VOLUME 6 | ISSUE 2 | 2024
ISSN 2642-3669

Adult Literacy Education

The International Journal of
Literacy, Language, and Numeracy

ProLiteracy®

Adult Literacy Education:

The International Journal of Literacy, Language, and Numeracy

Adult Literacy Education
is published three a year by by ProLiteracy in partnership with Rutgers University.

Manuscripts should be submitted directly to the Journal through the online submission platform which can be found at: https://proliteracy.org/ALE-Journal. Full details, and author guidelines can be found online.

MISSION STATEMENT

The journal's mission is to publish research on adult basic and secondary education and transitions to college and career programs. It informs practitioners, researchers, policy makers, and funders about best practices in adult literacy, numeracy, and English language education in publicly funded, community and volunteer-based programs in a wide range of contexts. Each issue will consist of research articles focused on a particular theme plus other content of interest to readers (e.g., resource reviews, opinion pieces, and debates and discussions on timely topics of interest to the field).

CONSULTING EDITORS:

TABLE OF CONTENTS

http://doi.org/10.35847/CWang.ASainz.GRose.MAlfred.6.2.4

Research Article

Program Directors' Perspectives on Technology Integration in Adult Education and Literacy Classrooms

Chih-Wei Wang, Texas A&M University
Amanda D. Sainz, Texas A&M University
Glenda L. Rose, Community Action, Inc. of Central Texas
Mary V. Alfred, Texas A&M University

Abstract

This qualitative study investigated the status of technology integration in Texas adult education and literacy classrooms from the perspective of program directors. Researchers conducted 15 semi-structured interviews to learn about technology integration. The findings revealed that available technology resources, teaching and integrating digital literacy skills, professional development opportunities, and IT support contributed to the success of technology integration. In contrast, limited access to technology resources and the internet, professional development costs, and instructors' time and skill constraints were barriers to integrating technology into adult education and literacy classrooms. Providing various resources and ongoing support to improve technology integration in adult education and literacy programs is necessary. Recommendations for practice and future research are provided.

Keywords: technology integration, blended learning, adult education and literacy, professional development, peer support

Technological advancements like smartphones, computers, and tablets are transforming how people live, learn, and work. Students can now access learning materials on their digital devices and practice outside the classroom. These technological advancements provide more learning opportunities for adult learners, especially adult education and literacy (AEL) students (Jacobs et al., 2014). Students in AEL programs aim to enhance their English reading, writing, listening, speaking, and math skills (Texas Workforce Commission [TWC], 2017). AEL programs also assist students in their transition to postsecondary education and the workforce (Green, 2020). Acquiring technology skills is crucial for developing problem-solving competence and increasing the likelihood of future employment (Cummins et al., 2019). Thus, teaching adult learners to incorporate technology skills into their daily lives is necessary for AEL programs to meet student needs.

Technology Integration in Adult Education and Literacy

Although our study occurred before COVID-19, the pandemic exacerbated the need for digital literacy skills and classroom technology integration because social distancing required students and teachers to learn and work online (Belzer et al., 2022). This shift to an increasingly technological world makes this study even more relevant today. Technology integration in AEL classrooms is critical to adult learners' success because technology permeates every facet of modern life. Technology integration refers to the adoption of

Correspondence: amywang523@tamu.edu

technology for educational purposes (Knezek et al., 2000). AEL classrooms in Texas are encouraged to integrate technology into their classrooms and equip students with the skills needed "to find, evaluate, organize, create, and communicate information online" (Office of Career, Technical, and Adult Education [OCTAE], 2015, p. 1). A key driver of this integration is the Workforce Innovation and Opportunity Act of 2014 (WIOA), which outlines digital literacy as a workforce preparation activity. WIOA supports technology usage "for the improvement of teaching, learning, professional development, productivity, and system efficiencies" (OCTAE, 2015, p. 1).

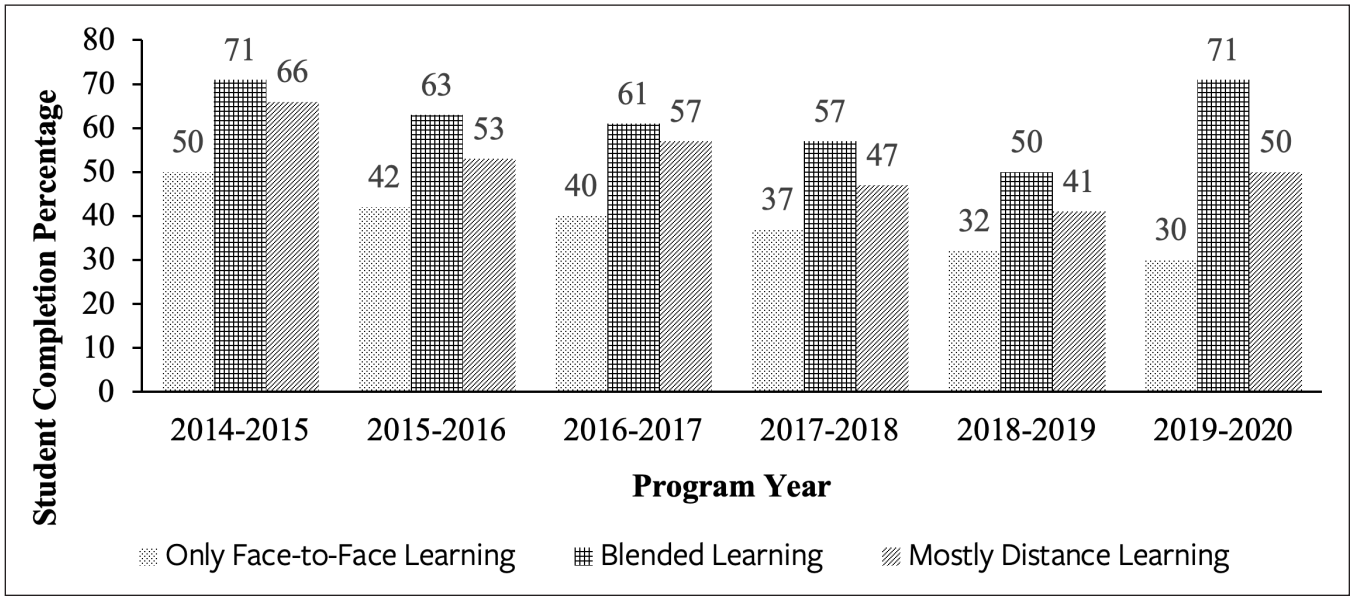
Digital literacies allow adults to fully participate in everyday life, and many AEL students are interested in learning these skills to reach their academic and career goals (Vanek & Harris, 2020). Instructors can facilitate this process by encouraging students to use smartphones and computers to practice their workplace and communication-related skills (McClanahan, 2014). Additionally, teaching digital skills can trigger students' higher-order thinking (Inverso et al., 2017). Ultimately, research suggests having digital literacy skills can transform adult learners' lives, leading to greater access to information and global connections (Jacobs et al., 2014). As a result, digital literacy training for adult education practitioners and digital literacy-embedded courses for adult learners are progressing.

Texas Digital Literacy Initiatives

As part of the 2015-2020 Strategic Plan for Adult Education and Literacy, the Texas Workforce Commission (TWC, 2015) outlined four strategies for promoting a supportive and accountable system: (a) increase workforce, secondary, and postsecondary education, and training outcomes, (b) address demand, (c) increase system coordination and integration, and (d) improve performance excellence. To address strategy one, Texas began integrating digital literacy with the distance learning (DL) initiative for AEL programs in 2015. Through this DL initiative, Texas AEL extended its services to those with limited transportation by integrating DL and technology applications into the curriculum (TWC, 2015). By the 2017-2018 program year (PY), Texas had over 83,000 adult learners enrolled in AEL programs. Many students also participated in DL to supplement their regular classroom instruction. This blended approach enabled face-to-face students to engage in their learning materials at home. According to McKenna et al. (2020), blended learning is an effective instructional delivery method for teaching adult learners because it facilitates self-direction.

Students in Texas AEL programs can enroll in distance education, face-to-face, or blended classes. Students who participate in blended classes are introduced to online learning platforms in the face-to-face classroom. Instructors model how to use these online learning

FIGURE 1. Percentage of Student Completion from TEAMS Data



platforms in class, and then students continue working on their learning modules at home. The hours spent working independently are logged as DL hours. When analyzing data from the Texas Educating Adults Management System (TEAMS), we found that students who participated in blended learning had higher completion rates compared to face-to-face (24%) and DL (10%) students (Figure 1). This student completion rate is determined by whether students pass the exit assessment, indicating their readiness to either progress to the next level or exit the program (TWC, 2017). TEAMS data shows that integrating DL with face-to-face instruction can promote students' learning and performance. Thus, preparing AEL instructors to integrate technology and promote DL could greatly benefit students.

The Texas Center for the Advancement of Literacy and Learning (TCALL) provides professional development (PD) to AEL practitioners. This PD center offers training and resources to programs that align with statewide objectives. TCALL also supports programs in integrating distance learning and technology. As researchers from TCALL, we aimed to investigate the status of technology integration in Texas. There is limited research that focuses on technology integration in the context of AEL. Therefore, this study aimed to investigate technology integration in Texas AEL programs. Phase one of this study included a survey of AEL practitioners and their technology skills (Rose et al., 2019), however, more information was needed to understand what factors contribute to technology integration across programs. We chose to interview directors because they are the driving force for change within their programs. To learn more about directors' perspectives on technology integration, we sought to answer the following research questions:

1. What do program directors perceive as contributing factors to technology integration in AEL programs?
2. What do program directors perceive as barriers to technology integration in AEL programs?

Conceptual Framework

The Will Skill Tool (WST) model of technology integration (Knezek et al., 2000) is the guided conceptual framework for this study. The WST model explains how an educator's will (attitudes toward using technology in instruction), skills (technology proficiency), and available tools (access to technology) contribute to classroom technology integration and student achievement. These three constructs are assumed to be foundational to technology integration in education. The extended version of this model considers the behavioral components that assess teaching styles, instructional strategies, and instructor confidence in using technology to enhance student learning (Knezek & Christensen, 2016). Evaluating these constructs is critical for understanding the overall status of technology integration in AEL programs. We chose to interview directors because overall program success is dependent on leadership strategies and approaches. Accordingly, we adopted these concepts to understand how program directors perceive their AEL instructors' willingness, skills, tools, and behavior when integrating technology into classrooms.

Review of the Literature

The following sections discuss the digital divide within AEL programs, the need for PD, and its impact on classroom technology integration.

The Digital Divide

Although technology integration within AEL classrooms has become a trend, the digital divide has become more evident (Belzer et al., 2022). Kotrlik and Redmann (2005) summarized the barriers AEL educators and students encounter with technology integration, including funding and cost, lack of training and expertise, lack of time and access to technology, resistance to change, technology anxiety, and teacher attitudes towards technology. Recent studies also show that AEL programs and instructors continue to face these barriers (Belzer et al, 2022; Berger, 2010; Hernandez, 2021; McClanahan, 2014). More specifically, internet access within AEL programs remains a significant challenge, especially for low-income communities (Pew Research Center, 2024). In PY 2017-18, 22% (nationwide) and 36% (Texas) of adult education students came from low-income households (OCTAE, 2019a, 2019b). Ultimately, research (Belzer et al., 2022) shows that adult learners and instructors have limited access to computers and other technologies in classrooms and at home.

Although the digital divide continues to be a significant challenge for low-income communities, smartphone usage has increased (Pew Research Center, 2024). Despite this national increase in the number of adults who own a smartphone, their knowledge, and skills in using these devices are limited (Rosen & Vanek, 2017). AEL practitioners suggest that with program and instructor support, learning with mobile devices could enhance education opportunities for students (Carter, 2017). As a result, learning platforms like Cell-Ed, USA Learns, and Quizlet developed mobile-friendly content for students and teachers to utilize in their classrooms and on the go (Vanek et al., 2022). For example, a story shared by Digital Promise (2015) discussed how a bus driver improved her English and digital literacy skills by using a digital learning tool on her smartphone in her spare time. Although smartphones are an excellent tool for helping people build digital literacy skills, instructor willingness is an essential component (Vanek, 2014).

Professional Development and Technology

Instructors who lack expertise in using technology tools need PD to advance their skills (Rosin et al., 2017). In response to this need for additional support and PD, several states, such as Pennsylvania (Kobrin et al., 2021) and Texas (TWC, 2015), established different initiatives to train instructors on using technology resources. The Texas statewide PD center developed a Tech Integration Coach Pathway course for AEL instructors (Wang & Rose, 2020). Participants who complete this seven-level badge course become qualified tech coaches. This initiative helps bring more certified coaches to local programs, allowing them to promote technology integration more effectively.

Despite efforts made by programs across the United States, there is still a lack of technology resources and training for AEL instructors, especially in rural areas (Belzer et al., 2020; Inverso et al., 2017). Furthermore, most instructors in AEL programs work part-time and are left with no time to learn or implement new technology in their classrooms (Rosin et al., 2017). Research suggests that AEL leaders should provide collaborative opportunities and practice-centered training to help instructors more effectively develop the digital skills they need to teach their students (Kobrin et al., 2021). Literature also suggests that instructors adapt their teaching approaches to students' needs and comfort with using technology (Frank & Castek, 2017). Instructors play an integral role during these periods because they can offer strategies and support to help reduce students' anxiety and increase learner motivation.

Classroom Technology Integration

A study conducted in Minnesota showed that lower-level students in digital literacy programs experienced anxiety about using computers (Digby & Bey, 2014). However, these researchers found that with instructor support, students were more likely to continue their digital literacy learning plans. Similarly, a study conducted in 2020 (Peng) disclosed that adult English language learners often felt anxious in their classes while learning technology or participating in online courses because it induced stress. Thus, teacher support is critical for students to develop digital literacy skills and learner resilience.

Technology integration in adult education classrooms is progressing slowly (Rosin et al., 2017). A study by Hernandez (2021) found that although AEL programs in California provided computer labs for digital literacy, instructors did not integrate computer usage during class. Further, PIAAC 2017 U.S. results on digital problem-solving skills showed that 27% of adults were below level one, the minimum proficiency level required to succeed in simple problem-solving tasks in daily life (National Center for Education Statistics, 2017). Thus, AEL programs must provide more digital support to instructors and students. The current literature outlines the complex dynamics of integrating technology into AEL programs, highlighting both the transformative potential and practical challenges. Thus, further research was needed to understand how program directors promoted technology use and integration within the AEL classroom.

Methodology

A basic interpretive qualitative approach (Merriam & Tisdell, 2015) was used to investigate the technology integration status in AEL classrooms from the perspectives of program directors. There were 34 grant-funded programs at the time this study was conducted. We used purposive sampling (Yin, 2011) to gather a representative sample of urban and rural programs, and 16 programs were selected to participate. An email invitation was sent, and fifteen directors agreed to participate. The sample consisted of six urban and nine rural program directors. Interviews were scheduled from

mid-August to mid-September of 2018. The participants and their program information are presented in Table 1. Two participants were male and thirteen were female. These directors had a variety of educational backgrounds and experience in adult education. Each program varied in size and capacity.

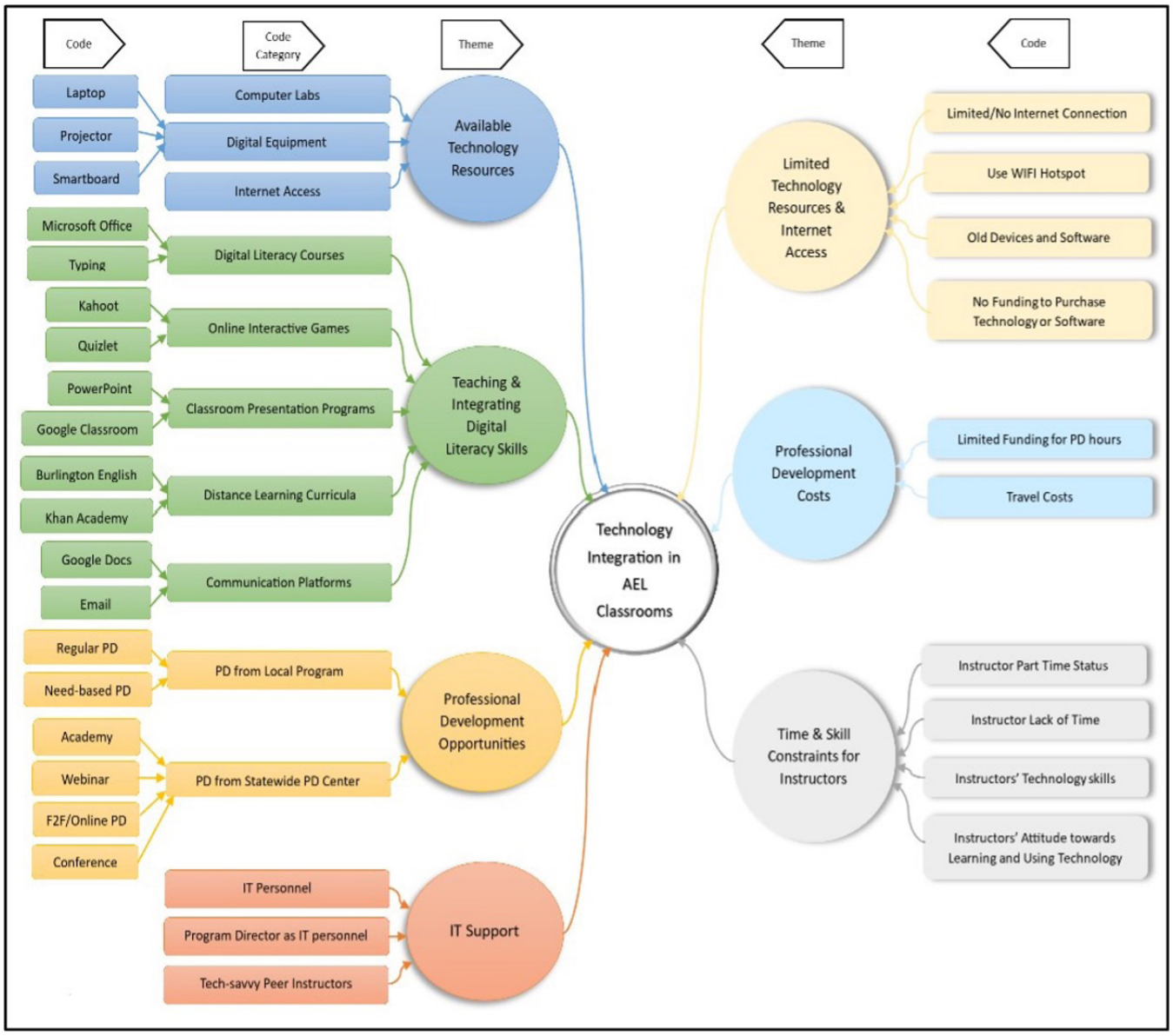
TABLE 1. Participant and Program Information

Participant code	Gender	Highest degree	Years working in AEL	Program		
				Area	Number of instructors (Rounded)	Estimated number of students enrolled per semester
RPD1	F	Master	9	Rural	35	1,100
RPD2	F	Bachelor	22	Rural	55	3,500
RPD3	M	Master	17	Rural	110	2,000
RPD4	F	Master	6	Rural	25	800-900
RPD5	F	Bachelor	15	Rural	25	225
RPD6	M	Master	8	Rural	50	1,000-1,200
RPD7	F	Master	13	Rural	45	600
RPD8	F	Master	4	Rural	25	800-900
RPD9	F	Master	22	Rural	35	800-1,200
UPD1	F	Master	24	Urban	190	4,200-4,400
UPD2	F	Doctorate	11	Urban	55	2,100
UPD3	F	Master	7	Urban	250	Over 9,000
UPD4	F	Doctorate	13	Urban	605	6,800
UPD5	F	Bachelor	24	Urban	95	2,500
UPD6	F	High School Diploma	40	Urban	30	1,300-1,500

Note: RPD=Rural Program Director, UPD=Urban Program Director, F=Female, M=Male

All 15 phone interviews were hosted, and audio recorded through WebEx. Most interviews lasted an hour or more, but two lasted 45 minutes. Interviews were semi-structured (Merriam & Tisdell, 2015) with open-ended questions that asked about available resources for instructors, technology implementation, and additional training needs. Researchers took notes during the interviews and transcribed the audio recordings verbatim. The data was analyzed using a thematic approach (Merriam & Tisdell, 2015). Data analysis involved preliminary manual coding followed by electronic coding using ATLAS.ti 8.0 (qualitative data analysis software). The researchers unitized the data and coded it independently. After two independent coding rounds, the researchers compared and consolidated coding categories into themes for consistency (Patton, 2002). This iterative process involved regular discussion, and themes were established through careful analysis and interpretation of interview transcripts. Figure 2 is a visual representation of how this process occurred. A peer examination (Merriam & Tisdell, 2015) was also conducted as an added validation measure. The lead investigator (Dr. Rose) has been an adult education practitioner for over thirty years. Throughout this time, she came to learn and understand the intricacies of Texas AEL programs. This prolonged engagement (Lincoln & Guba, 1985) with study participants enabled the lead researcher to develop relationships and rapport, further validating the themes that emerged in this study.

FIGURE 2. Visual Representation of Codes and Themes



Findings

From the interviews with AEL program directors, we identified four contributing factors and three barriers to technology integration. The four contributing factors were: available technology resources, teaching and integrating digital literacy skills, professional development opportunities, and IT support. The three barriers were: limited technology resources and internet access, professional development costs, and instructors' time and skill constraints. The following sections present the seven themes.

