LEARNERS

The strategies described above are important, but just a start. Traditional ABE

10 https://www.credentialengine.org/about
11 http://www.johnsonsimcenter.com/
12 http://www.healthforceminnesota.org/about/
13 http://cnagame.org/

programming, including its ACP options, reaches only 11 percent of the 36 million U.S. adults that have basic literacy needs (OECD, 2013). Expansion of ACP to more learners requires policy shifts in assessment and enrollment plus building new partnerships to on-board learners who have not been drawn to ACP.

One example of a new partnership includes the Minnesota libraries' Better Together initiative,[14] which leverages collaboration in support of digital literacy programming for adult learners. Through Better Together, ongoing networking has strengthened relationships amongst participating organizations, including libraries, adult education, and workforce organizations statewide. The impact is a delivery system for digital literacy programming that is available to learners outside of the formal ABE system, is aligned with workforce demands, and prepares learners for future enrollment in ABE.

Providence Public Library's Rhode Island Family Literacy Initiative (RIFLI)[15] coordinates educational services for immigrants in the areas of English language and literacy, technology and math at public libraries, public housing, public schools, the workplace, and American Job Centers. RIFLI's person-centered approach takes services to where they are needed, employing open and flexible options where adults can make choices about their learning paths. Learning Lounges,[16] where adults can get free help with their education and employment goals in a technology-enabled, welcoming environment, is an example of this approach. Through its Peer2Peer University* Learning Circles, RIFLI provides internet-based learning for students on waitlists. Learners work independently with a tutor and in support of each other, until a place opens for them in class (Sharma, 2017). Flexible onboarding helps reach learners who may not have otherwise found ACP learning opportunities.

In California, the California Labor Federation's Mobile Up Project[17] brings basic skills instruction and career education coaching services to approximately 400 underserved Limited English Proficient service workers entirely by cell phone. Cell-Ed's[18] interactive text and audio phone lines are used to teach English and basic skills to hundreds of low-wage janitors, long-term care, and other low-wage service workers who may have no to low digital literacy and internet access. This anytime, anywhere learning makes learning accessible to a demographic that cannot attend regular classes as they juggle multiple responsibilities and irregular work-shifts. These 'non-traditional' students are supported by bilingual, mobile coaches who track their progress, provide motivation, make referrals to next-step programs or wrap-around services, and coach students on reaching their career or life goals. Tech innovations like Cell-Ed and "out of the box" program design such as Mobile Up are needed if the workforce

14 www.mnliteracy.org/educators/better-together-strengthening-adult-learning-communities
15 http://www.rifli.org/
16 http://www.provlib.org/learning-lounge-ppl
17 http://mobileupproject.weebly.com/
18 https://www.cell-ed.com/adult-education/

development system will ever reach, train, and offer career advancement coaching to the more than 89 percent of lower-skilled adults left behind by traditional education service models.

CONCLUSION

From the Adult Literacy XPrize testing apps for adult basic education, to companies competing to develop algorithms to assess skills and match potential employees with employers, there is increased attention on both the need and the potential of technology to prepare lower skilled adults for higher education and employment. At the same time, conversations on the "Future of Work" underscore the need to help our current and future workforce develop coding and other higher technology and critical thinking skills to remain relevant and employable. For ACP programs to sustain their relevance in this work, ABE leaders and other ACP stakeholders must take seriously the need to ensure the use of relevant technologies in programming. By doing so, they will better ensure that the programming adequately prepares the broadest range of possible learners for employment all along their chosen pathway. ⌘

REFERENCES

Carter, J. (2017). Expanding access to learning with mobile digital devices. J*ournal of Research and Practice for Adult Literacy, Secondary, and Basic Education*, 6(2), 49–55. Retrieved from https://static1.squarespace.com/static/55a158b4e4b0796a90f7c371/t/59782f28e58c62b0e4b701cc/1501048703128/Summer+Journal+Interactive+FINAL.pdf

Jacobson, E. (2012). *Adult basic education in the age of new literacies. New Literacies and Digital Epistemologies. Volume 42. New Literacies and Digital Epistemologies* (Vol. 42). ERIC.

Mortrude, J. (2016). Integrated Education and Training: Model programs for building career pathways for participants at every skill level. *Opportunities for Action*. Washington DC: CLASP. Retrieved from https://www.clasp.org/sites/default/files/publications/2017/04/WIOA-IET-Model-Programs.pdf

OECD. (2013). Time for the U.S. to reskill? What the Survey of Adult Skills says. OECD Skills Studies. OECD Publishing.

Sharma, P. (2017). Learning Circles address wait lists for English classes. Retrieved from https://thewell.worlded.org/learning-circles-address-wait-lists-for-english-classes/

Trumka, R., & Dimon, J. (2017). JPMorgan and AFL-CIO CEOs: Finding a job is still too hard. Here's how we can fix that. Retrieved December 21, 2017, from http://fortune.com/2017/12/07/jpmorgan-chase-afl-cio-microsoft-support-credential-engine/

Workforce Innovation and Opportunity Act, Pub. L. No. H.R. 803 (2014). United States of America. Retrieved from https://www.congress.gov/113/bills/hr803/BILLS-113hr803enr.pdf