DRAW

Digital Resilience in the American Workforce:

Findings from a National Landscape Scan on Adult Digital Literacy Instruction

AT A GLANCE

With the urgency of adult digital skill development as a backdrop, the Digital Resilience in the American Workforce (DRAW) initiative, funded by the U.S. Department of Education's Office of Career, Technical, and Adult Education (OCTAE), conducted a national landscape scan to identify existing resources and effective approaches for digital skills development, skill definitions and frameworks, assessment, and practitioner professional development. This report's findings will inform the design of forthcoming professional development for adult educators by answering this primary research question:

What training resources and approaches are most relevant for educators seeking to increase digital literacy and digital resilience for an adult learner population?

JFF

EdTech Center @ World Education

SAFAL Partners

AUGUST 2022

Acknowledgments

The DRAW team would like to recognize everyone who contributed to this landscape scan, especially Alison Ascher Webber and Jamie Harris from World Education, who designed and led the scan in partnership with Rachel Pleasants McDonnell and Shakari Fraser from JFF. We also want to thank everyone from JFF, World Education, and Safal Partners who led or supported components: Dristi Adhikari, Annalisa Crowe, Melissa Gordon, Jeff Goumas, Nicole Klues, Fred McIntyre, Ronalis Naveo, Rachel Riggs, Jennie Rivera, Felicia Sullivan, Alex Swartsel, and Jen Vanek. We are especially grateful for the vision and guidance of Katie Chase and Travis Combs from the Office of Career and Technical Education. Finally, we want to thank the DRAW Technical Working Group members, subject matter experts, practitioners, adult learners, and learner focus group participants who contributed to the scan.

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Jobs for the Future (JFF) drives transformation of the American workforce and education systems to achieve equitable economic advancement for all. www.jff.org

About World Education

World Education-US advances equity through education and improving the availability, quality, and capacity of adult education & workforce programs. Its award-winning EdTech Center advances digital equity and supports organizations to leverage technology to accelerate impact. www.worlded.org

About Safal Partners

Safal Partners mission is to revolutionize public sector programs and services to catalyze positive societal change at scale. www.safalpartners.com

This report was created by Jobs for the Future and World Education and as part of the DRAW project funded by the U.S. Department of Education's Office of Career and Technical Education, Division of Adult Education and Literacy, under contract GS10F0094X. The views expressed by the project do not necessarily represent the policy of the Department of Education, and its contents should not be considered an endorsement by the federal government or the funding agency.

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Introduction

Technology is integral to nearly every aspect of our daily lives, including the way we participate in our communities, learn, and work. Digital literacy is now a core literacy: The growing digitalization of learning and work puts new skill development demands on education leaders, teachers, and learners alike.[1] Meanwhile, an estimated 32 million Americans struggle to use a computer, and half of all Americans say they are not confident in using technology to learn, with 14 percent not doing so at all.[2] COVID-19 accelerated the importance of building the digital literacy skills of American workers and learners, yet many current teachers have not been trained to provide digital literacy instruction to their learners. Even fewer educators have been trained on how to help learners develop the confidence, self-efficacy, and digital resilience they need to adapt to today's digital demands.

Persistent gaps in access to technology and opportunities to develop digital skills exacerbate existing disparities, disproportionately impacting people of color. Black, Latinx, and Native American adults, immigrants and refugees, individuals with physical and cognitive disabilities, and socioeconomically disadvantaged communities are less likely to have internet and device access and opportunities to develop digital skills.[3]

With COVID-19, the burden of taking on new digital responsibilities without adequate access to training fell unequally on Americans who were already marginalized, vulnerable, and less connected.[4] Though interventions in response to the COVID pandemic helped close the digital divide for some, especially learners receiving digital literacy instruction or supports,[5] new U.S. census data released in May 2022 by the National Telecommunications and Information Administration shows only limited gains. The increase in Americans

ages 3 and older using the internet in some fashion only increased 1 percentage point, from 79 percent to 80 percent, between 2019 and 2021.[6]

Digital inequity brings considerable cost to individuals and our wider society and economy, with more than eight in 10 middle-skill jobs requiring digital skills.[7] Adult educators have an important role to play in helping adults develop the digital skills needed to open doors to economic mobility and increased equity in our society, especially given that approximately three-fourths of learners in Title II-funded adult education programs are people of color.[8]

Fortunately, there are new historic levels of federal investment in digital inclusion, including through the U.S. Department of Commerce and Department of Labor and the Institute of Museum and Library Services.