Contributing Factors to Technology Integration

The outcomes revealed four factors that supported technology integration. First, technology resource availability influenced the application of technology usage. Second, programs that had the resources integrated digital literacy into their curriculum. Third, participation in PD helped strengthen instructors' technical skills. Lastly, IT support encouraged practical integration.

Available Technology Resources

AEL programs host several teaching sites across urban and rural communities. These communities have varying needs regarding technology access and availability. Thus, programs had different approaches to providing technology resources across sites. For example, all 15 AEL programs established at least one computer lab location to comply with the states' technology integration initiative. However, student access to these labs varied across programs.

Most programs partnered with community colleges, Independent School Districts (ISD), libraries, or churches to expand access to computers and the Internet. One program director (UPD2) said, "If [sites] have access to the internet, then they have computers. In the main building, we have computer labs and a handful of computers in every classroom." UPD4 added, "The on-campus classes are the easiest ones for the integration of technology because each of the classrooms [at the community college] has a teacher presentation panel where there is a computer, speakers, and projectors." RPD6 also commented, "We have pretty good internet connectivity because we're either in the workforce building or a school district. A lot of ISDs will let us have classes there, and it's in the agreement that they'll give us internet access."

RPD3 had a different experience and mentioned that "a lot of our ISDs are afraid to let us use their computers." This statement indicates that programs might need to better coordinate contract agreements when establishing partnerships. Technology availability, such as computers, laptops, iPads, projectors, and smartboards, varied based on class locations. According to program directors' descriptions, instructors used what was available to teach, but there was still insufficient technological equipment for all instructors.

Teaching and Integrating Digital Literacy Skills

Programs tailored digital literacy instruction to meet the needs of their students and the local job market. Some students did not have access to the internet at home and were reluctant to use technology. Many directors encouraged their instructors to improve their student's digital literacy skills by integrating technology into their lessons. UPD5 stated:

> We have computers available, but the teachers say the ESL students are too low-skilled. They don't know how to use computers. This is why I always think we should be showing them how and getting them introduced as soon as possible.

As a result, AEL programs developed beginning computer literacy courses to teach typing skills and Microsoft Office programs (RPD5, UPD1&6). Other program directors shared how instructors contextualized their lessons by teaching students to create resumes, search for jobs (RPD5), research their home countries, and write reports (RPD6). UPD6 specified that "students need to work in Excel, so our program tries to integrate that into our math course to teach them to create charts." Programs were creating digital literacy courses that aligned with students' needs and interests.

Instructors who taught more advanced courses integrated technology by using online interactive games like Kahoot or Quizlet to test students on learning outcomes. They also used platforms like email, text, and Google Docs to communicate with students. Further, many instructors used classroom presentation programs like PowerPoint and Google Classroom to facilitate lessons. Some programs even incorporated distance learning curricula like Burlington English, Aztec, and Khan Academy, which supported student learning at home. Instructors were integrating digital literacy with different approaches to enhance student skills and learning. Students thoroughly enjoyed these new learning opportunities. For example, RPD9 described, "We designed an advanced digital literacy class similar to a college-level computer class but just at a slower pace. Those classes are filling up fast with young adults 17-18 years old who cannot operate a computer." These findings show that AEL programs are designing digital literacy courses that align with student's needs.

Professional Development Opportunities

All Texas AEL instructors are required to complete 15 PD hours each program year. Instructors must attend at least 9 hours of training from the statewide PD center. The remaining 6 hours can be earned at local programs. PD opportunities are provided in person, online, via live webinars, and at literacy conferences. PD session categories include principles of adult learning, literacy development, and other more general topics. Practitioners must earn certifications in each category to meet the annual requirement and teach. Local programs also host

regular and need-based training for their instructors. For example, RPD6 said, "We try to train the teachers as much as we can in using the equipment...we had a training session on Kahoot. Now they take that back to teach." Instructors also utilized the training courses offered by the statewide PD center.

The statewide PD center hosts an online learning management system (the PD Portal) for practitioners to participate in online learning opportunities. Live webinars, online learning modules, and discussion forums are available in the PD Portal to encourage users to collaborate and complete their PD hour requirements at their own pace. UPD4's instructors completed the Distance Learning Academy course to prepare for teaching adult students at a distance. Similarly, several instructors at UPD3's program took the Google Academy course. Both directors discussed that by having qualified instructors, they could bring DL or Google into their classrooms. One program director (UPD3) expressed how the PD Portal makes finding training and resources easier by saying,

> I'm more involved with what's going on with PD, I think it's a little bit easier for us to find it through the PD portal. I think that Laura [Learning Management Specialist] has been amazing in helping us on both ends of the PD portal for us to have a better understanding and the emails are awesome. With the Tech and Tells, with the professional development opportunities that are available. Those notices are amazing. So I think now we're more involved, and we have the ability to find out what's there. And we know who we can contact too so I think those resources are there.

The statewide PD center offers various monthly webinars, including the Tech and Tell series. The Tech and Tell series focuses on demonstrating technology tools or websites that can help instructors stay organized, engage students, and enhance their tech skills. Seven program directors mentioned that some of their instructors had become regular Tech and Tell attendees. RPD9 shared, "We brought in Google Sites last year and discussed what was on the Tech and Tells." However, three program directors also discussed that they did not know how many instructors utilized these webinars. Two program directors further addressed the need for follow-up training sessions and support after instructors participated in a technology-related PD session. RPD8 articulated, "It's great that we do training and show them the technology that can be implemented. But then, are we showing them how to implement and coaching them through that implementation process?" This statement implies that programs need onsite technical support personnel to facilitate ongoing implementation. In all, positive feedback about resources like Tech and Tell webinars could encourage instructors to attend PD more often and increase technology use in the classroom.

IT Support

Although PD opportunities are readily available for instructors and staff, having regular information technology (IT) support is essential for successful technology integration. Seven (3 urban and 4 rural) programs had one or more technology-skilled instructors or staff members to help with technical assistance. UPD2 said, "In my program, everybody nurtures and takes care of each other. I'm very fortunate to have two teachers with master's degrees in technology. Between the two of them, they help everybody." Similarly, RPD6 shared how their instructors learned to use the new smartboards:

> They are just kind of teaching themselves. We have one lady who worked pretty extensively on it. She used to be a workforce person, and they used them there, so she's leading and teaching the others how to use the smartboard.

Some program directors acted as the tech-support person for their program too. As RPD5 noted, "I only have 7 teachers. They just holler at me and ask: how do you do this? And I show them how to do it." Smaller programs tend to use their own instructors and staff as IT support.

Hiring an IT staff was another approach that programs used to supplement technical assistance. RPD4 said:

> I have an amazing IT guy. I always joke that he is the glue of the program because he will do training anytime that we implement anything new, like distance learning software. ...if it's just one teacher who has a question on how something works, my IT guy will go out there and show them what to do.

UPD6 shared that they hired a formal director of technology to help other staff with technology:

> One of the things that she does is she works with one of our classes as a trainer for an online distance learning IET [integrated education training] program... she's actually giving hands-on training... she's available to help our staff in any way as far as any types of technology that we need. ...35 staff total that I feel everybody has really good skills.

Programs who had technology-skilled staff to assist with technology integration seemed to progress better.

Other programs received IT support from local communities they partnered with. UPD3 shared how IT supports their instructors: "We started partnering with the local ISD's technology service department. They come into the classroom to help the students learn, but at the same time, you have the instructors in the class, so there's dual learning going on." UPD5 said, "We have an excellent tech coach, and she does a great job of trying to stay proactive." When programs had IT or peer instructor support, instructors were more willing to integrate technology into their content delivery. Therefore, having a technology-skilled person available is needed for programs to promote technology integration successfully.

Barriers to Technology Integration

Three barriers were found to inhibit technology integration. First, insufficient technology resources and unstable internet access made it difficult to use technology. Second, sending instructors to take in-person PD is costly. Lastly, instructors lacked time and skills due to AEL policies and their working status.

Limited Technology Resources and Internet Access

The lack of technology-related resources is a constant challenge for Texas AEL programs. Providing and upgrading technological equipment and software for the classroom is costly. UPD2 said, "Our challenge is funding...not having enough computers for every student, and not having internet access at all the locations." Several programs were using outdated and low-quality equipment. RPD4 shared, "Our program is using 10-year-old computers predominantly in rural areas, and we don't have enough funds to replace them." UPD1 noted, "Some of the south locations don't have computer labs... we do have some laptops... but they're bulky, hard to carry around, and have security issues." Furthermore, RPD4 emphasized, "Our GED [General Educational Development] students take turns using computers because they only have eight available at that one site. We only open a new site when that location has internet and computer access." Technology is constantly changing and updating, making it difficult for programs to keep up with.

Rural communities faced additional challenges when trying to integrate technology. For example, limited internet access and classroom spaces made it difficult for programs to host classes. RPD9 pointed out that "internet service in some of the areas...is very spotty and slow... we used to use Prezi in our orientation sessions, and we had to go back to a PowerPoint because the Prezi system wasn't running." Moreover, RPD1 and UPD6 mentioned that they must use hotspots for the Internet at some rural sites' classes. It was also challenging for students to access computers and the Internet outside classrooms. RPD7 explained:

> It takes about 2 hours to fill up one of the semi-tractor trailer trucks with either sand or water. And this was the time that truck drivers were allotted to do their GED or computer classes or college classes, but there was no connectivity.

Texas covers 268,597 square miles, making it challenging to offer convenient classroom locations to adult learners in rural areas. Students might also lack childcare, transportation services, or financial support, hindering them from attending class. RPD1 explained:

> Some of those communities are so small it's maintaining a class size of even 5 where you have continual attendance. It becomes a cost-effective issue, and you can't just open a class. I've got one student 20 miles away from this county. They won't drive 20 miles 2 nights a week to go to class. They don't have the resources, the gas money, or childcare, and they're not going to do it consistently.

Programs faced these hardships when recruiting and retaining students. Resources for students and internet availability impacted computer access, classroom locations, and the number of courses offered. Thus, programs needed more funds to host distance learning opportunities and give students and instructors computers and hotspots.

Professional Development Costs

For programs, supporting instructors to take PD in person is costly. RPD1 noted, "If it's local training, I have to bring everybody in...by the time you pay mileage, pay them for their day, I'm looking at $9,000-$10,000, and I don't have the money to do that many times." Moreover, only one program director, RPD2, mentioned that they have instructors attending a state conference for educational technology. It is difficult for programs to budget PD funds above the 15-hour requirement. RPD 4 asserted, "I will pay them for 15 hours. Other than that, they can ask, and sometimes I say yes, sometimes I say no, depending on where we're at budget-wise." Similarly, RPD6 addressed:

> Our biggest problem in PD…is time. Because the budgets are tight and you are going to pay teachers…The biggest part of our expenditures is payroll, so increasing hours to an already busy day for them to teach becomes difficult to fund the hours for them to get PD.

In addition, RPD8 explained that because the PD plan for the year was already in place, they could not add in more. Even if they really needed technology integration training for instructors who are not technology literate, they had to wait until next year. Due to insufficient funds, programs must strategically plan and budget PD training events.

Instructors' Time and Skill Constraints

Instructor time constraints were another major concern. The majority of AEL instructors are part-time (over 90%) and are current or retired teachers from the K-12 system. The state law for part-time workers is strictly regulated to where instructors only have 19 paid working hours per week. These time restrictions make it difficult for instructors to invest in technology integration. Instructors preferred being in the classroom rather than attending PD for technology integration. UPD4 explained:

> The majority of our staff can only work 19 hours per week. When training is 6 or more hours, it creates a hardship because that instructor would have to back out of some instructional time to complete the DL or technology training.

RPD3 addressed their situation:

> People are busy and they're part-time teachers. So, they invest little time in technology if they don't have a knack for it already… I'd say about 25% of our staff are interested and gung-ho about technology and are looking for training.

Many program directors wished they could allow more time for instructors to take PD.

Most program directors indicated that some instructors were uncomfortable or had low interest in implementing technology because they lacked time and skills. RPD8 pointed out why his retired instructor struggled, "It's retired teachers with limited technology experience. I'm thinking of one teacher specifically, and it may have been the reason she retired. The technology was coming out and it was uncomfortable for her." RPD2 also noted how they convinced their instructors, "We need to get the teachers to buy in to use it…We also need to teach them technology problem-solving skills." Urban program directors mentioned some of their instructors are technology challenged as well. UPD5 illustrated, "some are using it effortlessly and others need more help because they're unaware of what's there and unsure how to." UPD2 noted, "Some teachers just don't use it…very old school… like handouts." Retired teachers and unskilled instructors tend to have more resistance to learning new technology due to time constraints and low motivation.

Discussion

This study revealed several challenges and strategies for technology integration prior to the COVID-19 pandemic. Challenges such as the need for virtual learning opportunities were resolved amidst the pandemic, and others still need to be addressed. Although this study was conducted in 2018, the identified challenges persist in adult education. The identified strategies can also inform the field today. Recommendations to overcome the barriers to technology integration are discussed in the following sections.

Many directors emphasized that they needed adequate access to computers and the Internet to successfully integrate technology. Our findings showed that programs with computer labs and Internet access were more likely to use tools like Kahoot, PowerPoint, and Google. These programs also built digital literacy curricula into their course offerings. Technology funding became more readily available after the onset of COVID-19, and this made it easier for programs to purchase equipment for students and instructors (Belzer et al., 2022). Texas AEL digital device loan services for students are now available and have proven to help students continue learning (Wang et al., 2022). Although programs have returned to in-person classrooms, many are still providing virtual learning opportunities. This digital expansion allows students to attend school despite any transportation or childcare barriers they may face.

Along with increased access to technology resources, regular and up-to-date PD opportunities allowed instructors to quickly integrate technology into their classrooms. Many program directors expressed that PD opportunities for technology helped teachers with integration. However, some directors also reported that many instructors were hesitant to learn new technology skills. COVID-19 was a motivating force for change, as it

required practitioners to brush up on their technology skills at a moment's notice. The PD Portal was a critical resource throughout this time, allowing practitioners to take the courses they needed for virtual instruction (Wang et al., 2022). Although programs have returned to in-person activities, classroom technology use remains.

The statewide PD center paved the way for many programs as they transitioned to virtual learning in 2020. Online PD courses offered by the center are a flexible and cost-effective option for AEL programs. AEL programs in California also had success with virtual PD offerings after COVID-19 (Zachry & Rayala, 2022). With the expansion of online PD courses, AEL instructors can take training on their own time, reducing training costs. Online participants have also shared positive feedback about their experiences, indicating that they found useful practices and content from these online courses (Wang et al., 2022). Therefore, we recommend program directors in Texas encourage instructors to participate in online PD courses. We also suggest PD coordinators plan supplemental sessions with technology assistants to reinforce skills learned. Other states should consider offering online PD courses and supplemental support for instructors as needed to enhance technology integration in AEL classrooms.

Professional learning is most impactful when accompanied by peer support (Stewart, 2014). For example, our findings indicated that instructors were more willing to use and learn about technology when programs offered IT services or had tech-savvy colleagues to support them with technical issues. Moreover, technology coaches can support instructors to effectively implement tools (Darling-Hammond et al., 2017). Thus, we urge Texas AEL programs to continue providing technical support to instructors and staff and encourage them to participate in the Tech Integration Coach Pathway course.

As indicated above, adequate access to technology resources is essential for integration and adaptation. However, these resources can be costly, especially for students and part-time instructors. The Texas State Report showed that one-third of adult education students enrolled in programs during the 2017-18 program year came from low-income households (OCTAE, 2019a). Limited internet access also remains an issue for rural areas. AEL programs may consider purchasing low-cost refurbished computers or laptops (Rosen, 2022) to increase student access to technology resources. Braided funding agreements are another potential solution for AEL programs to increase financial resources (TWC, 2017; Vanek & Harris, 2020). Several programs we interviewed successfully created partnerships and braided funding with local independent school districts to gain computer access. Therefore, it could be advantageous for AEL programs to develop partnerships with local businesses to establish resources for instructors and students.

While having access to technology in the classroom is crucial for developing digital literacy, it is the instructor's willingness to learn and skills to incorporate technology into their teaching that ultimately determines the success of technology integration. Our findings pointed out that instructors with low technology skills or low interest had higher resistance to technology integration. Phase one of this study included a technology proficiency self-assessment (Rose et al., 2019), which indicated that rural program instructors had lower levels of confidence in using slideshows and software applications in the classroom. Similarly, Yenal (2021) found that the deficiency of adult education instructors' technology competency is a main barrier to technology integration. As a result, AEL programs should aim to enhance instructors' self-efficacy and develop their technology skills so that they can effectively adopt technology in the classroom and transfer their knowledge to students.

Limitations and Future Directions

Although the data from this study did not directly reflect the voices of AEL instructors, it revealed what program directors perceive about their staff's willingness, skills, available tools, and behaviors when integrating technology. This study is significant because it highlights how access to technology resources and professional development enables programs to break barriers and successfully integrate technology into classrooms. This study also adapts concepts from the WST model to the field of adult education, which to our knowledge, has not been done before. However, instructor perspectives and student skills should also be considered to holistically assess the progress of technology integration. Future research is required to include instructors' and students' perspectives on technology integration in the classroom to evaluate

whether it supports their needs. Another limitation of this study is that it focused on grant-funded AEL programs. Faith-based and volunteer initiative programs might encounter different challenges when implementing technology in AEL classrooms. Ultimately, the COVID-19 pandemic has changed the field of adult education and its need for technology integration. Many AEL instructors must now teach online; therefore, future research may investigate what strategies can be implemented to swiftly adapt to online instruction.

Conclusion

Digital literacy and technology skills in adult education have never been more critical. As reflected above, access to technology resources is essential for classroom integration. Lack of technology resources and technology training make it difficult for students and instructors to learn new skills. Digital inequity and ability exacerbate the difficulties of AEL students, and these inequities became even more apparent during COVID-19. Stay-at-home orders put adult educators, learners, and their children at greater risk of financial and educational losses as most did not have the resources to work or study from home. Although stay-at-home orders have lifted, technology use and integration continue to expand throughout classrooms and workspaces. To align with the Texas AEL Strategic Plan (2015-2020 and 2021-2026) and help students find employment that provides a family-sustaining wage, a concerted effort must be made toward making computer and internet access available to all. AEL providers must prepare their instructors and train adult learners to use technology in ways that support themselves, their families, and their communities.

References

Belzer, A., Leon, T., Patterson, M., Rhodes, C., Salas-Isnardi, F., Vanek, J., Webb, C., & Wilson-Toro, B. (2020). *COVID-19 rapid response report from the field.* ProLiteracy. https://www.literacynewyork.org/documents/Covid-19/COVID-19-Report.pdf

Belzer, A., Leon, T., Patterson, M., Salas-Isnardi, F., Vanek, J., & Webb, C. (2022). From rapid emergency response to scaling and sustaining innovation: Adult foundational education in the time of COVID-19. *New Directions for Adult and Continuing Education*, 2022, 81-91. https://doi.org/10.1002/ace.20454

Berger, J. I. (2010). Profiles of internet use among ALBE instructors. *Adult Basic Education and Literacy Journal, 4*(3), 151-160.

Carter, J. (2017). Expanding access to learning with mobile digital devices. *Journal of Research & Practice for Adult Literacy, Secondary & Basic Education*, *6*(2), 49-54.

Cummins, P. A., Yamashita, T., Millar, R. J., & Sahoo, S. (2019). Problem-solving skills of the workforce and preparedness for job automation. *Adult Learning*, *30*(3), 111-120. https://doi.org/10.1177/1045159518818407

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development.* Learning Policy Institute.

Digby, C., & Bey, A. (2014). Technology literacy assessments and adult literacy programs: pathways to technology competence for adult educators and learners. *Journal of Literacy and Technology*, *15*(3), 28-57.

Digital Promise. (2015, February 18). *A developer and a CBO make a difference in adult education.* https://digitalpromise.org/2015/02/18/the-anatomy-of-a-solution-how-a-developer-and-a-cbo-are-making-a-difference/

Frank, T., & Castek, J. (2017). From digital literacies to digital problem solving: Expanding technology-rich learning opportunities for adults. *Journal of Research and Practice for Adult Literacy, Secondary, and Basic Education, 6*(2), 66-70.

Green, A. M. (2020). Texas hold'em: Engaging employers to close the skills gap. *COABE Journal: The Resource for Adult Education*, *9*(1), 48-67.

Hernandez, R. (2021). Program development of digital literacy workshops to help adult students navigate "everyday" life. *COABE Journal: The Resource for Adult Education, 10*(2), 46-53.

Hobbs, R. & Coiro, J. (2019). Design features of a professional development program in digital literacy. *Journal of Adolescent & Adult Literacy, 62*(4), 401-409. https://doi.org/10.1002/jaal.907

Inverso, D. C., Kobrin, J., & Hashmi, S. (2017). Leveraging technology in adult education. *Journal of Research and Practice for Adult Literacy, Secondary, and Basic Education, 6*(2), 55-58.

Jacobs, G. E., Castek, J., Pizzolato, A., Reder, S., & Pendell, K. (2014). Production and consumption: A closer look at adult digital literacy acquisition. *Journal of Adolescent & Adult Literacy*, *57*(8), 624-627. https://doi.org/10.1002/jaal.293

Knezek, G., & Christensen, R. (2016). Extending the will, skill, tool model of technology integration: adding pedagogy as a new model construct. *Journal of Computing in Higher Education, 28*(3), 307-325. https://doi.org/10.1007/s12528-016-9120-2

Knezek, G., Christensen, R., Hancock, R., & Shoho, A. (2000, February). *Toward a structural model of technology integration* [Paper presentation]. Hawaii Educational Research Association Conference, Honolulu, HI, United States.

Kobrin, J., Bullock, P. N., Gierke, J., & Heil, C. (2021). Adult educators adopting technology in their classrooms through innovation, collaboration, and inquiry. *Adult Literacy Education: The International Journal of Literacy, Language, and Numeracy, 3*(1), 49-54. http://doi.org/10.35847/JKobrin.PBullock.JGierke.CHeil.3.1.49

Kotrlik, J. W., & Redmann, D. H. (2005). Extent of technology integration in instruction by adult basic education teachers. *Adult Education Quarterly*, *55*(3), 200-219.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.

McClanahan, L. (2014). Training using technology in the adult ESL classroom. *Journal of Adult Education*, *43*(1), 22-27.

McKenna, K., Gupta, K., Kaiser, L., Lopes, T., & Zarestky, J. (2020). Blended learning: Balancing the best of both worlds for adult learners. *Adult Learning, 31*(4), 139-149. https://doi.org/10.1177/1045159519891997

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation.* John Wiley & Sons, Inc.

National Center for Education Statistics. (2017). Highlights of PIAAC 2017 U.S. results. https://nces.ed.gov/surveys/piaac/national_results.asp

Patton, M. Q. (2002). *Qualitative research and evaluation methods.* Sage.

Peng, M. (2020). Motivate beginning level adult ESL learners in online teaching. *Master's Projects and Capstones, 1129.* https://repository.usfca.edu/capstone/1129

Pew Research Center. (2024). Americans' use of mobile technology and home broadband. https://www.pewresearch.org/internet/2024/01/31/americans-use-of-mobile-technology-and-home-broadband/

Rose, G. L., Wang, C., Sainz, A., & Joshi, S. (2019, June). Technology use and integration in adult education and literacy classrooms. *Proceedings of the Adult Education Research Conference,* Buffalo, NY, USA. https://newprairiepress.org/aerc/2019/papers/2

Rosen, D. J. (2022). Refurbished computers for adult learners at home or in class. *Adult Literacy Education: The International Journal of Literacy, Language, and Numeracy, 4*(1), *74-78.* http://doi.org/10.35847/DRosen.4.1.74

Rosen, D. J., & Vanek, J. B. (2017). Technology for innovation and change in adult basic skills education. *New Directions for Adult and Continuing Education, 2017*(155), 51-60. https://doi.org/10.1002/ace.20240

Rosin, M., Vanek, J., & Webber, A. A. (2017). How investment in technology can accelerate collective impact in adult learning. World Education. https://worlded.org/resource/how-investment-in-technology-can-accelerate-collective-impact-in-adult-learning/

Stewart, C. (2014). Transforming professional development to professional learning. *Journal of Adult Education, 43*(1), 28-33.

Texas Workforce Commission. (2015). *Adult education and literacy strategic plan for FY 2015-2020.* https://twc.texas.gov/files/twc/twc-strategic-plan-adult-education-literacy-fy2015-2020.pdf

Texas Workforce Commission. (2017). *Texas adult education and literacy guide.* https://tcall.tamu.edu/docs/17-Texas-AEL-Guide-TWC.pdf

Office of Career, Technical and Adult Education. (2019a). *Statewide performance report—WIOA Title II adult education program PY2017-18.* https://www2.ed.gov/about/offices/list/ovae/pi/AdultEd/spr/py2017/texas.pdf

Office of Career, Technical and Adult Education. (2019b). *National summary of the statewide performance report—WIOA Title II adult education program PY2017-18.* https://www2.ed.gov/about/offices/list/ovae/pi/AdultEd/spr/py2017/nationalsummary.pdf

Office of Career, Technical, and Adult Education. (2015). *Integrating technology in WIOA, March 2015 fact sheet.* http://www2.ed.gov/about/offices/list/ovae/pi/AdultEd/integrating-technology.pdf

Vanek, J. & Harris, K. (2020). Digital literacy and technology integration in adult basic skills education: A review of the research. *ProLiteracy.* https://www.proliteracy.org/briefs#TechnologyIntegration

Vanek, J., Simpson, D., Harris, J., & Goumas, J. (2022). *IDEAL distance education and blended learning handbook*. World Education.

Wang, C. & Rose, G. L. (2020). Teaching Case—Gamified tech integration coach pathway for AEL teachers and staff. *New Horizons in Adult Education and Human Resource Development, 32*(4), 82-88. https://doi.org/10.1002/nha3.20300

Wang, C., Sainz, A., Joshi, S. C., & Alfred, M. V. (2022). A case study of adult education and literacy programs and the transition to remote services during the COVID-19 pandemic. *New Horizons in Adult Education and Human Resource Development, 34*(1), 37-50. https://doi.org/10.1002/nha3.20352

Workforce Innovation and Opportunity Act, 29 USC 301 § 2, (2014).

Yenal, E. (2021). *Technology integration barriers encountered by adult learning program teachers.* [Doctoral dissertation, Northcentral University]. ProQuest Dissertations Publishing.

Yin, R. K. (2011). *Qualitative research from start to finish*. Guilford Publications.

Zachry, C, & Rayala, C. (2022). California's adult education pandemic pivot. *COABE Journal: The Resource for Adult Education, 11*(2), 154-165.

http://doi.org/10.35847/KSkowranek.KBuddeberg.KCafantaris.LHeilmann.6.2.18

Research Article

The Relationship of Social Vulnerability to Health-Related Digital Practices: A Quantitative Analysis Based on the German LEO Literacy Assessment

Kristin Skowranek, Hamburg University
Klaus Buddeberg, Hamburg University
Karola Cafantaris, Hamburg University
Lisanne Heilmann, Bremen University

Abstract

A link between literacy and health has already been demonstrated in various national and international surveys. Previous research has shown that adults with low literacy are very frequent users of social media. Increasingly, people are gaining their health-related knowledge and skills by being in digital spaces and consuming health-related content across platforms. In this article, we explored the relationship between digital health practices and the health of people with low literacy skills using data from the German-based LEO assessment. We found that low literacy skills do not have a strong direct effect on health status, but social vulnerability, such as low social participation and low social recognition, has a strong effect on a person's subjectively perceived health status.

Keywords: literacy; vulnerability; health literacy; digital literacy

International studies such as the Programme for the International Assessment of Adult Competencies (PIAAC) or the International Adult Literacy Survey (IALS) (Organization for Economic Co-operation and Development [OECD], 2019; OECD & Statistics Canada, 2011) have shown that health knowledge is linked to literacy in the sense of reading literacy (health-related literacy). This link is particularly evident in the question of how knowledge and information are generated. During the COVID-19 pandemic, health information and medical treatment have increasingly moved into the digital space, for example in the form of video medical consultations. At the same time, health-related news and so-called fake news were disseminated through digital media, requiring skills to distinguish between real and fake information and legitimate knowledge providers. This example showed that low literacy and critical thinking skills can lead to exclusion from social participation and vulnerability in health issues (Heilmann & Grotlüschen, 2020). At the same time, the digitalization of the (German) health care system is advancing, and dealing with it requires digital literacy (Bundesministerium für Gesundheit, 2023). These examples show the relevance of questions of social participation/vulnerability when it comes to the intersection of literacy, health, and digitalization, as well as a current interest in further research in this area (for a brief introduction to the relationship between basic education and vulnerability see Gal et al., 2020). Empirical results from an assessment of reading and writing skills in Germany (LEO 2018 – Living with Low Literacy; in the following: LEO 2018) have shown that adults with very limited reading and writing skills use social media more frequently than average. Moreover, social media is seen critically when it comes to the discourse about health and

Correspondence: klaus.buddeberg@uni-hamburg.de

knowledge gain. Often, they are regarded negatively (e.g., fake news, COVID-19 infodemic).

Following on from this, we want to explore which digital platforms and formats (low literate) adults use when seeking information about health issues (or if they do not use them at all). We want to take a closer look at the specific educational needs of adults with low reading and writing skills regarding health-related digital information and their social vulnerability (as shown by Heilmann & Grotlüschen, 2020).

The paper is based on a review of the research literature, as well as empirical data from LEO 2018. We link the concepts of literacy, social media, and health to highlight the intersection between digital literacy and health education and their role in the analysis of vulnerability and health practices. In the empirical part, the analysis of data from LEO 2018 will show that the use of social media in everyday life as well as general literacy seem to be marginally but positively correlated with subjectively perceived health status. However, this suggests that low literacy skills are not associated with poorer health per se, but rather place people in vulnerable social and employment positions.

Literature Review

Our literature review consists of three sections. First, we present references to research on literacy and basic competences from a perspective of vulnerability, followed by findings on digitalization research, before concluding with a description of the link between digitalization and health.

Literacy and Adult Basic Proficiencies

Assessments are usually built on a notion of literacy (in this article, literacy in the core refers to reading and writing skills) as a measurable skill which Brian Street critically refers to as an autonomous model of literacy (Street, 2013). This applies, for example, to reading literacy and everyday mathematic skills, as measured by the PIAAC study. Governments and institutions which are running educational programs are using results from large-scale surveys. Evidence-based policy particularly asks for these kinds of results (OECD, 2007; Pellegrini & Vivanet, 2021). The data on which this article is based comes from the 2018 German survey on adult literacy LEO 2018 (Buddeberg et al., 2020; Grotlüschen et al., 2019; Grotlüschen et al., 2020). As a national large scale assessment survey it represents a currently important strand of literacy research, as do international large scale assessments like IALS (OECD, 2000), Adult Literacy and Lifeskills Survey (ALL) (OECD & Statistics Canada, 2011) or PIAAC (OECD, 2013).

Contributions to literacy research are based on both qualitative and quantitative data. Currently, large-scale quantitative surveys represent a dominant branch of research. Criticisms of this dominance and of the transformation of social practices into quantities (Hamilton et al., 2015) are mainly formulated by protagonists of qualitative approaches. There are critical positions towards the basic theoretical assumptions and the global political implications (Addey, 2021; Evans, 2019; Grek, 2020). Critical approaches present findings on societal subgroups that face significant disadvantages, e.g. in the context of the pandemic (Tett, 2023) or in the context of incarceration (Patterson, 2022).

Important international assessment surveys are the studies IALS, ALL and PIAAC mentioned above. In some countries PIAAC was performed with additional modules like a special sample of adults aged 65 to 80 years in Germany (Friebe et al., 2014) or PIAAC Health in the United States. PIAAC Health revealed a correlation between formal education and information-seeking behaviour. Furthermore, the use of the internet for searching health-related information strongly correlates with health status (Feinberg et al., 2016). Regarding the reading skills (literacy) and everyday mathematics skills (numeracy) PIAAC reports larger – though different – proportions of low-performing adults in all participating countries. PIAAC differentiates five levels of skills with the level one and below representing very limited skills (OECD, 2019). Low skills in literacy and numeracy are reported especially for countries entering the survey in the second or third round, many of them from the so-called Global South (Grotlüschen & Buddeberg, 2020). National basic skills surveys have been performed in England (Department for Business, Innovation and Skills, 2012), France (Jeantheau, 2013), or Germany (Buddeberg et al., 2020). Compared to international surveys these national surveys offer the opportunity to design survey instruments and background questionnaires that take account of the respective national contexts. The German survey LEO 2018 which offers the

data for this contribution, besides assessing the reading and writing skills of adults gathered information about reading and writing practices in different fields of life (family, work, digitalization, politics, finance, health) and self-reported basic proficiencies in these domains. The survey thus expands the single story of literacy (Addey, 2021) from the narrow perspective of the autonomous model to a wider notion of literacy which at least partially implies a perspective of literacy as a social practice (Barton & Hamilton, 2000). While the discussion on literacy as social practice already has a longer tradition, numeracy as social practice refers to a more recent discourse (Gal et al., 2020; Street, 2005; Yasukawa et al., 2018).

In addition to literacy and numeracy, there is a broad range of further basic skills (e.g., European Commission, 2007; European Commission et al., 2019). By examining different domains, LEO 2018 adopted a part of these key proficiencies which also correspond to the National Decade for Alphabetization and Basic Skills (2016-2026), which is the current policy framework in Germany regarding basic skills (BMBF & Kultusministerkonferenz, 2016). Unlike PIAAC which mainly follows a perspective of employability in the framework of a human capital approach (Evans, 2015) LEO 2018 followed a perspective on social inclusion or on social vulnerability. The survey determined a higher risk of unemployment and employment in low-wage sectors (Stammer, 2020). Also, low literacy does correlate with feelings of social exclusion and vulnerability (Heilmann & Grotlüschen, 2020).

Digitalization

As such, digital transformation touches all areas of life and affects people at many different levels (Dander et al., 2020). Almost 20 years ago Selwyn et al. (2005) state, that with the ongoing digital knowledge transfer, the "internet has transformed the personal computer into a powerful connected resource – bringing hitherto unimaginable networked computing power to homes, schools and workplaces" (Selwyn et al., 2005, p. 6). The authors describe that the internet is "popularly celebrated to be transforming all sectors of everyday life" (Selwyn et al., 2005, p. 6) as well as bringing all kinds of technical change through capable platforms (Selwyn et al., 2005).

While on the one hand the internet is seen as a cultural revolution, on the other hand there are critical voices that warn against the technological and cultural changes (artificial intelligence/AI, increased social inequality through algorithms, technologization, etc.) that accompany the internet, or at least examine them by weighing up its advantages and disadvantages (e.g., O'Neil, 2017). Critics, however, see these as deterministic tendencies that do not consider digitalization in its full scope and underestimate the ambivalent structures of digitalization in education (e.g., digital divide) (Reich, 2020). In the education sector, it is a matter of taking advantage of the resources of digital media (e.g., democratization of knowledge) while at the same time considering the associated relativization of secure knowledge resources through the internet. The problem of finding trustworthy sources on theinternet comes to a head especially in social media. Research on the phenomenon of the internet combines different perspectives. The variety shows that there is a "wide range of views on digitalization" (Kühn & Robak, 2021), such as technological perspectives, cultural studies perspectives, sociological perspectives as well as socio-technical perspectives. Perspectives that describe the socio-cultural aspects of digitalization and the medialization of society through the internet also call this the emergence of a culture of digitality (Stalder, 2021). In this sense, the internet is seen as a "range of practices, software and hardware technologies, modes of representation and interaction that may or may not be interrelated by participants, machines or programs"' (Miller & Slater 2000, p. 14 in Selwyn et al., 2005, p. 7). Thus, it is repeatedly pointed out that despite the continuing euphoria about digital media, critical and mature assessments of their use should be reflected and this especially in education (Selwyn, 2022).

Looking at the educational sector in general, the field of education seems to be called upon to adapt to developments and technical progress and to face up to the accompanying tasks of digitalization in a pedagogically informed manner. At the same time, it shows that the use of previously unused (digital) opportunities, such as social media, can reach disadvantaged groups in a different way than traditional educational media (print newspaper, etc.) can.

Link Between Digitalization and Health

Health-related literacies and skills and their relation to digitalization are among the most relevant challenges in this field. While health-related information becomes

available more easily through digital channels, it becomes more and more difficult to distinguish relevant and empirically verified information from commercially exploitative claims and simple fake news or even conspiracy theories. The European Health Literacy Survey finds a generally low health literacy in several European countries. The survey was able to show that adults generally struggle to find and judge health-related information (Sørensen et al., 2015). A Swedish study among teenagers and young adults was able to demonstrate the immense difficulties they had in distinguishing advertisement from relevant information and news (Nygren & Guath, 2019) and it stands to reason that health-related information is no exception. Instead, health seems to be a topic of great misinformation, manipulation and exploitation. As social media has become a platform for the exchange of health-related information, the impact of this trend (Wiedicke et al., 2022) and the skills necessary to deal with the flow of information, need to be subject of research.

Earlier evaluations of the LEO 2018 data showed that the ability to judge digital information critically, like distinguishing between real information and advertising, has a positive impact on critical health literacy (Heilmann & Skowranek, 2023).

Especially during the COVID-19 pandemic the significance of health-related information on the internet increased. The World Health Organization (WHO, 2020) used the term "infodemic" in the context of the COVID-19 pandemic because of mixing truthful information and fake news about the virus on the internet and on social media platforms. In this context internet users and especially those who search for health information on the internet need special skills in terms of ehealth literacy (Norman & Skinner, 2006). These skills are "defined as the ability to seek, find, understand, and appraise health information from electronic sources and apply the knowledge gained to addressing or solving a health problem" (Norman & Skinner, 2006, p. 2). According to specific surveys 80% of the US citizens and 72% of the German population are searching for health information on the internet (Link et al., 2021).

Zschorlich et al. (2015) highlight that persons who mainly use health information on the internet on average tend to be female, younger to middle aged, and have higher educational qualifications and higher income. They also search specifically for particular topics either for themselves or for others.

The KomPaS Study (Horch, 2021) examined communication and the information in the health system from the point of view of the adult population (age 18 and older, n=5,053). They found out that 69% of the German population are searching for health information on the internet. Women in the age of 30 till 44 years are searching more often for health information then men in the same age group. People with a low socio-economic status are searching less often, but in the group of people with low economic status the men are searching more often for health information on the internet then women (Horch, 2021).

During the first lockdown of the COVID-19 pandemic in Germany Dadaczynski et al. (2020) analyzed the digital health literacy of students (n=14,895). More than 80% of the participants used search engines, news websites or websites of official authorities. 40% of the participants also used social media and YouTube. Within the group of the students, women showed lower digital health literacy, especially in the areas "Search and Find" and "Assess the Quality of the information." In addition to these results, they also found out that students with a higher digital health literacy had a higher psychological health (Dadaczynski et al., 2020).

Feinberg et al. (2019) describe that in the United States people with low health literacy and low ehealth literacy are also affected by a low health insurance literacy, because in the United States more than 63% of the population under the age of 65 have employer-sponsored health insurance plans, for which terms are only accessible through internet documents written in formal language. Due to this people need special skills to access and understand these digital insurance documents. This makes it difficult for them to understand what insurance benefits they are entitled to, which in turn prevents them from claiming the benefits they deserve (Feinberg et al., 2019).

Regardless of the search behavior, studies in Germany found out that 52.4% of the participants (*n*=8,500, aged 18-75 years) (Kolpatzik et al., 2020) or rather 75.8% of the population(*n*=2,151) (Schaeffer et al., 2021) only have low digital health literacy. The search for information and the evaluation of the relevance and quality of the information was found to be difficult (Kolpatzik et al., 2020). Nevertheless, women and people with higher incomes have

higher digital health literacy levels (Kolpatzik et al., 2020). Groups of people who are particularly affected by low digital health literacy are people above the age of 65, people with low education, people with low literacy, people with low financial resources, and people with multiple chronic illnesses (Schaeffer et al., 2021). Nevertheless, digitalization offers an opportunity to monitor and control one's own health behavior using apps and smart watches. In addition, the internet offers research opportunities on health topics anywhere and anytime and enables the exchange of experiences on health topics on social media platforms (Schaeffer et al., 2021, p. 2). In Germany, 20% to 30% of the population use health related apps, but currently there are only a few study results on digital health literacy, so that sufficient knowledge about the extent of digital health literacy and the need for support is missing (Schaeffer & Gille, 2022). In addition, there is no consensus if social media influences health in a positive or negative way, even though about ¾ of the population of the United States uses social media and about half of them report about an influence of health information on their health-related behavior. In China, about 70% of the WeChat user use the app as primary source for health information (Schillinger et al., 2020).

Social media news feeds are generated through algorithms which use Big Data for showing user specific content. For showing personalized content to the users their search and consumption behavior on the internet is evaluated through the algorithms and the feed will be created from the results and contains information and advertising which could be interesting for a user (cf. Gillespie, 2014). Through this automated showing of user-related content it could be possible to consume health related information involuntary through social media news feeds.

Research Question

Based on the state of research we want to answer the research question: Are functional-pragmatic digital proficiencies related to social media positively associated with increased health literacy?

We want to use the results as a basis for making deductions for educational practice especially to demonstrate specific educational needs for adults with low literacy regarding health-related digital information and their social vulnerability.

Data and Method

To answer the research question, we compiled several linear multiple regression analyses in which we included low reading and writing skills as a potentially moderating effect on digital practices. These were based on the LEO 2018 survey. It is a German nation-wide and representative survey on reading and writing skills and literacy-related competencies and practices with a sample size of 7,192 cases. In this survey, adults between the ages of 18 and 64 were included; adults living outside of private households (e.g., in any kind of state institution or unhoused adults) as well as parts of the German population that did struggle with the German language were excluded from the survey. More detailed information on LEO 2018 can be found in Grotlüschen et al. (2019). The survey combined a reading and writing assessment with a detailed background questionnaire with sociodemographic and socioeconomic variables as well as variables about practices related to reading and writing (e.g., information search on the internet) and self-reported basic skills in the domains of health, digitalization, finance, and politics.

Variables

Central variable to this secondary analysis of the LEO 2018 data is the state of health which was operationalised by LEO as subjectively perceived health status (see Monden, 2014). The subjectively perceived health status was used as dependent variable for all regression analyses. In the survey the corresponding question was "How would you rate your state of health in general?" with responses on a five-step Likert scale (very good, good, partly good/ partly poor, poor, very poor). In addition, three groups of independent variables were used: (a) variables on digital practices, (b) socio-economic background variables and (c) variables of societal vulnerability.

The main interest of this paper is the relationship between digital practices and the subjectively perceived state of health, and how this relationship is influenced and moderated by reading and writing skills. The two main variables used here were the frequency of reading and consuming social media posts from friends or acquaintances and the frequency of watching online tutorials or instructional videos, as these have been shown to have significant correlations with the subjectively perceived state of health. For answering the questions

about these two practices interviewees used the response categories: daily, at least once a week but not daily, less than once a week, less than once a month, never. For both variables, proficiency values on reading and writing skills were added as a potential moderator.