With the urgency of adult digital skill development as a backdrop, the U.S. Department of Education's Office of Career, Technical, and Adult Education (OCTAE) launched the Digital Resilience in the American Workforce (DRAW) initiative in late 2021 to better prepare educators to teach and support learners that struggle to

Overview

The scan's main findings are organized in six thematic sections. This report will be supplemented by deep dives providing more detail and discussion on learnings from the scan across the thematic areas:

- Defining Digital Skills and Resilience
- Advancing Digital Inclusion and Equity
- Instructional Approaches and Practices
- Digital Skill Content and Curriculum
- Assessing and Validating Digital Skills
- Professional Development for Practitioners

Additionally, the DRAW team developed a blog series to highlight different aspects of scan findings for a broader audience:

- Putting Digital Literacy and Digital Resilience into Frame
- The Digital Skills Library
- Selecting an Assessment for Digital Literacy
- Challenges and Solutions for Inclusive and Equitable Digital Access

engage and succeed in tasks that demand the use of digital technologies. The DRAW team conducted a landscape scan to identify existing resources and effective approaches for digital skills development; digital inclusion of adult learners; defining digital skills; assessing digital skills; and practitioner professional development. This report shares the scan findings that informed the design of forthcoming professional development (PD) for adult educators by answering this primary research question:

What training resources and approaches are most relevant for educators seeking to increase digital literacy and digital resilience?

The DRAW Landscape Scan used a mixed-method approach that combined and analyzed insights from a wide range of sources, including interviews with experts, focus groups with adult learners, questionnaires, a literature review, learner input, and a market scan.

The scan's main findings are organized in six major thematic sections:

1. Defining Digital Skills and Resilience
2. Advancing Digital Inclusion and Equity
3. Instructional Approaches and Practices
4. Digital Skill Content and Curriculum
5. Assessing and Validating Digital Skills
6. Practitioner Professional Development

1. Defining Digital Skills and Resilience

The question among many policymakers, educators, nonprofit practitioners, and individuals continues to be which digital skills are important to learn and nurture.[9] This was echoed by the diverse stakeholders consulted in our scan. In our research, we cataloged the definitions and frameworks most used in the adult education field, as well as frameworks employers are using to define the digital competencies needed by employees.