These relations were controlled for socio-economic factors like age cohort, gender, and formal educational attainment (low, middle, high). In addition, the later, more complex models also include the interest in health-related topics ("In general, how interested are you in the subject of health?" - strong, rather strong, rather little, little, not at all) and frequency of internet usage (daily, at least once a week but not daily, less than once a week, less than once a month, never). Educational attainment (and the correlated social standing and capital) is known to show a positive relation to health outcomes; the higher the education, the higher are a person's chances of good health (Kakarmath et al., 2018). Same goes for higher age cohorts. With inclining age cohorts, not only do people show more health problems, also the relation factors set earlier in life increases (Conti et al., 2010). The relationship between gender and health has been widely discussed and researched. Health disparities between genders (with most research focussing on men and women) have been shown in multiple studies and are theorized to be a result of structural sexism in society and in the health sector (Homan, 2019). The variables on health-related interest and frequency of overall internet usage were added to the regression models because we presumed that either one might be inherently connected to health-related practices in digital spaces.

To approximate the social vulnerability of adults, two further variables were included in the analyses. LEO 2018 includes questions both on the sense of belonging to the main society ("Social life: To what extent do you feel more like part of it or rather excluded?") and on the feeling of general contentment in life ("How satisfied are you at present, all in all, with your life?") both of them with a response scale from 0 to 10. These were used as indicators of inclusion and vulnerability.

Questions and Models

The analysis was conducted in seven steps, in which different layers were added to the regression model. First, only the two digital practices were correlated separately with the health outcome. Subsequently, literacy as a moderator was added. And finally, regressions with the control variables were added.

Findings

Social Media Use and Online Tutorials

Our findings show that social media use correlates positively with subjectively perceived state of health by a factor of 0.05 (model 1 in Table 1). This is a marginal but nevertheless highly significant effect. When literacy and a moderator between literacy and social media use are added to the equation, the statistical impact of social media use more than doubles to 0.11 points (model 2). Both coefficients are statistically significant on a 0.001-level. Using social media in everyday life as well as general literacy skills seem to correlate marginally but positively with health outcomes. However, the correlation between reading and writing skills and subjectively perceived state of health is higher than the impact of social media use. The moderator between high reading and writing skills and frequent social media use is not significant and therefore not shown in the table but indicated toward a negative moderator.

TABLE 1

Linear regression models for subjective health status in dependency of social media use, literacy and the moderator between literacy and social media use.

	Model 1	Model 2
social media use	0.05	0.11
reading and writing skills		0.26
moderator literacy/social media use		(n.s.)

Note: Source LEO 2018 – Living with Low Literacy; N = 6739, n.s. = not significant on 0.05-level.

Like the use of social media, watching online tutorials correlates with a coefficient of 0.07 with health outcomes (model 3 in Table 2). However, when literacy and the moderator variable are added to the regression model, none of the coefficients are statistically significant.

TABLE 2

Linear regression models for subjectively perceived health status in dependency of the frequency of online tutorial consumption.

	Model 3	Model 4
online tutorial	0.07	(n.s.)
reading and writing skills		(n.s.)
moderator literacy/online tutorials		(n.s.)

Note: Source LEO 2018 – Living with Low Literacy; N = 6739, n.s. = not significant on 0.05-level.

Education, Age, and Vulnerability

Both variables lose their statistical significance when they are controlled for background variables. Among these, the strongest and highest positive predictor for health is the educational background. A high educational attainment has a significant factor equivalent to 0.3 (model 5 in Table 3). A medium education attainment corresponds with a 0.15 coefficient. The educational background was used here as a proxy for general wealth and social class.

Another proxy we used for social inclusion and well-being is adults' overall sense of satisfaction and their overall sense of being included in society. Being in the 20 per cent with the lowest sense of overall satisfaction is the strongest negative predictor of subjective health. With a coefficient of -0.48 (model 5 in Table 3), health is correlated with being in the least satisfied quintile of adults. Similarly, but to a lesser extent, being in the lowest quintile of feeling included in society has a significantly negative relationship with the subjectively perceived health status, with a coefficient of -0.26 (model 5 in Table 3).

As discussed in earlier research, age's relation to health was shown in the present regression outcomes. The age group of 50 to 64-year-olds has a coefficient of -0.43 (model 5 in table 3) in comparison to adults ages 18 to 29.

TABLE 3

Linear regression models for subjectively perceived health status in dependency of the frequency of social media use and online tutorial consumption, and control variables

	Model 5
social media use	(n.s.)
Online Tutorials	(n.s.)
reading and writing skills	(n.s.)
educational attainment (medium)	0.15
educational attainment (high)	0.30
female gender	(n.s.)
Age group (in relation to 18–29-year-olds)	
Ages 30-39	(n.s.)
Ages 40-49	-0.23
Ages 50-64	-0.43
Low feelings of general contentment	-0.48
Low feelings of belonging to society	-0.26

Note: Source LEO 2018 – Living with Low Literacy; N(Model 5) = 6994, n.s. = not significant on 0.05-level.

Discussion

In contrast to earlier findings which indicated a relation between literacy and health-related outcomes (Heilmann & Grotlüschen, 2020), we now rather propose that low literacy and low digital literacy or ehealth literacy are major determinants in the processes in which adults' general vulnerability is increased.

We approximated the question of societal vulnerability with the two variables on satisfaction and feelings of societal inclusion, assuming that being in the bottom 20 percent of these two scales might indicate some kind of exclusion and vulnerability. Both were found to be significant negative predictors of subjectively perceived health status. However, we expect that at least part of the statistical effect of satisfaction is due to a reciprocal interaction between low subjective health status and overall satisfaction, where health-related struggles might affect one's satisfaction as well as overall dissatisfaction and vulnerability might be related to lower subjective health status. However, the relatively strong relationship between these two variables suggests that both are related to vulnerability.

The fact that literacy does not have a strong direct effect on the subjectively perceived health status is consistent with the findings of MacDonald et al. (2022), who report this relationship only for certain age cohorts. While literacy skills might not directly be relevant to care for one's own health, it seems that by lessening chances of social inclusion, e.g. in the field of employment (especially of well-paid employment) and by increasing adult's feeling of not belonging, low literacy very well can be a factor in a low subjectively perceived health status.

Our results show that being part of the 20% of society that feel least included has a significant relation to health. This might have multiple reasons. Not being able to participate in the labor market due to health problems can lead to feelings of exclusion, as the labor market is one of the most relevant spaces of social inclusion in our societies (Gebel et al., 2021). The access to health services is also often moderated by other forms of social participation like income.

We propose some explanations for the use of social media. It is possible that social media use per se has little or no relevance for health outcomes. Although health-related misinformation often circulates on social media, we cannot say a lot about how people evaluate it. Adults with low literacy skills attribute low skills to themselves in assessing the credibility of information on the internet (Buddeberg & Grotlüschen, 2020). Regarding artificial intelligence, less experienced users regardless of their reading and writing skills are less confident that they will not fall for fake news (Grotlüschen et al., 2024). There may be adverse effects that cannot be shown in our generalized models. Beneficial and detrimental effects of digital health information might cancel each other out either at the individual level or at the societal level. Further analysis is needed to distinguish these effects.

Limitations

As mentioned before, our possibilities to differentiate between different social media forms and different types of consumption are very limited. Therefore, no specific statements regarding the direct effect of social media and online tutorials can be made. Instead, we can show that there is no relation between both practices and health outcomes that can be generalized.

The data set of LEO 2018 considers adults aged 18 to 64 years, who live in private households and speak sufficient German to follow a personal interview in the German language. Non-German speakers, prisoners, people in home accommodation and adults aged 65 and older are not included in the data set (Grotlüschen et al., 2020, p. 55).

The LEO 2018 data was surveyed in 2018 and therefore excludes post-pandemic learning and potential changes in society. It tested and surveyed different skills and practices. The variables used here refer exclusively to the description of practices, so that considerable differences in proficiency are to be assumed. Our research shows, however, that literacy itself seems to play a minor role here.

Unlike the findings of Feinberg et al. (2016), that the internet itself is a valuable source of health-related information, based on our findings this does not seem to hold true for social media only.

Conclusion and Outlook

We propose to interpret the presented results as follows: First, we note that the statistical association between literacy and health does not hold when other control variables are added -particularly variables regarding social and financial vulnerability. This indicates that literacy is not associated with poorer health per se, but rather pushes people into vulnerable positions in society and employment. These, in turn, are often associated with higher health risks and poorer health outcomes. Thus, our first concluding thesis is that de-stigmatization, better

and more socially equal health care, and better working conditions increase the health of a variety of vulnerable people, including the health of people with low literacy.

In addition, social media and online tutorials are presented here for the first time as neutral sites of learning that are not automatically associated with poor health (for example, through misinformation). Instead, the issue of empowered and critical digital literacy seems to be a crucial factor here. Accordingly, it may be of great benefit to consider issues of critical literacy not as an afterthought to basic literacy skills such as reading and writing, but as necessary learning goals. People with low literacy skills would benefit from learning opportunities that support the competent use of digital media and health-related information in digital spaces, in a low-threshold approach and without high access requirements. Such opportunities might be courses in e.g. Adult Education Centers (German: Volkshochschulen), providers of parental and family education or community centers.

References

Addey, C. (2021). Literacy assembled as global in ILSAs. The danger of a single story. In A. Grotlüschen (Ed.), *Zeitschrift für Pädagogik: Alphabetisierung und Grundbildung von Erwachsenen* (pp. 153–165). Beltz Juventa.

Barton, D., & Hamilton, M. (2000). Literacy practices. In D. Barton, M. Hamilton, & R. Ivanič (Eds.), *Literacies. Situated literacies: Reading and writing in context* (pp. 7–15). Routledge.

Buddeberg, K., Dutz, G., Grotlüschen, A., Heilmann, L. M., & Stammer, C. (2020). Low literacy in Germany: Results from the second German literacy survey. *European Journal for Research on the Education and Learning of Adults*, *11*(1), 127–143. https://doi.org/10.3384/rela.2000-7426.rela9147

Buddeberg, K., & Grotlüschen, A. (2020). Literalität, digitale Praktiken und Grundkompetenzen. In A. Grotlüschen & K. Buddeberg (Eds.), LEO 2018 – Leben mit geringer Literalität (pp. 197–225). wbv.

Bundesministerium für Gesundheit. (2023). *E-Health - Digitalisierung im Gesundheitswesen*. www.bundesgesundheitsministerium.de/themen/digitalisierung/digitalisierung-im-gesundheitswesen.html

Conti, G., Heckman, J., & Urzua, S. (2010). The education-health gradient. *The American Economic Review*, *100*(2), 234–238. https://doi.org/10.1257/aer.100.2.234

Dadaczynski, K., Okan, O., Messer, M., & Rathmann, K. (2020). *Digitale Gesundheitskompetenz von Studierenden in Deutschland: Ergebnisse einer bundesweiten Online-Befragung*. https://fuldok.hs-fulda.de/opus4/frontdoor/deliver/index/docId/843/file/COVID-HL+Ergebnisbericht_Deutschland.pdf

Dander, V., Bettinger, P., Ferraro, E., Leineweber, C., & Rummler, K. (Eds.). (2020). *Digitalisierung - Subjekt - Bildung: Kritische Betrachtungen der digitalen Transformation*. Verlag Barbara Budrich. https://doi.org/10.2307/j.ctvvb7n3h

Department for Business, Innovation and Skills. (2012). *2011 Skills for Life Survey: A Survey of literacy, numeracy and ICT levels in England* (BIS Research Paper No. 81). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/36000/12-p168-2011-skills-for-life-survey.pdf

European Commission. (2007). *Key competences for lifelong learning: European reference framework*. European Communities. http://ec.europa.eu/dgs/education_culture/publ/pdf/ll-learning/keycomp_en.pdf

European Commission, Directorate-General for Education, Youth, Sport, & Culture. (2019). *Key competences for lifelong learning*. Publications Office. https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en

Evans, J. (2019). Adult skills surveys and transnational organisations: globalising educational policy. In J. Evans, S. Ruane, & H. Southall (Eds.), *Data in society: Challenging statistics in an age of globalisation* (pp. 65–77). Policy Press.

Feinberg, I., Frijters, J., Johnson-Lawrence, V., Greenberg, D., Nightingale, E., & Moodie, C. (2016). Examining associations between health information seeking behavior and adult education status in the U.S.: An analysis of the 2012 PIAAC Data. *PloS One*, *11*(2), e0148751. https://doi.org/10.1371/journal.pone.0148751

Feinberg, I., Greenberg, D., Tighe, E., & Ogrodnick, M. (2019). Health insurance literacy and low wage earners: Why reading matters. *Adult Literacy Education, 1*(2), 4–18. https://doi.org/10.35847/IFeinberg.DGreenberg.ETighe.MOgrodnick.1.2.4

Friebe, J., Schmidt-Hertha, B., & Tippelt, R. (Eds.). (2014). *DIE-Spezial. Kompetenzen im höheren Lebensalter: Ergebnisse der CILL-Studie*. wbv.

Gal, I., Grotlüschen, A., Tout, D., & Kaiser, G. (2020). Numeracy, adult education, and vulnerable adults: A critical view of a neglected field. *ZDM*, 1–18. https://doi.org/10.1007/s11858-020-01155-9

Gebel, M., Unt, M., Bertolini, S., Deliyanni-Kouimtzi, V., & Hofäcker, D. (2021). Introduction. In M. Unt, M. Gebel, S. Bertolini, V. Deliyanni-Kouimtzi, & D. Hofäcker (Eds.), *Social Exclusion of Youth in Europe: The multifaceted consequences of labour market insecurity* (pp. 1–28). Policy Press. https://doi.org/10.2307/j.ctv1sr6k9z.7

Gillespie, T. (2014). The Relevance of algorithms. In T. Gillespie, P. J. Boczkowski, & K. A. Foot (Eds.), *Media Technologies: Essays on Communication, Materiality, and Society* (pp. 167–193). MIT Press.

Grek, S. (2020). Prophets, saviours and saints: Symbolic governance and the rise of a transnational metrological field. *International Review of Education.* Advance online publication. https://doi.org/10.1007/s11159-020-09844-z

Grotlüschen, A., Dutz, G., & Skowranek, K. (2024). Writing with Artificial Intelligence? Ad-hoc-Survey findings raise awareness for critical literacy at the International Literacy Day. IJLE. https://doi.org/10.1080/02601370.2024.2349657

Grotlüschen, A., & Buddeberg, K. (2020). PIAAC and the South - Is Southering the new Othering? Global Expansion of dominant Discourses on Adult Literacy. *European Journal for Research on the Education and Learning of Adults*, *49*(3), 17–34. https://doi.org/10.3384/rela.2000-7426.rela9214

Grotlüschen, A., Buddeberg, K., Dutz, G., Heilmann, L., & Stammer, C. (2020). Hauptergebnisse und Einordnung zur LEO-Studie 2018 - Leben mit geringer Literalität. In A. Grotlüschen & K. Buddeberg (Eds.), LEO 2018 – Leben mit geringer Literalität (pp. 13–64). wbv.

Grotlüschen, A., Buddeberg, K., Dutz, G., Heilmann, L. M., & Stammer, C. (2019). Practices and Competencies - Evidence from an Adult Literacy Survey in Germany. In M. Schemmann (Ed.), *Internationales Jahrbuch der Erwachsenenbildung /International Yearbook of Adult Education* (pp. 17–34). wbv.

Hamilton, M., Maddox, B., & Addey, C. (Eds.). (2015). *Literacy as numbers: Researching the politics and practices of international literacy assessment*. Cambridge University Press.

Heilmann, L. M., & Grotlüschen, A. (2020). Literalität, Migration und Mehrsprachigkeit. In A. Grotlüschen & K. Buddeberg (Eds.), *LEO 2018 – Leben mit geringer Literalität* (115-142). wbv.

Heilmann, L. M., & Skowranek, K. (2023). Kritisch-hinterfragende Kompetenzen bei der Suche nach gesundheitsbezogenen Informationen. In A. Grotlüschen, K. Buddeberg, & H. Solga (Eds.), *Edition ZfE: Vol. 14. Interdisziplinäre Analysen zur LEO-Studie 2018 – Leben mit geringer Literalität: Vertiefende Erkenntnisse zur Rolle des Lesens und Schreibens im Erwachsenenalter* (1st ed., pp. 213–239). Springer VS; Springer Fachmedien. https://doi.org/10.1007/978-3-658-38873-7_9

Homan, P. (2019). Structural sexism and health in the United States: A new perspective on health inequality and the gender system. *American Sociological Review*, *84*(3), 486–516. https://doi.org/10.1177/0003122419848723

Horch, K. (2021). Suche von Gesundheitsinformationen im Internet: Ergebnisse der KomPaS-Studie. *Journal of Health Monitoring*, *6*(2), 71–77. https://doi.org/10.25646/7143

Jeantheau, J.-P. (2013). *IVQ: more than a national survey, more a basis for an indicators net*. http://www.basicskills.eu/wp-content/uploads/2013/07/IVQ-more-than-a-national-survey-JP-Jeantheau-ANLCl1.pdf

Kakarmath, S., Denis, V., Encinas-Martin, M., Borgonovi, F., & Subramanian, S. V. (2018). *Association between literacy and self-rated poor health in 33 high- and upper-middle-income countries* (OECD Education Working Papers No. 165). Paris. OECD Publishing. https://doi.org/10.1787/7aaeac27-en

Kolpatzik, K., Mohrmann, M., & Zeeb, H. (2020). *Digitale Gesundheitskompetenz in Deutschland*. Berlin. KomPart.

Kühn, C., & Robak, S. (2021). Adult education research in the context of digital transformation: Concepts and perspectives for a complex field of research. In J. P. Egan (Chair), *adult education in global times.* Symposium conducted at the meeting of University of British Columbia, Vancouver.

Link, E., Baumann, E., & Klimmt, C. (2021). Explaining online information seeking behaviors in people With different health statuses: German Representative Cross-sectional Survey. *Journal of Medical Internet Research*, *23*(12), e259631–14. https://doi.org/10.2196/25963

MacDonald, E., Arpin, E., & Quesnel-Vallée, A. (2022). Literacy and self-rated health: Analysis of the Longitudinal and International Study of Adults (LISA). *SSM - Population Health*, *17*, 1–8. https://doi.org/10.1016/j.ssmph.2022.101038

Monden, C. (2014). Subjective health and subjective well-being. In A. C. Michalos (Ed.), *Encyclopedia of quality of life and well-being research* (pp. 6423–6426). Springer.

Norman, C. D., & Skinner, H. A. (2006). Ehealth literacy: Essential skills for consumer health in a networked world. *Journal of Medical Internet Research*, *8*(2), e9. https://doi.org/10.2196/jmir.8.2.e9

Nygren, T., & Guath, M. (2019). Swedish teenagers' difficulties and abilities to determine digital news credibility. *Nordicom Review*, *40*(1), 23–42. https://doi.org/10.2478/nor-2019-0002

Organization for Economic Co-operation and Development. (2007). *Knowledge management evidence in education: Linking research and policy*. https://doi.org/10.1787/9789264033672-en

Organization for Economic Co-operation and Development. (2019). *Skills matter. Additional results from the Survey of Adult Skills. OECD skills studies*. OECD Publishing. https://doi.org/10.1787/1f029d8f-en

Organization for Economic Co-operation and Development & Statistics Canada. (2011). *Literacy for life: Further results from the adult literacy and life skills survey*.

O'Neil, C. (2017). *Weapons of math destruction: How big data increases inequality and threatens democracy*. B/D/W/Y Broadway Books.

Patterson, M. B. (2022). Basic correctional education and cecidivism: Findings from PIAAC and NRS. *Adult Literacy Education*, *4*(2), 18–35. https://doi.org/10.35847/MPatterson.4.2.18

Pellegrini, M., & Vivanet, G. (2021). Evidence-based policies in education: Initiatives and challenges in Europe. *ECNU Review of Education*, *4*(1), 25–45. https://doi.org/10.1177/2096531120924670

Reich, J. (2020). Failure to disrupt: *Why technology alone can' t transform education.* Harvard University Press.

Schaeffer, D., Gille, S., Berens, E.-M., Griese, L., Klinger, J., Vogt, D., & Hurrelmann, K. (2021). Digitale Gesundheitskompetenz der Bevölkerung in Deutschland: Ergebnisse des HLS-GER 2. *Gesundheitswesen*, 1–9. https://doi.org/10.1055/a-1670-7636

Schillinger, D., Chittamuru, D., & Ramírez, A. S. (2020). From "infodemics" to health promotion: a novel framework for the role of social media in public health. *American Journal of Public Health*, *110*(9), 1393-1396. https://doi.org/10.2105/AJPH.2020.305746

Selwyn, N. (2022). *Education and technology: Key issues and debates* (3rd ed.). Bloomsbury Academic.

Selwyn, N., Gorard, S., & Furlong, J. (2005). Whose internet is it anyway? *European Journal of Communication*, *20*(1), 5–26. https://doi.org/10.1177/0267323105049631

Sørensen, K., Pelikan, J. M., Röthlin, F., Ganahl, K., Slonska, Z., Doyle, G., Fullam, J., Kondilis, B., Agrafiotis, D., Uiters, E., Falcon, M., Mensing, M., Tchamov, K., van den Broucke, S., & Brand, H. (2015). Health literacy in Europe: Comparative results of the European health literacy survey (HLS-EU). *European Journal of Public Health*, *25*(6), 1053–1058. https://doi.org/10.1093/eurpub/ckv043

Stalder, F. (2021). *Kultur der Digitalität* (Originalausgabe, 5. Auflage). *Edition Suhrkamp: Vol. 2679*. Suhrkamp.

Street, B. V. (2005). Applying new literacy studies to numeracy as social practice. In A. Rogers (Ed.), *Urban literacy: Communication, identity and learning in development contexts* (pp. 87–96). UNESCO Institute for Education.

Street, B. V. (2013). New literacy studies. In C. Rosebrock & A. Bertschi-Kaufmann (Eds.), *Lesesozialisation und Medien. Literalität erfassen: bildungspolitisch, kulturell, individuell* (pp. 149–165). Beltz Juventa.

Tett, L. (2023). Community-based adult learning: A Scottish case study in the time of COVID-19. *Adult Literacy Education*, *5*(1), 21–35. https://doi.org/10.35847/LTett.5.1.21

Wiedicke, A., Reifegerste, D., Temmann, L. J., & Scherr, S. (2022). Verbal and visual framing of responsibility for Type 1 diabetes by patient influencers on Instagram. *Social Media + Society*, *8*(4), 205630512211361. https://doi.org/10.1177/20563051221136114

World Health Organization (2020). Infodemic management: A key component of the COVID-19 global response. *Weekly Epidemiological Recort*, *95*(16), 145–148. https://doi.org/10.1177/0037549719885021

Yasukawa, K., Jackson, K., Kane, P., & Coben, D. (2018). Mapping the terrain of social practice perspectives of numeracy. In K. Yasukawa, A. Rogers, K. Jackson, & B. V. Street (Eds.), *Rethinking numeracy as social practice: Global and local perspectives* (pp. 3–17). Routledge.

Zschorlich, B., Gechter, D., Janßen, I. M., Swinehart, T., Wiegard, B., & Koch, K. (2015). Gesundheitsinformationen im Internet: Wer sucht was, wann und wie? [Health information on the Internet: Who is searching for what, when and how?]. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*, *109*(2), 144–152. https://doi.org/10.1016/j.zefq.2015.03.003

http://doi.org/10.35847/MCandy.6.2.30

Report from the Field

Low Literacy Correctional Students in North Dakota

Michelle Candy, North Dakota Department of Corrections and Rehabilitation

Abstract

The North Dakota Department of Corrections and Rehabilitation has developed two methods of working with low-literacy students. One is testing for accommodations for GED testing. The other is integrating the STAR literacy program for adult readers.

Keywords: corrections, literacy, GED, accommodations, STAR

Adult students in correctional settings have many educational barriers and differences that set them apart from adult students at a community adult learning center (ALC). In North Dakota, the median age for a non-corrections adult student is 19, with 91% of the students being under age 30. However, in North Dakota corrections, the median age is 28, with nearly half of the students being over age 30. Statistics from a U.S. Department of Justice survey show that nearly a quarter of all state and federal prisoners questioned had been in special education classes in school (Maruschak et al., 2021). This compares with the roughly 15% of the general population in special education classes in the United States (Irwin et al., 2023) Anywhere from 15-26% of all state prisoners reported that they had been told by a professional that they had a learning disability such as dyslexia or dyscalculia (Brazzell et al., 2009; Maruschak et al., 2021). While it is difficult to find either state-specific or national/federal prison statistics for literacy rates among incarcerated individuals, the fact is that many of these individuals have low reading rates, whether because of learning disabilities, lack of education, or other reason. School districts across the nation are starting to turn to the Science of Reading to remedy these reading problems before fourth grade. But what about correctional educators and their adult students?

National adult correctional education numbers are hard to come by, as some states report numbers and others do not. The Programme for the International Assessment of Adult Competencies (PIAAC) Survey of Incarcerated Adults shows that those without a high school diploma have an average literacy score of 224, which is at Proficiency Level 1 (Rampey et al., 2016). Less than 2% of incarcerated individuals receive basic educational or vocational education (Brazzell et al., 2009). However, the PIAAC Survey shows that approximately 30% of respondents had less than a high school credential, with 18% of respondents stating that they wanted to enroll in high school completion or high school equivalency (Rampey et al., 2016). Reasons incarcerated adults may not be able to take part in education include not being eligible to attend or being on a waiting list for a program, which may be taught by certified teachers, volunteer teachers, or incarcerated tutors (Brazzell et al., 2009; Rampey et al., 2016).

I am an instructor in the North Dakota Department of Corrections and Rehabilitation (ND DOCR), and I am addressing the issue of literacy from our local level. In the ND DOCR, anyone coming into the system without a high school diploma or high school equivalency is required to be enrolled in the education department for GED preparation. Because the ND DOCR requires anyone without secondary-level education to be in educational programming, the education department contains students of all ages, abilities, and desires for education. This is in contrast with students at an ALC who are there because they choose to be there.

Adult education programs in North Dakota use the Test

Correspondence: mcandy@nd.gov

of Adult Basic Education (TABE) for assessment tracking purposes. The TABE scores in the ND DOCR range from National Reporting System (NRS) Level 1 through NRS Level 6. For the purposes of this article, I'm defining L1 and L2 as low literacy (they range roughly from Grade 1-3 reading level). At the time I was writing this article, there were 208 students enrolled across the four adult facilities that comprise the ND DOCR. When I tallied students' reading scores, I was shocked to see that 109 out of 208 were in the L1 and L2 range. Having approximately half our students test at third grade reading level or lower represents a large challenge for a small department (19 state-certified teachers in the four adult facilities).

Approximately 31 of these students may have a disability such as dyslexia, with up to 104 possibly having been in special education classes in school. While we do not formally track these numbers, our informal interactions with students show that these numbers are not too far off. These interactions can include discussions in which a student shares that he or she was in special education class in school or more explicitly telling us they were "diagnosed with" dyslexia or another learning difficulty in school.

The importance of being aware of disabilities and advocating for students cannot be understated. Under the Americans with Disabilities Act (ADA), state and federal entities such as prisons are required to advise and help those with disabilities to be able to fully participate in education. Recently, the federal government sued the state of Minnesota for not helping those with disabilities to apply for and access official accommodations from GED Testing Service (GEDTS), leaving those students unable to complete a GED diploma and move on to further educational training within the prison system (*United States of America v. Minnesota Department of Corrections*, 2023). The consent decree signed by both parties spells out what the Minnesota Department of Corrections (MN DOC) must fulfill, including (but not limited to) making reasonable modifications within their GED-prep program and classes for qualified individuals with disabilities; responding in a timely manner to requests for modifications, accommodations, or auxiliary aids or services; evaluating requests for modifications, including individual assessments where indicated. The department was also ordered to hire an agency-wide ADA compliance officer and appoint an ADA coordinator at each individual facility. Additionally, the MN DOC is ordered to pay compensation to individuals who had been aggrieved by the actions of the department. Finally, they must report program compliance data to the government every 6 months (*United States of America v. Minnesota Department of Corrections Consent Decree*, 2023). This is an important issue for all of us in adult education to be aware of, as we all have individuals with disabilities that are protected by the ADA.

Seeing that the federal government takes this very seriously, how can adult educators, and specifically correctional educators, address literacy and disability needs while continuing to teach GED prep courses? In the ND DOCR, we have developed a two-pronged approach, the first involving literacy instruction, and the second involving GED testing accommodations. Although I use the term "two-pronged," many students are in both categories at the same time.

In the fall of 2021, my colleague and I were part of a national, remotely conducted cohort in learning Evidence Based Reading Instruction (EBRI) through Student Achievement in Reading (STAR) literacy training, a federal initiative for adult literacy educators from the U.S. Department of Education's Office of Career, Technical, and Adult Education (OCTAE). As we learned about EBRI and the methods to assess and instruct for reading improvement, we recognized that what we were learning filled a large missing piece in our educational toolbox. STAR classes are aimed to reach those in the intermediate reading ability range (defined by STAR as between grade 4-8 reading level), with the methods and principles working effectively as well for those in the beginning and advanced ranges. Our students in the intermediate reading level started making gains in their reading scores, improving their reading ability, and passing GED tests. As an example, I had a student I had worked with during a couple of incarcerations. He had passed his math GED test but struggled with reading comprehension, to his and my frustration. As I learned the techniques through STAR, I kept this person in my mind. I placed him in my first STAR class and told him that I was so excited to practice what I was learning with him. After about three months of working on reading comprehension using EBRI, this student was able to start passing his tests, eventually becoming our first GED graduate of the 2021-2022 school year! I have more students who have followed a similar path, but this one was special for me.

Because of the success our students were having, and because of their positive reviews of the STAR classes, we gained permission to become state-level STAR trainers, beginning our training in the fall of 2022. We have recently completed training six ND DOCR instructors and three administrators in the STAR teaching techniques and EBRI philosophy. Since the training was completed so recently, we don't have full results yet, but we're hopeful that this will further aid our L1 and L2 students who struggle with literacy.

For the second approach, we have developed an assertive policy aimed at identifying and assessing students for potential disabilities affecting their learning. These assessments may lead to accommodations in classwork and practice testing and can be used to request formal testing accommodations from GEDTS. GEDTS allows for several different accommodations, including extra time, testing by oneself, extra breaks, a reader, or a scribe. Additionally, if the students go on to work with North Dakota Vocational Rehabilitation after re-entry, they can present these assessments for specific, personalized assistance.

The first step in this approach is for our test administrators and teachers to be aware of incoming students with low literacy. If our TABE test administrators see a new student's score fall into an L1 or L2 range in reading, they can reach out to the teachers to make them aware of this student's level. These scores may be low because the student chose not to take their time or was annoyed at having to take the TABE tests, or they may be low because of language (if English is their second language) or reading disability or a traumatic brain injury. The teachers observe the students to see how they perform in the classroom: Are they performing at a higher level than their TABE tests would indicate? Are they struggling with basic literacy? Do they need glasses to read their textbooks or the TABE test? Do they retain what they've learned in class?

If educational staff working with an individual suspect a learning disability, or if the student self-reports having been in special education in school, the educators can reach out to the special education teacher, who is housed at the North Dakota State Penitentiary in the education department. This individual is qualified to give assessments to students who have been identified as possibly needing accommodations. We give two assessments, the Wechsler Adult Intelligence Scale – Fourth Edition (WAIS-IV) and the Woodcock Johnson – Fourth Edition (WJ-IV). The first of these assessments looks at cognitive abilities and IQ, while the second measures knowledge and academic ability compared to others their age. A combination of these two assessments can help to diagnose and ascertain what the student may need for accommodations.

These assessments must be scored, and the scores must be analyzed by a trained PhD psychologist. Some of these are analyzed in-house by psychologists in our ND DOCR treatment department. Additionally, as we have started raising awareness among teachers and assessing more individuals, we have contracted an outside psychologist. Each of these evaluations takes about two hours to administer to the student (a total of 4 hours per student) and about 5 hours to analyze. This represents a great investment of time and money into every one of these students. Nevertheless, about 7 years ago, our then-director felt it was necessary to lower educational barriers to as many students as possible, and our current director continues to support this investment. Teachers who, through the years, have seen the benefits for our students now encourage newer teachers to look for students who could benefit from having accommodations in their testing. Assessing so many students has also reduced the stigma surrounding accommodations. When students see that their classmates can be successful with extra time or with a reader, they are more likely to reach out to us and ask if they can be assessed, as well.

The results of these assessments may show us that a student could be successful taking GED tests if he or she had extra time, extra breaks, or even a reader. In this case, we send the assessment to GEDTS, asking for accommodations to be granted. Because of our detailed documentation (if we think the student would benefit from a reader, for example, we make that suggestion to the psychologist, who writes it in the recommendations), we usually get the accommodations we request. It can be difficult and expensive for a student to receive assessments and evaluations on their own while working at a regular ALC; thus, accommodations are more difficult to obtain for the student working on his or her own. The GED testing accommodations are valid for two years and can be renewed with a signed request from the student. Therefore, if a student is working on getting his or her

GED diploma and is released before completing the testing, he or she can go to an ALC and have the same accommodations available.

These assessment analyses also help the instructors. For example, if a student needs to have material read aloud for comprehension, the teacher can read materials aloud in class to help the student process the information. This helps the student learn the material in the way he or she best can, giving greater likelihood of success in the classroom and in testing. I have also had good results practicing as a reader with my students who have reader as an accommodation. Together we can figure out how they want their tests read to them so they can direct their testing reader when entering the testing situation.

For administrators wishing to make successful education outcomes more attainable by students with learning disabilities, there are several steps to consider. The first is personnel. Administrators must determine the person or persons who will be giving the assessments and if they will be doing this full-time or part-time. Administrators also need to take into consideration the cost of purchasing the assessment tools and the cost for having each assessment evaluated. In a correctional setting, if the correctional treatment department is able and willing to evaluate these assessments, they may be done in-between other projects but will not incur an additional cost. If the facility chooses to contract with an independent psychologist, this will lead to a cost per assessment. Once a student has been assessed, a staff member (preferably the person giving the assessments) will need to send a request for accommodations, along with the assessments, to GEDTS. This person also will communicate the findings to the teachers who are in contact with this student, so they can work together to make the learning environment as appropriate as possible. Once the accommodation has been granted by GEDTS, the facility GED test administrator must be informed so that he or she can arrange for these accommodations when registering the tester.

Both approaches, accommodations testing and STAR (or another EBRI) reading training, take time and a commitment to rise past the status quo. Change is rarely enjoyable. However, that is not a reason or an excuse to ignore this overlooked group of students having high needs. The whole reason for having a correctional education department is to help people to break the cycles that bring them into carceral settings. We recently had a man who we could see needed extra time, and, after going through the assessment process, he was granted 100% extra time for taking a test. When he successfully completed his GED testing, he asked for advice in thinking about post-secondary education. His statement to me was, “This opens so many doors I didn’t even know were there.” We know we are making a difference when we have students who earn a GED diploma with accommodations or after having taken STAR reading classes. If you are an adult or correctional teacher or administrator looking for an impactful way to serve your students, look at your remedial reading program and consider accommodations testing for your students.

References

Brazzell, D., Crayton, A., Mukamal, D., Solomon, A., & Lindahl, N. (2009). *From the classroom to the community: Exploring the role of education during incarceration and re-entry.* The Urban Institute. https://files.eric.ed.gov/fulltext/ED508246.pdf

Irwin, V., Wang, K., Tezil, T., Zhang, J., Filbey, A., Jung, J., Bullock Mann, F., Dilig, R., and Parker, S. (2023). *Report on the condition of education 2023* (NCES 2023-144rev). National Center for Education Statistics. https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2023144rev.

Maruschak, L. M., Bronson, J., & Alper, M. (2021). Disabilities reported by prisoners: Survey of prison inmates, 2016. NCJ252644. U.S. Department of Justice Bureau of Justice Statistics. https://bjs.ojp.gov/content/pub/pdf/drpspi16st.pdf

Rampey, B. D., Keiper, S., Mohadjer, L., Krenzke, T., Li, J., Thornton, N., & Hogan, J. (2016). Highlights from the U.S. *PIAAC Survey of Incarcerated Adults: Their skills, work experience, education, and training: Program for the International Assessment of Adult Competencies: 2014* (*NCES 2016-040*). National Center for Education Statistics. https://nces.ed.gov/pubs2016/2016040.pdf

United States of America v. Minnesota Department of Corrections, 2023 0:23-cv-367. https://www.justice.gov/opa/press-release/file/1568491/download

United States of America v. Minnesota Department of Corrections, 2023 0:23-cv-00367-JWB-ECW. https://www.justice.gov/d9/case-documents/attachments/2023/03/07/consent_decree-us_v_mndoc_approved.pdf

http://doi.org/10.35847/IKirsch.MLennon.LHalderman.6.2.35

Forum: PIAAC's Impact on ABE Practice and Policy

(*Part 1 of 3*)

Reflections on the Growth and Impact of Large-Scale Assessments of Adult Skills

Irwin Kirsch, Mary Louise Lennon, and Laura Halderman, Educational Testing Service

From modest beginnings in the late 1950s, large-scale assessments have experienced consistent growth. Increasing interest in these surveys reflects not only the recognition of the importance of cognitive skills and skill development for both economic growth and societal well-being, but also the value in benchmarking performance against peers and economic competitors. Over this period of some 60 years, these surveys have also contributed to significant advances in new methodologies and various aspects of measurement science, as well as pioneering the full incorporation of digital technologies into survey design, development and implementation. Although much of the early work around large-scale assessments focused on student populations, since the 1980s there has been growing interest in adult surveys both at the national and international level. Over this time period, policy makers, researchers and other key stakeholders have raised new questions that focused on adults such as: What is the relationship between education and cognitive skills? How are skills related to labor force success? What factors contribute to skill acquisition and decline across age cohorts? The assessments developed to address such policy questions have contributed to a deeper understanding of the distribution of skills among adult populations and the connection those skills have to social, educational and labor market outcomes (Kirsch et al., 2017).

The latest international survey of adult skills is the second cycle of the Programme for the International Assessment of Adult Competencies (PIAAC). Adults ages 16-65 in over 30 countries/economies have participated in the survey and results are due to be released by the Organization for Economic Co-operation and Development (OECD) in December of 2024. The focus of this paper is to highlight the innovations in the first and second cycles of PIAAC that extend the utility of these assessments beyond what was achieved in earlier surveys of adult skills and to discuss their impacts. To do so, it is helpful to have a general understanding of how large-scale assessments have evolved from their earliest iterations to the present.

National Large-Scale Assessments of Adult Skills: 1984 - 1993

The first three assessments that established the foundation for future adult surveys, including PIAAC, were all paper-based assessments administered in the United States. These included: the Young Adult Literacy Survey (YALS, 1984), the assessment of adult participants in the United States Department of Labor training and unemployment programs (DOL, 1990) and the National Adult Literacy Survey (NALS, 1993).

Each of these surveys reflected an important shift from a focus on school-based reading to a broader conceptualization of literacy that reflected the diversity of tasks that adults encounter at work, home and school, and in their communities. Importantly, these surveys collected data that supported the notion of literacy as a set of complex information-processing skills that extend well beyond decoding and basic comprehension. Research based on this work helped define those information-processing skills in ways that could contribute to a deeper understanding of what is being assessed and set the stage for a move from national to international assessments of adult skills (Kirsch, 2001, 2003).

Correspondence: ikirsch@ets.org

International Large-Scale Assessments of Adult Skills: 1994-2008

As policy interest in the skills of adults grew, two paper-based international assessments focusing on adults ages 16-65 were developed and implemented: the International Adult Literacy Survey (IALS) and the survey of Adult Literacy and Lifeskills (ALL). IALS, which assessed prose, document and quantitative literacy, was conducted in multiple rounds from 1994-1999 resulting in a total of 19 participating countries. The ALL survey assessed literacy, numeracy and analytic problem solving and was conducted between 2003 and 2008 in 11 countries. Both IALS and ALL were designed to profile and explore the distribution of literacy skills among populations within and across participating countries and each expanded what was measured, both in the background questionnaires and the cognitive domains.

The work associated with developing and implementing IALS and ALL formed a knowledge base that contributed to the development and implementation of PIAAC in several important ways. Importantly, these early assessments established that it was possible to collect internationally comparable data in an assessment that is administered in multiple languages across a diverse set of countries. Additionally, these assessments demonstrated that incorporating sophisticated background questionnaires into the surveys made it possible to investigate the connections between the skills being measured and important personal and social outcomes including labor force participation, literacy activities and social participation.

The Introduction of Technology-Based Assessments: PIAAC Cycle 1 (2012 – 2017)

PIAAC Cycle 1 was the first household survey to design and deliver an international large-scale assessment of adult skills on a technology platform. Administered in three rounds from 2012 through 2017, PIAAC was unprecedented in scope, assessing close to 200,000 adults across 39 countries. While linked by design to IALS and ALL, including sets of questions from these previous surveys, PIAAC refined and expanded the existing assessment domains and introduced two new domains as well. The main instruments in PIAAC Cycle 1 included a comprehensive background questionnaire and cognitive assessments focused on literacy, numeracy, reading components and problem solving in technology-rich environments (PS-TRE).

The successful conduct of PIAAC was important in that it paved the way for other surveys of student and adult skills to transition from paper-based to technology-based assessments. It also improved what could be assessed both in terms of extending legacy constructs such as literacy and numeracy to include digital content and also allowing for the introduction of new constructs such as PS-TRE.

PIAAC Cycle 2 (2018-2024)

The second cycle of PIAAC is the culmination of all that was learned in the process of developing, delivering and interpreting the results of previous large-scale assessments of adult skills. Like the first cycle, the main instruments in Cycle 2 include a comprehensive background questionnaire and cognitive assessments of literacy and numeracy skills. Adaptive problem solving, the new cognitive domain in Cycle 2, focuses on problem solving in the context of dynamically changing situations. Finally, to improve the measurement of adults with lower skills, measures of reading and numeracy component skills are included in the assessment, with the latter being introduced for the first time in a large-scale assessment of adults.

In addition to extending what was assessed, PIAAC Cycle 2 introduced other innovations that expanded the impact of the survey. For example, the introduction of a simple tablet-based design for the administration of all survey instruments meant that the need for paper administration was eliminated. As a result, more data could be collected about the digital literacy skills of all participating adults. Additionally, performance data, including timing and response patterns could be captured in the log files for each task. While the potential of log file data and analyses is yet to be fully realized, these data have already provided valuable insights into how adults at different skill levels approach literacy, numeracy and problem-solving tasks.

Impact of the PIAAC Surveys

International large-scale assessments of adults have proven over the years to be a reliable source of credible information about the distributions of skills and how they may be changing over time. In addition, PIAAC data provide participating countries with an opportunity to examine how performance on the set of skills assessed relates to a host of social, educational and labor market outcomes. As such, there has been an increased interest in using PIAAC data for a variety of purposes including secondary analyses, the creation of derivative products, estimating skills for subpopulations, and connecting the assessment materials to targeted interventions.

Secondary Analyses

The availability of large-scale assessment data in general, and PIAAC in particular, has led to a variety of secondary analyses along with the development and publication of research papers and policy reports that address a variety of issues. For example,

- The GESIS Leibniz Institute for the Social Sciences has been developing a bibliography that contains more than 900 references to papers and reports relating to PIAAC and its precursor assessments including available abstracts and links to the various publications. The current version covers the period from 2008, when the first cycle of PIAAC began, through 2023 (Maehler et al., 2023).
- Work within ETS has focused on the development of policy reports that use PIAAC data, along with other assessment data, to examine a variety of issues that center around the growing importance of skills and their distribution both within and across participating countries. Among other findings, these reports reflect the growing relationship between human and social capital and their connections to opportunity and overall well-being. These policy reports also include a series on labor market outcomes associated with skills, educational attainment and income as well as information on a representative sample of the incarcerated population and older adults between the ages of 66 and 75. Access to these reports can be found at: https://www.ets.org/research/policy/human-capital-education/reports.

Derivative Products

Work associated with PIAAC Cycle 1 and earlier international assessments has been extended through derivative products that make use of the content, development processes and procedures, and data from these assessments for new purposes. For example, national large-scale assessments in the U.S. in the 1990s formed the basis for several derivative products including: the Test of Applied Literacy Skills (TALS), a paper-and-pencil test that yielded individual-level results; a multi-media group-based instructional system for adults that focused on prose, document and quantitative literacy; and the PDQ Profile series, an adaptive computer-based assessment of literacy proficiency for individuals that was linked to the NALS and IALS scales.

Following a similar model, Education & Skills Online (ESO) was developed in conjunction with the OECD and several interested countries as an online adaptive assessment designed to provide individual-level results in some 16 language versions that are linked to PIAAC Cycle 1. Measures of literacy and numeracy are included in this derivative product, as well as optional assessments of reading components and problem solving in technology-rich environments. Because of its link to PIAAC, results from ESO can be benchmarked against national and international results for participating countries. An optional assessment of non-cognitive skills is also included in the product. The primary purpose of ESO is to provide information about the skills of individuals, either to inform training efforts or for research purposes. As such, the OECD identifies potential users and ways in which the ESO can be used.

Estimating Skills for Subpopulations

While PIAAC provides a direct measure of the skills and background characteristics of large national samples, researchers and policy makers are often interested in estimates of the proficiency distribution of selected subpopulations that go beyond the selected sample of adults who participated in the main study. One way to obtain this information is through indirect estimates based on information collected from the direct assessment along with other known characteristics of the population in a desired geographical area or areas. The methods used to obtain this information are called “small area estimates.” Small area estimation is a methodology that

can be used to leverage that relationship in order to estimate skills for subpopulations who have not taken the cognitive assessment but for whom other sources can provide some of the same background data as that collected in PIAAC. For example, small area estimation models were used in the US to develop the Skills Map, which provides reliable estimates of adult literacy and numeracy skills in all 50 states and the District of Columbia. See https://nces.ed.gov/surveys/piaac/skillsmap/

Connecting the Assessment to Targeted Interventions

In addition to ESO and small area estimation, there are other potential benefits for countries participating in PIAAC. One of these involves connecting the assessment materials to targeted interventions that can be used with various groups of adult learners to help them improve their skills. Another relies on the materials and trainings that are provided by the contractors and the OECD that can extend the capabilities of current and new participating countries. Each is discussed briefly here.

- Current assessments such as PIAAC represent recent advances in measurement science and provide a model for the design and development of cognitive instruments that focuses on the collection of validity evidence to support both their development and appropriate use. Developing a deeper understanding of what is being assessed and how it relates to various outcomes can contribute to the development of more effective interventions. That is, linking learning materials with these assessments requires the same rigor and understanding as needed to develop the assessments. The approach used to develop this type of assessment system is referred to as construct based, or evidence-centered design, and offers a critical roadmap for the development of coherent and quality interventions (Kirsch et al., 2021).
- In addition to a deeper understanding of what is being assessed and how to connect this to the development of learner materials and instructor development, PIAAC produces other materials such as a technical report and a set of standards and guidelines that can also help provide participating countries with information that can expand their capabilities and experience with developing and administering these types of assessments, as well as how to use and analyze the data. Data files are provided by the OECD, as well as by individual countries, as public use and restricted use files. As an example, after the first cycle of PIAAC, the U.S. government sponsored a multiyear program where interested researchers learned how to use the PIAAC data and submitted short proposals on topics they wanted to study. These were reviewed and feedback was provided as needed to support their research efforts. This led to the development of numerous reports that were reviewed and selected to be presented at a 2-day conference.

Summary

As societies continue to evolve, there has been a growing recognition about the importance of human capital to support social and economic development. And, as the ability to develop and deliver international surveys has evolved and met the information needs of a wide range of countries, there has been a growing interest from middle- and low-income countries in participating in these surveys as well as from international donors who are willing to support them. Following each cycle and round, the OECD meets and talks with a variety of countries and funding agencies to gauge their interest in participating in PIAAC and other international surveys. As such, each round generally includes both returning and new participants.

Not surprisingly, the increased participation in PIAAC and other international surveys has also led to a number of challenges and concerns, which are both technical and political in nature. For example, increased interest leads to the need for systematic efforts that will enhance capabilities to support expanding participation by a wider range of countries. There will also be a desire to broaden the range of constructs that can be assessed as well as the need to accommodate rising costs and the desired use of multiple digital devices. On the political side, there are concerns around the misuse of league tables and desire to frame policy goals in terms of country rankings. There are also challenges associated with how best to disseminate findings from secondary analyses and, in some places, an apparent decline in the trust of evidence and expertise. Collectively, these challenges present healthy tensions that can and should be discussed and debated among policy makers, researchers and other

key stakeholders. Although we are reasonably certain that international large-scale assessments will continue to face these and other challenges, it is also likely that new technical and methodological innovations will follow from new questions and requirements raised by the various stakeholders. Like the evolution we have seen from the first large-sale assessments of adult skills to the present, we expect that current and future innovations will lead to increased appreciation and impact for PIAAC and other international surveys.

References

Kirsch, I. S. (2003). Measuring literacy in IALS: A construct centered approach. *International Journal of Educational Research, 39*, 181-190.

Kirsch, I. S. (2001). The framework used in developing and interpreting the International Adult Literacy Survey (IALS). *European Journal of Psychology of Education*, *16*, 335-361.

Kirsch, I., Lennon, M.L., Yamamoto, K., & von Davier, M. (2017). Large-scale assessments of adult literacy. In R. Bennett & M. von Davier (Eds.), *Advancing human assessment. Methodology of educational measurement and assessment* (pp. 285–310). Springer, Cham. https://doi.org/10.1007/978-3-319-58689-2_9

Kirsch, I, Sands, A.M., Robbins, S.R., Goodman, M.J., & Tannenbaum, R.J. (2021). *Buttressing the middle: A case for reskilling and upskilling America's middle-skill workers in the 21st century*. Educational Testing Service.

Maehler, D. B., Konradt, I., Morozova, D., Dickson, J., Braun, R.-K., & Jakowatz, S. (2023). PIAAC Bibliography - 2008-2022. (GESIS Papers, 2023/04). GESIS - Leibniz-Institut für Sozialwissenschaften.

Organization for Economic Co-operation and Development. (2013). *Technical report of the Survey of Adult Skills (PIAAC)*. OECD Library. https://www.oecd.org/skills/piaac/_Technical%20Report_17OCT13.pdf

http://doi.org/10.35847/SBlack.6.2.41

Forum: PIAAC's Impact on ABE Practice and Policy

(*Part 2 of 3*)

Neoliberal Capitalism, the Misuse of OECD Statistics, and Everyday Literacy Practices: A Response to Kirsch, Lennon, and Halderman

Stephen Black, University of Technology Sydney

I begin my response to Kirsch, Lennon, and Halderman's Forum article by acknowledging the contribution of Kirsch and the Educational Testing Service (ETS) to large-scale assessments of adult skills and particularly Organization for Economic Co-operation and Development (OECD) international surveys. I have worked in the field of adult literacy in Australia for more than 4 decades and I first became aware of the work of the ETS in the late 1980s when its assessment framework and literacy constructs (Kirsch & Jungeblut, 1986) formed the basis of Australia's first national survey of adult literacy (Wickert, 1989). This survey was very significant in highlighting the role of adult literacy skills in Australian society, and in providing important research data to support the Australian Language and Literacy Policy (Australian Government, 1991). In the coming decades, three OECD international skills surveys were administered in Australia (Australian Bureau of Statistics [ABS], 1997, 2008, 2013). One of these, the Adult Literacy and Lifeskills survey (ALL, see ABS, 2008), had a profound national impact, providing the key statistical rationale for Australia's current National Foundation Skills Strategy for adults (Standing Council for Tertiary Education Skills and Employment [SCOTESE], 2012). Thus, for more than 30 years, these large-scale skills surveys have underpinned Australian national policy on adult literacy, now incorporated within the broader concept of foundation skills.

The impact of OECD large-scale skills surveys extends far beyond Australia. It would be fair to state that through these surveys (e.g. OECD, 1995, 2005, 2013) the OECD has since the 1990s dominated the field of adult literacy in its member states. This includes every aspect of literacy - how it is conceptualized, measured and assessed, researched, framed in policy documents, and taught in the curriculum. OECD definitions and constructions of literacy comprise taken-for-granted, "common sense" discourses on literacy (Rubenson, 2015, p. 179).

Human Capital and Neoliberal Governance

Having acknowledged the powerful national and international impact of OECD skills surveys, I will now outline some counterarguments aimed at disrupting the dominant perspectives represented by the surveys.

I begin with the somewhat uncontroversial question of why the OECD, a large international organization founded on global *economics*, should focus so extensively on educational development? The answer, of course, is human capital theory, the idea that by improving educational skills, and in particular, literacy skills, there will be an economic payoff in terms of better jobs, increased productivity, competitiveness, and profit. This human capital rationale for improving literacy skills is dominant in OECD's discourses on adult literacy and appears to be assumed in the Kirsch et al. article with references to literacy for economic growth and labor force success. Since the early 1990s and preceding its first major international adult literacy survey (OECD, 1995), the OECD has foregrounded the perceived economic benefits of improved adult literacy skills (OECD, 1992). These skills can be seen, not as goals in themselves, but as means to economic growth (Valiente, 2014).

Correspondence: Stephen.Black@uts.edu.au

Less commonly featuring in OECD and other dominant texts on adult literacy is political economy, how the system of capitalism works to maximize economic growth. Increasingly for at least the past four decades this has taken the form of neoliberal capitalism which operates "under the sign of the free market" (Connell, 2013, p. 100). The OECD is recognized as a major promoter of neoliberal capitalism (Rubenson, 2015). In its extensive work in education, this includes competition mechanisms, standardization, core curriculums, corporatization, and accountability regimes (Teodoro, 2020). The OECD's international adult literacy surveys have been described as "technologies of neoliberal governance" (Atkinson, 2012, p. 81) because they promote market values in which individuals, as units of human capital, are expected to take personal responsibility for their own well-being. Improving one's literacy skills, based on OECD measures of literacy, equates with assuming neoliberal versions of what it is to be a worthy citizen – individual consumers who are knowledgeable and autonomous (Atkinson, 2019; Walker, 2009).

These observations may appear unremarkable for those who are comfortable with contemporary neoliberal values and who see the promotion of adult literacy skills to be primarily about individuals contributing to the labor market and the economy more generally as producers and consumers of capital. But these dominant perspectives are unlikely to sit well for critical educators who resist neoliberal ideology and its practices and who argue that literacy for the empowerment of individuals and communities goes beyond economics (e.g., Tett & Hamilton, 2019).

The Misuse of OECD Survey Data: Level 3 and the Deficit Crisis Discourse

Literacy skills in Australia's first national adult literacy survey were presented across different scales (originally prose, document and quantitative), each with a range of proficiency levels (1-5). The survey report stated that literacy standards/levels in society were relative "to social and cultural norms, to time and place, to purpose and intent," and thus there was "no single measure" or level of literacy required for participating in society (Wickert, 1989, p. 4). In the second Australian national adult literacy survey (ABS, 1997) based on the OECD's (1995) international adult literacy survey, different levels of literacy proficiency were viewed as a "continuum" of skills and not in terms of "a basic threshold" determining those who are literate or illiterate (ABS, 1997, p. x). The problem, however, is that Australia's third national adult literacy survey, based on the OECD's ALL survey (OECD/Statistics Canada 2005), did just that, it established a threshold Level 3 as the "minimum required" (ABS, 2008, p. 5) for participating in a modern economy (ABS, 2008). While this Level 3 criterion level has been contested (Black & Yasukawa, 2014), the impact of applying it to adult populations has been far-reaching. The news media, for example, reported that "half of Australians are illiterate" (Yasukawa & Black, 2016, p. 27). The ALL findings also provided the rationale for Australia's National Foundation Skills Strategy for adults (SCOTESE, 2012) with claims that the 44% (6 million people) falling below Level 3 had serious implications for Australia's future productivity. These Level 3 statistics have been cited by major government, industry, and skills organizations, and they have been integral in fueling a deficit crisis discourse on adult literacy skills in Australia.

The literacy crisis discourse promoted by the ALL survey has continued in Australia, despite the implementation of the later OECD Programme for the International Assessment of Adult Competencies (PIAAC) survey (ABS, 2013) which makes no reference to a criterion level of skills for participating in modern economies. For example, a prominent national TV series, *Lost for Words* (SBS, 2021), states many times that more than 43% of Australian adults (7 million people) do not have the literacy skills "needed for everyday life." The TV program claims to base this on PIAAC data, but it has clearly applied the Level 3 criterion from the ALL survey.

The OECD states that proficiency levels have no normative element and should not be understood as "standards" or "benchmarks" (OECD, 2013). And yet, it seems references to the Level 3 criterion cannot easily be erased. Adding some confusion, the latest Australian government report on adult literacy (House of Representatives, 2022, p. 1) claims that 3 million adults lack the literacy skills needed for "work and life." This government report applied Level 2 of the PIAAC results as the criterion level, which may lead some to ask just how many adults in Australia are considered not to meet the literacy demands of modern

life: 7 million or 3 million? I have argued that these uses of criterion literacy levels are unjustified and a misuse of OECD survey data (Black, 2024).

The Power to Name and Define Literacy Versus Everyday Literacy Practices

Conceptualizing literacy as a series of proficiency levels effectively identifies those assessed within the lower levels as deficient, not only in literacy, but in their ability to participate in modern society. As Street (2011) states, literacy determines what counts as inequality in society. He draws attention to large global organizations, particularly UNESCO in relation to the Global South, that have the power to name and define literacy and thus determine inequalities in societies. In the case of the Global North, this power is exerted by the OECD.

UNESCO and the OECD have similar understandings of literacy as a "single uniform thing" (Street, 2011, p. 580), a set of skills usually acquired and developed in early schooling and seen to lead to a range of benefits in society, including better jobs and socio-economic well-being more generally. This "autonomous" model of literacy (Street, 1984) represents dominant understandings of literacy globally, and it forms the basis for deficit crisis discourses. But there are alternative perspectives on literacy. Street (2011, p.580) argues that ethnographic perspectives on literacy, as represented by social practice approaches, provide an understanding of literacy as practices that are "multiple and culturally varied" that can help to avoid the "one dimensional and culturally narrow" autonomous model of literacy.

Increasingly over the past 40 years researchers have undertaken ethnographic studies of literacy in adult contexts. Early renowned studies included those by Heath (1983) and Street (1984), forerunners of research referred to as the new literacy studies. The focus of these ethnographic studies is the uses of literacy (or literacies) in local contexts, on how individuals and communities manage literacy practices in their everyday lives and the power dynamics that they entail. They stand in contrast to the "single story" of literacy represented by the OECD and its international surveys (Addey, 2018; Hamilton et al., 2015); a dominant, privileged literacy that fails to account for how local literacies are used in people's everyday lives (Hamilton, 2001).

In my own research studies of literacy with colleagues over a 40-year career I have adopted an ethnographic approach (mainly semi-structured interviews) to examine how different groups of low socio-economic status adults, I refer to them as working-class, manage literacy practices in their everyday lives (Black, 2024). These groups have included prisoners, unemployed people, workers in local councils and manufacturing companies, adult literacy and vocational education students, and adults experiencing Type 2 diabetes. With each of these adult groups, there was a significant contradiction between the dominant "single story" of literacy that saw them assessed to be deficient in literacy skills, and thus struggling to participate in modern society, and the more complex, "situated" story of how they actually used and managed literacy practices in their everyday lives. Often, indeed predominantly for many in these groups, everyday literacy practices were managed with relative ease, and with little individual sense of being deficient. In large part, this was due to the important role played by others in social networks, long recognized as a source of support (Fingeret, 1983), but rarely acknowledged in "single story" literacy studies. In workplaces, for example, workers collaborated in teams, and lacking literacy in a normative sense (through standardized testing) was a non-issue if appropriate organizational structures, including teamwork, were in place. In the case of another group, adults experiencing Type 2 diabetes, many were found to successfully manage everyday health literacy practices through support provided by family, friends, and informal networks. Literacy, in effect, could be seen, not as an individual attribute that people either possessed or lacked, but "distributed" as shared knowledge and expertise within the social networks of the patients (Papen, 2009, p. 27).

I concluded from my studies that the dominant and powerful autonomous model of literacy promoted by the OECD serves the purpose of identifying those who are worthy in society, based on contemporary neoliberal values, and those who are not. Following Stuckey (1991), I would argue that this autonomous model of literacy oppresses working-class people; a symbolic violence imposed in the interests of dominant groups representing neoliberal capital. The issue for me is social justice. Poorer, working-class individuals and groups are deemed by

governments and dominant groups to be unworthy and targeted with special policies and programs because they do not meet the standards of a literacy that is proxy for being a good neoliberal citizen. Lack of this literacy means they are often blamed for socio-economic conditions (low productivity, unemployment, etc.) that are not of their making. And yet, at the local level, a great many of these individuals and groups successfully and unproblematically manage literacy practices in their everyday lives, albeit at times with support from others in their social networks.

References

Addey, C. (2018). Assembling literacy as global: The danger of a single story. In M. Milano, S. Webb, J. Holford, R. Waller, & P. Jarvis (Eds.), *The Palgrave International Handbook of Adult and Lifelong Education and Learning* (315–335). Palgrave.

Atkinson, T. (2012). Beyond disempowering counts: Mapping a fruitful future for adult literacies. In L. Tett, M. Hamilton, & J. Crowther (Eds.), *More powerful literacies* (75–87). NIACE.

Atkinson, T. (2019). Calculating normative literacy, constituting human capital. In D. Brock (Ed.), *Governing the social in neoliberal times* (138–158). UBC Press.

Australian Bureau of Statistics. (1997). *Aspects of literacy: Assessed skill levels*.

Australian Bureau of Statistics. (2008). *Adult Literacy and Life Skills Survey, Summary results, Australia, 2006*.

Australian Bureau of Statistics. (2013). *Programme for the International Assessment of Adult Competencies, Australia, 2011–2012*.

Australian Government .(1991) *Australia's language: The Australian Language and Literacy Policy.* DEET.

Black, S. (2024). *Literacy in the lives of working-class adults in Australia: Dominant versus local voices*. Bloomsbury.

Black, S., & Yasukawa, K. (2014). Level 3: Another single measure of adult literacy and numeracy. *Australian Educational Researcher*, *41*(2), 125–38.

Connell, R. 2013. The neoliberal cascade and education: An essay on the market agenda and its consequences. *Critical Studies in Education,* 54(2), 99–112.

Fingeret, A. (1983). Social networks: A new perspective on independence and illiterate adults. *Adult Education Quarterly*, *33*(3), 133–46.

Hamilton, M. (2001). Privileged literacies: Policy, institutional process and the life of the IALS. *Language and Education*, *15*(2–3), 178–96.

Hamilton, M., Maddox, B. & Addey, C. (Eds,) (2015). *Literacy as numbers: Researching the politics and practice of international literacy assessment.* Cambridge University Press.

Heath, S.B. (1983). *Ways with words: Language, life and work in communities and classrooms*. Cambridge University Press.

House of Representatives (2022). *Don't take it as read: Inquiry into adult literacy and its importance.* Parliament of the Commonwealth of Australia.

Kirsch, I. S., & Jungeblut, A. (1986). *Literacy: Profiles of America's young adults* (NAEP Report No. 16-PL-01). ETS.

Organization for Economic Co-operation and Development. (1992). *Adult illiteracy and economic performance.*

Organization for Economic Co-operation and Development. (1995). *Literacy, economy and society: Results of the first International Adult Literacy Survey.* OECD/Statistics Canada.

Organization for Economic Co-operation and Development. (2005). *Learning a living: First results from the Adult Literacy and Life Skills Survey*OECD/Statistics Canada.

Organization for Economic Co-operation and Development. (2013). *OECD skills outlook 2013: First results from the Survey of Adult Skills.*

Papen, U. (2009). Literacy, learning and health: A social practices view of health. *Literacy and Numeracy Studies*, *16*(17), 19–34.

Rubenson, K. (2015). Framing the adult learning and education policy discourse: The role of the Organization for Economic Co-operation and Development. In M. Milana & T. Nesbit (Eds.), *Global perspectives on adult education and learning policy* (179–193). Palgrave.

SBS. (2021). *Lost for words: Documentary*. https://www.sbs.com.au/guide/article/2021/08/18/heartwarming-lost-words-documentary-looks-learning-read-adult

Standing Council for Tertiary Education Skills and Employment. (2012). *National foundation skills strategy for adults*. Australian Government.

Street, B. (1984). *Literacy in theory and practice.* Cambridge University Press.

Street, B. (2011). Literacy inequalities in theory and practice: The power to name and define. *International Journal of Educational Development*, *31*(6), 580–6.

Stuckey, J.E. (1991). *The violence of literacy*. Boynton/Cook Heinemann.

Teodoro, A. (2020). *Contesting the global development of sustainable and inclusive education: Education reform and the challenges of neoliberal globalization.* Routledge.

Tett, L., & Hamilton, M. (Eds.). (2019). *Resisting neoliberalism in education: Local, national and transnational Perspectives.* Policy Press.

Valiente, O. (2014). The OECD skills strategy and the education agenda for development. *International Journal of Educational Development*, 39, 40–8.

Walker, J. (2009). The inclusion and construction of the worthy citizen through lifelong learning: A focus on the OECD. *Journal of Education Policy*, 24(3), 335–51.

Wickert, R. (1989). *No single measure: A survey of Australian adult literacy.* University of Technology Sydney.

Yasukawa, K., & Black, S. (2016). Policy making at a distance: A critical perspective on Australia's National Foundation Skills Strategy for adults. In K. Yasukawa & S. Black (Eds.), *Beyond economic interests: Critical perspectives on adult literacy and numeracy in a globalised world*, 19–39. Sense.

http://doi.org/10.35847/DKennedy.6.2.46

Forum: PIAAC's Impact on ABE Practice and Policy

(Part 3 of 3)

The Role of PIAAC in Adult Education in the United States

Deborah Kennedy, National Coalition for Literacy

The release in late 2024 of results from the first round of data collection in Cycle 2 of the Programme for the International Assessment of Adult Competencies (PIAAC) (National Center for Education Statistics [NCES], n.d.-a) offers an opportunity to consider the impact of the Cycle 1 assessments. This article outlines PIAAC's approach to understanding adult foundational literacy, numeracy, and problem-solving skills. It then explores ways in which this approach intersects with, and potentially affects, instructional practice and national-level policy.

The PIAAC Approach

The conceptual framework underlying the PIAAC Survey of Adult Skills draws on two interrelated lenses: competency-based education and human capital theory. Each of these became influential in adult education in the latter part of the 20th century and continues to inform instructional practice and policymaking today.

Competences and Competency-Based Education

Competency-based education (CBE; also called competency-based learning [CBL]) focuses on the knowledge, skills, and abilities that adults need to be able to apply in order to carry out the tasks of everyday living. In CBE-oriented programs, curriculum, instruction, and assessment are based on stated performance objectives. The CBE focus on learner understanding and performance outcomes is pivotal in some approaches to training that have become influential over the past 30 years. Examples include *Understanding by Design* (Wiggins & McTighe, 2005) and *Dialogue Education* (Vella et al., 1998), both of which center on learners' purposes for learning and stress learner engagement in understanding how they will achieve their desired learning outcomes.

In adult education, CBE performance objectives are identified primarily with workforce skills and workforce preparation. For example, in the context of adult ESOL, Parrish (2019) observes that

> CBE, in its early days in the field of adult ESL, emphasized several areas of knowledge needed for adults to function in society… Outcomes…were identified in terms of performance objectives (learners will be able to…), which became the basis for curricula. Most often these outcomes were related to basic "life skills" competencies ….With a move toward curricula based on college and career readiness standards, CBE today is most common in career-focused programs. (p. 35-36)

Some adult CBE does still seek to cast a wider net, however. For example, the Transitions Integration Framework (ABE Teaching & Learning Advancement System, 2023) uses "students will be able to" statements to define each of the six transitions skills (effective communication, learning strategies, critical thinking, self-management, developing a future pathway, and navigating systems) that it presents as "the hard-to-define, yet make-or-break, skills needed to succeed in the workplace, college, and community" (n.p.).

Human Capital and Human Capital Theory

Human capital is a term that emerged in the context of economics as a way of characterizing an individual's attributes, including education, skills, experience, and personal qualities, in terms of economic value—that is, how the skills contribute to the individual's productivity within the labor force (Goldin, 2016; Organization for Economic Co-operation and Development [OECD], 1998). It uses an investment-and-return model to connect initial education

Correspondence: deborah.kennedy@key-words.us

and training with later productivity. This theory has become a foundational principle underlying government and business perceptions of the purpose of education and training (Deming, 2022; Ross-Gordon et al., 2017).

Competences and Human Capital in the PIAAC Framework

PIAAC Cycle 1 measured adults' levels of proficiency in three areas: literacy, numeracy, and problem solving in technology-rich environments (PS-TRE). Each is characterized as a key information-processing competency that is essential to adults' purpose-driven ways of approaching tasks and functions (NCES, n.d.-b).

- Literacy is understanding, evaluating, using and engaging with written texts to participate in society, to achieve one's goals, and to develop one's knowledge and potential.
- Numeracy is the ability to access, use, interpret and communicate mathematical information and ideas, in order to engage in and manage the mathematical demands of a range of situations in adult life.
- PS-TRE is using digital technology, communication tools and networks to acquire and evaluate information, communicate with others and perform practical tasks. However, in PIAAC Cycle 2, PS-TRE is being replaced with Adaptive Problem Solving. For more information, see Questions 15 and 16 at https://nces.ed.gov/surveys/piaac/faq.asp

The focus in each definition is on skills in use. PIAAC's assessment of the application of knowledge and know-how in literacy, numeracy, and PS-TRE is then characterized as a proxy measure of human capital (OECD, 1998 as cited in OECD, 2019, p. 104).

PIAAC's Intersection with Instruction in Adult Education

PIAAC assessment items ask assessment takers to apply their literacy, numeracy, and problem-solving skills to complete tasks that adults could encounter in their daily lives. This focus on the identification and assessment of skills in use aligns PIAAC with current approaches to the design and provision of literacy, numeracy, and English language instruction for adults, particularly task-based learning and project-based learning, both of which center on their relevance to learners and the incorporation of literacy and numeracy skills as means to completing tasks or projects rather than as ends in themselves.

Recognizing this alignment, soon after PIAAC Cycle 1 was completed, the NCES commissioned three papers designed to demonstrate how adult educators could use aspects of the PIAAC frameworks in their programs (Curry 2017, 2019; Trawick 2017, 2019; Vanek, 2017). Each outlines the relevant PIAAC skill area framework and provides examples of ways an instructor could use it to structure curriculum and instruction. The authors make clear that such application of the frameworks involves the incorporation of critical thinking and problem-solving skills to tasks whose complexity increases gradually over time.

Curry, Trawick, and Vanek all recognize the relationship between adult education in the United States and the PIAAC frameworks. As Curry (2017) describes it,

> These skills and competencies align with the... *College and Career-Readiness Standards for Adult Education* (CCRS) [that] have been adopted in an effort to prepare adult learners in the U. S. for the skill demands of the 21st century. ... In 2014, Congress passed the Workforce Innovation and Opportunity Act (WIOA) as the primary legislation directing adult education activity nationally. Together, WIOA and the CCRS provide guidance for the adult basic education field to ensure adult learners develop skills to help them succeed in college and careers. *The PIAAC framework provides a set of useful tools that practitioners can use to move the WIOA and CCRS agenda forward.* (p. 2, emphasis added)

However, despite the clarity of this statement, these commissioned papers and the PIAAC frameworks that they reference are rarely, if ever, cited as guides for program design, curriculum development, or approaches to instruction. None of the other commissioned papers available on the PIAAC Gateway (https://www.piaacgateway.com/researchpapers/) address this potential role of the PIAAC frameworks. In addition, with the exception of a 2017 PIAAC Literacy Circle that used Trawick 2017 as a basis for reflection and discussion (https://community.lincs.ed.gov/group/126/discussion), references to PIAAC on the Education Department's Literacy Information and Communication System (LINCS) resource site lead to research studies on PIAAC findings rather than articles on applications of the PIAAC frameworks in instruction. Even the massive pandemic-induced shift to online and hybrid models of learning, with its resultant need for instructors to guide themselves and

their learners in developing digital skills, has not generated references to the PIAAC PS-TRE framework in the many resource tools that have been developed through the Ed-Tech Center @ World Education (https://edtech.worlded.org/) and other providers.

The underlying cause of this disconnect is that the PIAAC frameworks and outcomes are not connected in any structural way with the National Reporting System (NRS), the federal adult education accountability mechanism. Where PIAAC provides a snapshot of adult skills across an entire country at one point in time, the NRS looks at change over time for participants in federally funded adult education, with specific reference to measurable skill gains (MSGs). PIAAC looks at what people *can do*; MSGs look at what they *have done*. In this sense, although the PIAAC frameworks reflect the emphasis on skills in use (competences) that are aligned with both the CCRS and WIOA goals, and although "the data from the [PIAAC] Background Questionnaire informed the new WIOA at the policy level" (Curry 2017, p. 4), the potential usefulness of PIAAC for practical adult education has been sidelined.

PIAAC's Intersection with Federal Adult Education Policy

PIAAC is more directly associated with policy than it is with curriculum and instruction. Kirsch et al. (2017) connect policy and PIAAC in their description of the development of large-scale assessments over time. They explicitly link it with human capital.

> Educational Testing Service's (ETS's) ... work has been designed to meet policy needs, both in the United States and internationally, based on the growing awareness of literacy as human capital. ... The human capital perspective led policy makers in the United States and internationally to recognize the need for large-scale assessments of adult foundational skills, to enable governments to identify the relationships between adult skills and economic advancement. (p. 285 and 287)

In the United States, the human capital perspective is codified in WIOA, where adult education (Title II, the Adult Education and Family Literacy Act [AEFLA]) is set in the larger context of federal labor law (Title I, Workforce Development Activities, and Title III, the Wagner-Peyser Act) and outcomes are quantified in terms of employment rates, median earnings, credential attainment, achievement of trade-related benchmarks, and completion of on-the-job training or an apprenticeship program (https://www.dol.gov/agencies/eta/performance/performance-indicators). PIAAC's influence is recognized primarily in relation to these types of outcomes by ETS researchers:

> The impact of [PIAAC and its predecessor] assessments has grown as policy makers and other stakeholders have increasingly come to understand the critical role that foundational skills play in allowing individuals to maintain and enhance their ability to meet changing work conditions and societal demands. For example, findings from these surveys have provided a wealth of information about how the distribution of skills is related to social and economic outcomes. (Kirsch et al., 2017, p. 285)

More recently, Murray and Binkley (2022) have used data from PIAAC and other large-scale assessments to "describe some of the policy options that are available to policy makers and what impact each might have on economic performance at the individual, firm and macro-levels" (p. 8). They maintain that "analyses of these datasets ... confirm that the demand for key cognitive skills is increasing, including literacy, that literacy skill supply shortages and misfit are impairing economic performance and amplifying wage inequality" (Murray & Binkley, 2022, p. 22).

Numerous researchers and practitioners in the field of adult education have critiqued federal policy's adoption of the human capital perspective, observing that it prioritizes the economic outcomes of adult education to the detriment of other essential learner benefits. As Stephen Reder (2020) explains,

> The ... focus of publicly funded programs in the United States is on employment, high school equivalency, and postsecondary training and education. Although these outcomes address the goals of many adults, many adults with basic skills needs have other goals that cannot readily be served within this framework. To begin with, millions of adults are not in the workforce due to age, disabilities, poor health, family care responsibilities, etc. Other adults wish to improve their basic skills for other reasons entirely, such as assisting their children with schoolwork, understanding and addressing their own health issues or those of family members, or participating in civic affairs such as voting or understanding political issues. (p. 51)

Similarly, Ross-Gordon et al. (2017) contrast policy based on the human capital perspective with policy based on the idea of education as a human right:

> There has always been a tension between a workforce or job skill development approach for adult literacy learning and the idea that all individuals, no matter their age, have a right to a basic or fundamental education... For the moment, the debate about whether adult education is a right or an aspect of job training has been answered. (p. 271)

However, although PIAAC-related materials produced by OECD, NCES, and ETS all cite the importance of measuring and increasing adults' competences because the workplace requires progressively higher skill levels, PIAAC itself allows for a much wider and deeper interpretation of potential policy directions by providing assessment data on adults' competences in the full range of life contexts.

> Through the work of expert panels convened to establish the framework for assessments, the conceptualization of literacy was expanded to reflect the diversity of tasks that adults encounter at work, home, and school and in their communities. ... Items have been based on everyday materials taken from various adult situations and contexts including the workplace, community, and home. ... In sum, by using real-life materials and open-ended simulation tasks, ETS's large-scale literacy assessments have sought to reflect and measure the range of literacy demands faced by adults in order to provide the most useful information to policy makers, researchers, and the public. (Kirsch et al., 2017, p. 287, 302, 303)

The PIAAC frameworks and data thus present opportunities for policymakers to expand the federal investment in adult education to a broader vision of adult competences in overall individual and community quality of life, defined in part by economic self-sufficiency but also by health, ability to use social resources, participation in community relationships, and opportunities to experience and enjoy culture in all its forms. Using PIAAC in this way could promote federal policy that considers the skills that support health, safety, financial security beyond work (for example, ability to detect and avoid scams), and environmental awareness, as well as economic self-sufficiency, in the establishment of strong communities and a secure nation.

As the results of the first round of data collection in PIAAC Cycle 2 are released in late 2024, we can hope that both policymakers and adult education practitioners will recognize their goal "to provide relevant information to the variety of stakeholders interested in the skills and knowledge adults have and the impact of those skills on both individuals and society in general" (Kirsch et al., 2017, p. 305) and take advantage of all that PIAAC has to offer.

References

ABE Teaching & Learning Advancement System (ATLAS). (2023). *Transitions Integration Framework*. Academic, Career, & Employability Skills. https://atlasabe.org/resource/transitions-integration-framework/

Curry, D. (2017). *Using the PIAAC numeracy framework to guide instruction: An introduction for adult educators.* https://www.piaacgateway.com/researchpapers#2015

Curry, D. (2019). The PIAAC numeracy framework: A guide to instruction. *Adult Literacy Education*, *1*(2), 33-51. https://doi.org/10.35847/DCurry.1.2.33

Deming, D. J. (2022). Four facts about human capital. *Journal of Economic Perspectives*, 36(3), 75-102. https://doi.org/10.1257/jep.36.3.75

Goldin, C. (2016). Human capital. In C. Diebolt & M. Haupert (Eds.), *Handbook of cliometrics* (pp. 56-86). Springer Verlag. https://scholar.harvard.edu/goldin/publications/human-capital

Kirsch, I., Lennon, M.L., Yamamoto, K., & von Davier, M. (2017). Large-scale assessments of adult literacy. In R. Bennett & M. von Davier (Eds.), *Advancing human assessment. Methodology of Educational Measurement and Assessment* (pp. 285–310). Springer, Cham. https://doi.org/10.1007/978-3-319-58689-2_9

Murray, T. S., & Binkley, M. (2022). *The importance of IALS, ALL and PIAAC results to U.S. policy.* https://www.piaacgateway.com/researchpapers#2015

National Center for Education Statistics. (n.d.-a). *Data collection schedule and plans*. https://nces.ed.gov/surveys/piaac/schedule.asp

National Center for Education Statistics. (n.d.-b). *What PIAAC measures*. https://nces.ed.gov/surveys/piaac/measure.asp

Organisation for Economic Cooperation and Development. (n.d.) *Productivity, human capital, and educational policies*. https://www.oecd.org/economy/human-capital/

Organisation for Economic Cooperation and Development. (2019). *The survey of adult skills: Reader's companion* (3rd ed.). OECD Skills Studies. https://doi.org/10.1787/f70238c7-en

Parrish, B. (2019). *Teaching adult English language learners*. Cambridge. www.cambridge.org/9781108702836

Pimentel, S. (2013). *College and career readiness standards for adult education.* U. S. Department of Education. https://lincs.ed.gov/professional-development/resource-collections/profile-521

Reder, S. (2020). A lifelong and life-wide framework for adult literacy education. *Adult Literacy Education*, *2*(1), 48-53. http://doi.org/10.35847/SReder.2.1.48

Ross-Gordon, J. M., Rose, A. D., & Kasworm, C. E. (2017). *Foundations of adult and continuing education.* Jossey-Bass.

Trawick, A. R. (2017). *Using the PIAAC literacy framework to guide instruction: An introduction for adult educators.* https://www.piaacgateway.com/researchpapers#2015

Trawick, A. R. (2019). The PIAAC literacy framework and adult reading instruction. *Adult Literacy Education, 1*(1), 37-52. http://doi.org/10.35847/ATrawick.1.1.37

Vanek, J. (2017). *Using the PIAAC framework for problem solving in technology-rich environments to guide instruction: An introduction for adult educators.* https://www.piaacgateway.com/researchpapers#2015

Vella, J., Berardinelli, P., & Burrow, J. (1998). *How do they know they know*. Jossey-Bass.

Wiggins, G., & McTighe, J. (2005). *Understanding by design* (2nd ed.). Pearson Education. https://www.ascd.org/books/understanding-by-design-expanded-2nd-edition?variant=103055

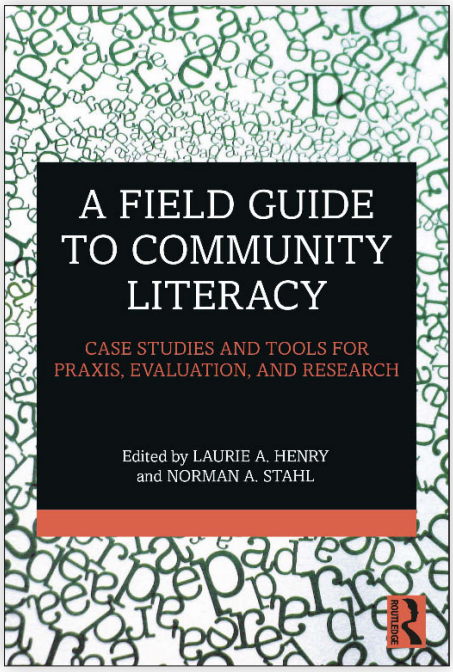
http://doi.org/10.35847/CMahady.LSaal.6.2.51

Book Review

Review of *A Field Guide to Community Literacy: Case Studies and Tools for Praxis, Evaluation, and Research (1st ed.)*

Christine Mahady and Leah Katherine Saal
Loyola University Maryland

In a 1988 mayoral inaugural address, Kurt Schmoke declared Baltimore "The City That Reads." The city's famous benches were painted with Schmoke's moniker along with "READING ZONE" on the top planks (Valentine, 1990). While the slogan was met with internal and external criticism due to the city's perceived "low literacy rate," the moniker was and is accurate. Baltimore is the home of the first free, integrated public library and has a vibrant historic and contemporary tradition of oral and print literacy (Cole, 2010). From one of the oldest independently owned Black publishers in the U.S. (Korrell, 2019) to an NFL team named for an 1845 poem by Edgar Allan Poe (Baltimore Ravens, 2020), Baltimore is an excellent model of how literacy and communities are intrinsically intertwined.



Henry and Stahl's (2022) new edited text, *A Field Guide to Community Literacy: Case Studies and Tools for Praxis, Evaluation, and Research,* invites readers to consider how "literacy can be a conduit to create, support, and strengthen communities" as Perry posits in the forward (p. xiii). Particularly, this guidebook offers an empirically and theoretically grounded and pragmatic approach to learning from community-based literacy initiatives, programs, and practices. Throughout four component sections, the text offers insights into how literacy practitioners and scholars can begin to or expand thinking of literacy and community as rarifying – showcasing how every community is "a city that reads."

In Part 1, *Building Community Through Literacy,* the notion of community as central to the discourse, content, and context of adult and family literacy programs is addressed. In chapter 1, Erik Jacobson anchors relationships as a core component of successful community learning within literacy and other disciplines. He highlights how literacy programs in community spaces showcase the complex nature of creating successful connections through collaboration. In Chapter 2, Bennett expands these conversations around community and connection by discussing how myopic and deficitized views of communities' literacies and resulting policies led to several community literacy programs reclaiming indigenous languages, upholding cultural practices, and

Henry, L.A., & Stahl, N.A. (Eds.). (2022). *A Field Guide to Community Literacy: Case Studies and Tools for Praxis, Evaluation, and Research (1st ed.).* Routledge. 350 pages. $180 hardcover; $39.95 paperback; $35.95 eBook. ISBN: 9781032131870/ 9781032118116/ 9781003228042. https://doi.org/10.4324/9781003228042

Correspondence: lksaal@loyola.edu

rebuilding paradigms lost to assimilation tactics.

In Chapter 3, Jacobs, Cramer, Mullikin, and Westberg from the National Center for Families Learning outline their tri-tiered engagement model for families. The model is posited by the authors as one which creates community and family social mobility through success in education and occupation. Finally, in Chapter 4, Cooper-Novack and Nordquist critically analyze and research the relationship between the academy and community literacy programs. The authors argue that the academy continues to embody hegemonic practices, reinforcing patriarchy and cultural uniformity towards students, scholars, and faculty.

In Part II, *Setting the Stage for Program Design,* the editors curate a compendium of perspectives and resources for assessing program needs, designing, and maintaining community literacy programs across locales. In Chapters 5 and 6, Bennett and Wilson explore the perspectives and procedures for conducting a community literacy audit to ascertain a community's or program's assets and existing resources as well as needs and opportunities for collaboration. In Chapter 7, Chambers and Teasdell provide insight on how designing and providing sustainable culturally sustaining practices can expand community literacy services for underserved youth in urban environments.

Chapter 8 follows by describing how a collective impact approach can build community capacity for literacy development through a structured action plan. Of particular use to the reader might be the current exemplar of how this type of planning met one rural community's needs during the COVID-19 pandemic. Finally, in Chapter 9 with applications inside and *outside* of the community literacy context, Browning demystifies the grant seeking and application process to expand programs and services with an eye toward alignment with potential funders' priorities.

In Part III, Henry and Stahl (2022) present, by way of exemplar, seven diverse community studies profiling evidence-based practices and action research in community literacy programs. From Waldren's Chapter 10 describing a study on the efficacy of Flint's community-wide efforts for literacy which analyzed a framework for literacy coaching to Marsh's study in Chapter 11 on the Linton Foundation's tutoring center for students with learning disabilities, these case studies employ a myriad of instructional methods and techniques ripe for exploration. Other cases trouble existing notions of community literacy including its domains (like Hughes' Chapter 13 on health literacy), locales (like Semingson and Bezboruah's Chapter 14 about Little Free Libraries or Flores, Meyer, Tignor, and Massey's Chapter 17 on university-based community literacy centers), or foci (like Yee's Chapter 12 and Montero, Denomme-Welch, and Henry's Chapter 15 describing studies focused on issues of social justice and decolonization). Each offers readers opportunities to expand their thinking around what community literacy is or could be.

In Part IV, *Evaluating and Researching Community Literacy Programs,* current customs for program evaluation and their corresponding methods of practice are outlined. In Genareo's Chapter 18, they provide an overview of the contemporary models for program evaluation most often utilized by programs and corresponding funding bodies. Finally, in Chapters 19 (Johnson) and 20 (Holt and Zaleski), community-based qualitative approaches and quantitative methods are examined for studying and evaluating community literacies and associated initiatives.

In summary, Henry and Stahl's (2022) new text, *A Field Guide to Community Literacy: Case Studies and Tools for Praxis, Evaluation, and Research,* is a valuable resource for researchers, program administrators, and educators of community literacies. One of the most unique features of the field guide, the editors' inclusion of a 12-part appendices section, is also one of its most helpful contributions. This section includes exemplars (or prototypes as the editors call them) of a treasure trove of resources for community-based literacy researchers and practitioners. Examples include how to conduct a program audit, checklists for planning and implementing community-based literacy programs, job descriptions, and grant readiness assessments. All have use for community-based literacy researchers and practitioners who are often strapped for time and capital. In short, this field guide is a handy text that makes transparent and obtainable contemporary considerations and innovations in community literacy for novice and seasoned scholar-educators.

References

Baltimore Ravens (2020). *History: Naming the team.* https://www.baltimoreravens.com/team/history/naming-the-team

Cole, J.L. (2010). *The city that reads: Novels in Baltimore.* https://loyolanotredamelib.org/CityThatReads/home.html

Korrell, J. (2019, February 21). Five independent presses celebrating black culture. https://independentbookreview.com/2019/02/21/5-independent-presses-celebrating-black-culture/

Valentine, P. (1990, August 27). Baltimore targets its high rate of illiteracy. *The Washington Post.* https://www.washingtonpost.com/archive/local/1990/08/27/baltimore-targets-its-high-rate-of-illiteracy/e2a171b8-4f4a-4c07-b354-eec90e959c63/

http://doi.org/10.35847/SGaer.KReyes.6.2.54

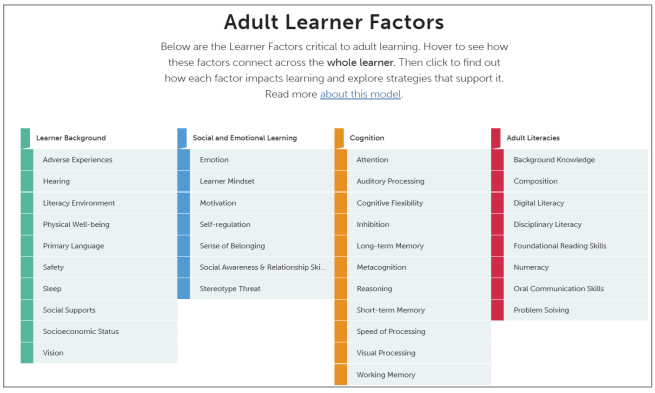
Resource Review

Digital Promise's *Adult Learner Variability Navigator*

Susan Gaer, OTAN Subject-Matter Expert,
Kristi Reyes, MiraCosta College

https://lvp.digitalpromiseglobal.org/content-area/adult-learner/factors

The Adult Learner Variability Navigator, developed as part of the Learner Variability Project by Digital Promise, is a tool designed to support educators in meeting the diverse needs of adult learners. This tool compiles resources and research that back up instructional and learning strategies to meet adult learners "where they are across varied contexts and needs" (Digital Promise, n.d.). Students in adult education programs represent a wide range of diversity that presents strengths and challenges. These challenges beset both the learners themselves and those who strive to prepare them for their next steps, whether workforce, academic, or personal goals. Digital Promise starts from the premise that there is no such thing as an "average" student; all students bring to their learning experiences varied factors. The objective of the site is to facilitate educators' efforts to address adult learners' abilities in the areas of literacy, numeracy, problem solving, communication, and digital skills in a connected way. The navigator centers on analyzing customized factors and strategies -- and, based on research -- assists the instructor in the types of activities to meet these needs. The navigator uses the term "factors," which are not to be confused with learning styles, and which can change with different contexts. For instructional and learning approaches and practices, the term "strategies" is used. The site recommends users follow a three-step process: 1. Choose a model, in this case "Adult Learner" (the site also has models for PK-12 Literacy and Math), 2. Identify factors, and 3. Get strategies. However, users of the site can also browse by factors or strategies.



The main factors are Learner Background, Social and Emotional Learning, Cognition, and Adult Literacies. Each factor is broken down into subfactors that are critical to adult learners' success. As an example, in the Adult Literacies category are the factors of background knowledge, foundation reading skills, and numeracy, to

Correspondence: sgaer@otan.us

name a few. Each factor leads to multiple strategies. When Digital Literacy is selected, 36 strategies for supporting students are provided, one option is Game-Based Learning. For this strategy, an overview and explanation of how to use the strategy in the learning environment are provided, and there are more than a dozen links to examples, research, and professional development opportunities.

Evaluation

The Adult Learner Variability Navigator is an innovative and powerful tool designed to support educators in meeting the diverse needs of adult learners. This online platform offers a wealth of resources, strategies, and personalized learning approaches to address the unique challenges faced by adult learners. Through a user-friendly interface, the navigator equips teachers with the knowledge and tools necessary to create inclusive and effective learning environments for their adult students.

One of the standout features of the navigator is its ability to provide personalized learning strategies. Teachers can use this tool to locate strategies for individual learners' strengths and weaknesses. By understanding learner variability within their classrooms, educators can tailor instructional methods, content, and pacing to suit each student's needs, enhancing engagement and motivation.

The platform houses an extensive repository of high-quality resources, research-backed strategies, and best practices, catering to the varied interests of adult learners. It also serves as a valuable tool for teacher professional development. There is a module for professional learning focused on the K12 navigator which is also relevant for adult educators to enhance their understanding of learner variability and implement evidence-based practices effectively. This support empowers teachers to continually refine their teaching approaches, which can lead to improved outcomes.

The navigator offers reliable and useful information and saves educators time because everything is organized in one central location. All the resources on the site are freely available. While not all resources are specific to adult learners they are, nevertheless, typically applicable. The site does not require a subscription to explore, but by registering for an account, users can save resources to a workspace.

The navigator is the only tool of its kind developed for those who teach in adult education. One minor disadvantage to the navigator is that at times the links are not updated, so some links may not be viable. Also, while the resource is valuable for finding ways to address learner factors, the site itself does not provide information about uncovering these factors. For that reason, it is crucial that adult educators get to know their students well early in a term. This can be accomplished with an intake survey that is sent out to students even before a class begins, asking questions about such topics such as previous educational experiences, goals, and interests.

Recommendations

The Adult Learning Variability Navigator has the potential to be a game-changer in adult education. By starting from a foundation of the variability among adult learners, this resource offers educators the tools and knowledge they need to advance inclusive, differentiated, and effective learning experiences. The platform's focus on educators' professional development equips teachers with research and teaching practices that enable them to learn, grow, and improve.

http://doi.org/10.35847/SCacicio.6.2.56

Technology and Adult Learning

Comic Life: Creatively Integrating Writing and Digital Skills with Adult Learners

Sarah Cacicio, Adult Literacy & Learning Impact Network

Years ago, as a part-time GED writing instructor for students ages 18-21 in a high school equivalency program in the Southwest Bronx, I found that learners felt constrained by writing assignments and frustrated by their inability to produce a cohesive essay from start to finish that would meet exam requirements. Open-ended writing prompts, while intended to elicit extended responses, often left learners feeling anxious and unsure about whether their responses were adequate or sufficient. They harped on how to say things in the right way. The prompts did not inspire them to think creatively or produce texts that felt authentic to their life experiences.

Rather than focus on writing as test preparation, my co-instructors and I designed activities to help learners get thinking, generate ideas, and experience the twists and turns of the writing process. We often asked learners to bring in an image or photograph (digital or print) that in some way visualized their personal journey or knowledge of a topic. The use of visual imagery provided a starting point for an essay and seemed to lessen the anxiety brought on by the blinking cursor on a blank page. It allowed learners to focus on arc of the narrative rather than get caught up on technical language or structure of the composition. The goal was to get learners to understand that writing was something they were fully—and already—capable of doing.

Writing skills, like any skills, need to be explicitly learned and practiced. In adult education settings, learners often experience a writing block, especially those who have been out of school for years (Pugh, 2021). Gruen (2018) found that the use of composition *makerspaces*—where people blend digital and physical technologies to explore ideas, learn technical skills, and create new products—improved adult learners' skills and practices in communication, problem-solving, motivation, self-esteem, and technology. Gruen (2018) demonstrates how the iterative *process* of composing with new technology—such as podcasts or blogs—allowed adult learners to reframe failure as positive and necessary for honing critical skills.

The purpose of this article is to explore the use of Comic Life— an app designed to help users create original comic strips or graphic narratives on a variety of topics—to support the development of composition skills for adults. Comic Life can provide a valuable and low-stakes entry point for writing skills across subject areas, particularly for those who struggle with essay writing.

The act of creating digital comics can help adult learners synthesize and present information or arguments in a clear, concise, and fun way, while practicing language, vocabulary, and technology skills. Through visual imagery and storytelling, Comic Life makes writing a joyful learning experience and can help adult learners work through many of the *psychosocial* barriers that writing in a social setting brings up, such as beliefs, values, attitudes, or perceptions about learning (Van Nieuwenhove & De Wever, 2024). As adult learners play with the tool and construct their comics, educators can effectively assess diverse learner needs and explicitly support the development of digital, language, and writing skills that individual adult learners need to thrive in and out of academic settings.

What Is Comic Life?

Comic Life (http://comiclife.com) is an app that allows users to transform images or photos from their life into an original comic. With access to a seemingly endless source of fonts, templates, and speech balloon

Correspondence: Sarah@barbarabush.org

styles, users can arrange images to design and caption a compelling narrative. In an adult learning setting, Comic Life can be used to help learners organize and process new information, apply developing language and vocabulary skills, and demonstrate their understanding across content areas. Comic Life provides ample ideas for educators and learners to generate digital graphic stories across science, history, and Language Arts, for example.

Educators can leverage Comic Life to support adult learners in practicing the critical writing skills needed to achieve their high school equivalency diploma, such as essay organization, sentence structure, and mechanics. At the same time, using the Comic Life software creates opportunities for adults to learn and immediately apply digital literacy skills that are transferable to other contexts, such as using google search for images or information on a topic, storing or sharing photos, dragging and dropping images, adjusting font style and size, and saving documents. Comic Life also allows learners to make strong connections to their background knowledge and lived experiences, from integrating personal photos from their smartphones to using humor and storytelling as strategies to share their knowledge.

How to Use Comic Life

Comic Life is a paid application ($19.99 per educator and learner license) but offers a free trial version of its software for mac and windows. Comic Life 3 offers multiple features such as new templates, script editor, advanced filters for photos, and new editing controls to bend and connect speech bubbles. Comic Life provides an immersive learning experience that allows adult learners to simultaneously organize ideas, practice foundational writing skills, and apply problem-solving skills. The skills used to create a digital comic are practical and transferable across learning contexts. Educators can download a free version and register for a 30-day trial to test the app. After 30 days, educators can then buy the software from Comic Life's plasq store and register the account or download from the Mac App Store.

Given the number of potential design features and applications, adult educators should provide clear instructions, examples, and vocabulary definitions to ensure that learners feel confident in their ability to try out the tool and take creative risks throughout the graphic writing process. To design a comic, learners can start by selecting a template from several thematic templates, including a classic comic as shown in Figure 1. Depending on the theme or topic, educators can help learners create an outline of their essay or story using visuals only. Learners will then gather a set of images to craft their narrative, drawing from stock images or personal photos from their smartphone. Learners can transfer images from their smartphones to their computers using various methods such as USB cables, email, or cloud storage services, such as google photo or Dropbox. The more tech-savvy adult educators can also help learners generate original images that precisely capture a phrase or experience with AI-image generators, such as Canva Text-to-Image, to use in Comic Life narratives (Cacicio & Riggs, 2023). Once the images are added, learners can resize, reposition, and customize them within the comic frames. Next, they can caption the image with written text and add speech bubbles and other graphic elements to create their comic.

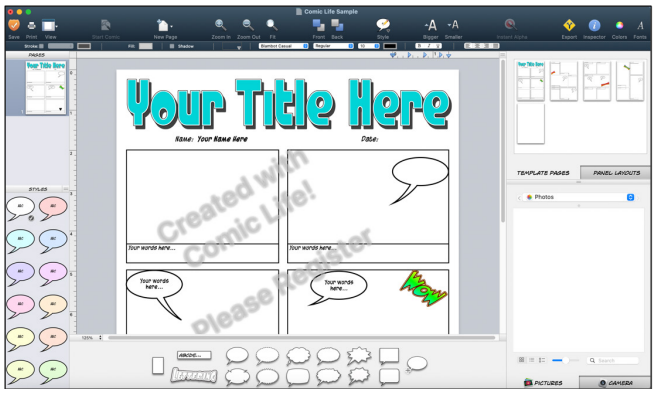


FIGURE 1 shows an example of a blank classic template in Comic Life. Learners can drag and drop images and type content below each image. They can also add story bubbles to create a comic narrative.

After completing their comic, learners can save their work within the Comic Life application. They can export the final comic in various formats such as PDF, image files, or other compatible formats to be printed or shared digitally.

With Comic Life, learners apply the same writing skills as with standard essay writing, outlining a topic sentence,

providing supporting details, and/or crafting an argument or story. Re-ordering and revising ideas are essential components of the graphic writing process. In this way, all learners experience writing as a nonlinear, creative practice, while becoming comfortable with technology and multimedia tools. Ideally, using digital tools like Comic Life can reduce the anxiety that adults experience with writing, and enable adult learners to view writing as a creative process that improves with practice.

Access a Free Trial

To access a free trial, you can take the following steps:

1. Visit the Comic Life website at https://plasq.com/apps/comiclife/macwin/ and navigate to the download or free trial button on the home page. Select the "Try It For Free" button. This will prompt you to download the version of the software that suits your device.
2. Provide your email address and other information to confirm access to the free trial.
3. Follow the on-screen instructions to download and install the software on your computer. When it prompts you to register, click "**Not Yet**" to complete the request for a free trial. After 30 days, educators can purchase the software from http://plasq.com/store/.

Opportunities to Strengthen Adult English Learning Through Comic Life

Comic Life can be a valuable and engaging tool for all adult learners. But for English learners, this tool can be especially effective as it offers a creative, low-stakes way to integrate language, vocabulary, and digital skills in real time. To effectively support writing skills using Comic Life, educators must provide clear guidelines, define key skills and terms, and model how to use key features, such as dropping an image into the template and adding captions or speech bubbles.

Here are several ways in which adult educators can use Comic Life with multilingual learners:

- **Assessment Tool:** Learner-created comics can be used to evaluate learners' understanding of a topic or language concept. It can serve as a formative assessment tool to determine language proficiency skills in English. In terms of content-area knowledge, educators can assign Comic Life tasks around specific themes or topics, such as the role of fossil fuels in global warming as exemplified in Figure B.
- **Digital Literacy**: Today, writing is largely a digital process. Using Comic Life is another opportunity to learn and apply digital literacy skills, such as working with images, using a search engine, saving a document in a digital folder, and typing.
- **Speaking and Listening**: The comics can involve dialogue between characters, integrating short, meaningful opportunities to practice descriptive text, vocabulary, and grammar skills. Adult learners can read their comics aloud or in pairs, helping them improve their pronunciation and intonation skills.
- **Vocabulary Building**: Comic Life allows students to integrate text with visuals images from stock photos—or from their personal life—providing a visual context for new vocabulary or content-area knowledge.
- **Writing Practice:** English learners can create comic strips or short graphic stories to practice narrative or argumentative essay writing. Rather than start with a blank screen, Comic Life starts with visuals, aiding critical thinking and problem-solving to first visually construct a text, then add language to describe ideas in development.

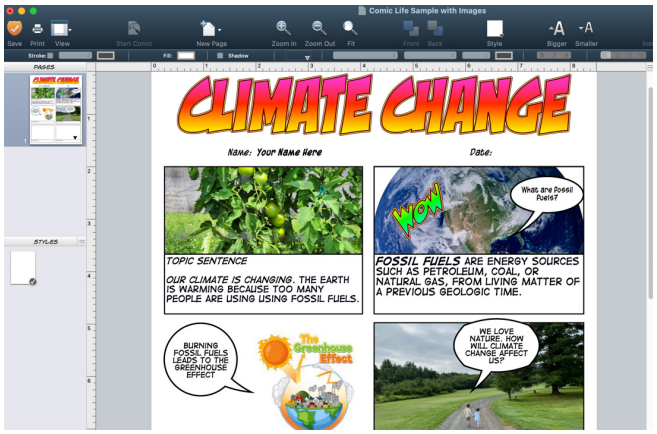


FIGURE B shows an example of integrating personal and free stock images to explore the issue of climate change.

Limitations of Comic Life

While Comic Life can be a useful tool for creating comics and visual storytelling, it does have some limitations for adult learning classrooms. Here are a few potential drawbacks to consider:

- **Access to visuals:** Comic Life requires some level of skill for working with digital images. While many adult learners know how to take, share, and upload images with a smartphone, Comic Life software can only be used on a laptop or desktop computer. Working with digital images on a computer is a distinct experience and may require explicit instruction or support.
- **Cost:** Comic Life is not a free software. Users may need to purchase a license to access the full range of features. While the cost is relatively affordable at $19.99 per license, many adult educators are volunteers or do not have program budgets to purchase edtech tools for instruction.
- **Digital skills:** As described above, Comic Life requires a basic level of digital skills to use. This tool may not be suitable for adult learners who are novice computer users. It has the potential to overwhelm digital beginners and derail the focus on writing or other subject area content.
- **Individual activity:** While learners could work in pairs, there is not really an option to collaboratively create or edit Comic Life in real time. Comic Life is best used to support an individual graphic writing experience.
- **Learning curve**: This tool takes some getting used to for educators and learners and time is always a consideration in adult learning contexts. When planning to use Comic Life, educators need to allot additional time for explicit instruction, modeling, and one-one support. A key focus of using Comic Life should be on the creative process, not the product. Educators should also consider teaching the key tech terms needed to effectively use Comic Life up front.
- **Platform limitations:** Comic Life is supported by Windows and macOS, but users of other operating systems may not have access to the software. It is not available on mobile devices.

Conclusion

Adult learners need support in visualizing and structuring their thoughts to convey ideas to specific audiences. In addition to creativity, problem-solving, and language skills for example, writing often involves multiple digital literacy skills, from operating a computer and navigating digital resources to communicating in digital environments through word processing, email, and other formats (Digital Promise, n.d.). As part of the writing process, adult learners need to be able to "skillfully use digital tools and develop a discovery and risk-taking mindset toward navigating online" (Frank & Casek, 2017). The use of digital tools, such as Comic Life, can aid the development of writing skills and help learners experience the ebbs and flows of the writing and revision process. It can inspire learners to think creatively, organize ideas, process information, and most importantly, identify as capable writers, and potentially, artists.

References

Cacicio, S. & Riggs, R. (2023). Bridging resource gaps in adult education: The role of generative AI. *Adult Literacy Education*, *5*(3), 80-86. http://doi.org/10.35847/SCacicio.RRiggs.5.3.80

Digital Promise. (n.d.). *Digital literacy.* https://lvp.digitalpromiseglobal.org/content-area/adult-learner/factors/digital-literacy-adult-learner/summary.

Frank, T. H., & Castek, J. (2017). From digital literacies to digital problem solving: Expanding technology rich learning opportunities for adults. *Journal of Research and Practice for Adult Literacy, Secondary, and Basic Education, 6*(2), 66-70. https://pdfs.semanticscholar.org/3cf6/5f682f8bb72dc2aca8fca07878d28cb7b3dc.pdf

Gruen, R. (2018). Authoring self: GED students transforming their identities in a composition makerspace. *Literacy Research: Theory, Method, and Practice*, *67*(1), 131-146. https://doi.org/10.1177/2381336918787197

Pugh, D. (2021). Teaching writing to adult literacy students from Harlem and the Bronx. *Adult Literacy Education*, 3(3), 35-40. http://doi.org/10.35847/DPugh.3.3.35

Van Nieuwenhove, L., & De Wever, B. (2024). Psychosocial barriers to adult learning and the role of prior learning experiences: A comparison based on educational level. *Adult Education Quarterly*, *74*(1), 62-87. https://doi.org/10.1177/07417136231147491