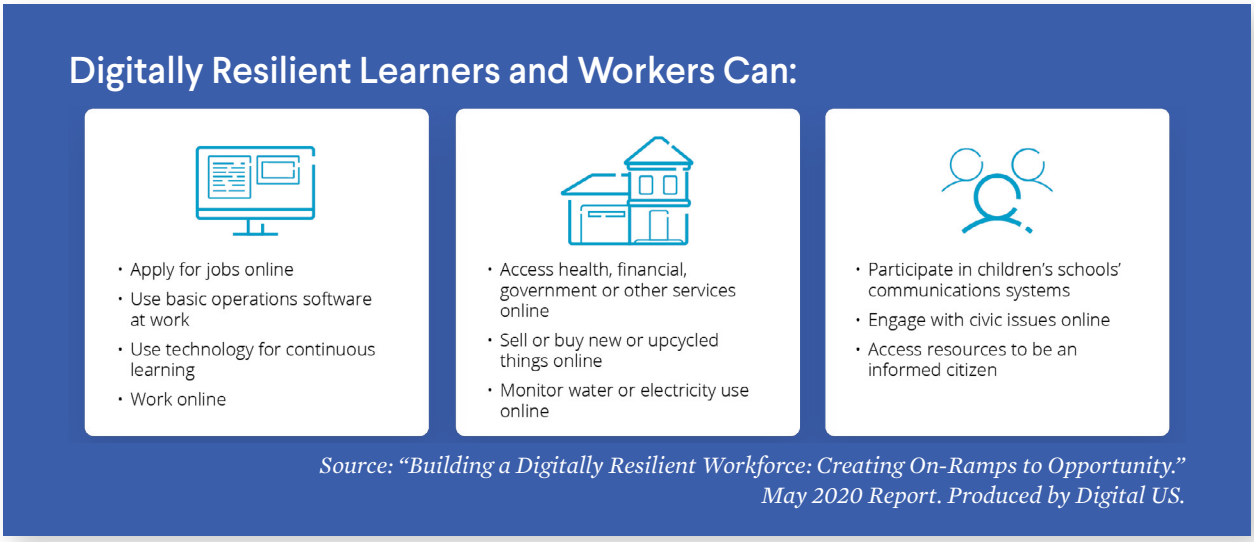
The federal Workforce Innovation and Opportunity Act (WIOA), which provides funding for adult education and workforce development programs, has adopted the Institute of Museum and Library Services' definition of digital literacy skills: "The skills associated with a) using technology to enable users to find, evaluate, organize, create, and communicate information; and b) developing digital citizenship and the responsible use of technology." This is a definition that many education, workforce, and digital inclusion efforts have adopted. What's missing in this, however, is the capacity for navigating digital transformation and becoming lifelong learners of new technologies—something top of mind for adult learners, educators, program leaders, and employers, especially in light of the COVID-19 pandemic and the increased digitalization of work and daily life.

Digital Resilience

"*Having the awareness, skills, agility, and confidence to be empowered users of new technologies and adapt to changing digital skill demands. Digital resilience improves capacity to problem solve and upskill, navigate digital transformations, and be active participants in society and the economy*"

For this reason, DRAW embraces the term *digital resilience,* developed in 2020 by the Digital US coalition, to signify "Having the awareness, skills, agility, and confidence to be empowered users of new technologies and adapt to changing digital skill demands. Digital resilience improves capacity to problem solve and upskill, navigate digital transformations, and be active participants in society and the economy."[10] Learners themselves are seeking digital resilience: in focus groups conducted for the scan, adult learners noted the diverse ways each of them uses technology in their daily lives and work. These include navigating new and constantly evolving apps and platforms for tasks such as coordinating and supporting their children's schooling and extracurricular activities or for finding and engaging in formal employment, entrepreneurship, and gig-economy opportunities.

The framework that best matches this more aspirational goal for adult learners is the International Society for Technology in Education's SkillRise Profile of a Lifelong Learner framework, which links digital skills to behaviors, mindsets, and actions, and describes five learner features: Lifelong Learner, Empowered Worker, Digital Citizen, Solution Seeker, and Mindful Colleague. Across the frameworks that offer granular definitions for foundational digital skills, common themes include communication, finding and managing information, use of mobile devices, and online safety and privacy.



Source: "Building a Digitally Resilient Workforce: Creating On-Ramps to Opportunity." May 2020 Report. Produced by Digital US.

Examples of commonly used frameworks detailing foundational digital skills for adults:

Seattle Digital Equity's Digital Skill Sets for Diverse Learners compared leading digital skills training frameworks and identified common themes and strategies, organized into 10 categories and 74 distinct digital skills.

Maryland's Digital Literacy Framework for Adult Learners defines for adult learners at different levels the elements required to navigate and fully participate in the constantly evolving digital landscape.

The European Union's Digital Competence Framework for Citizens (DigComp 2.2) identifies the key components of digital competence in five areas, with hundreds of examples of related knowledge, skills, and attitudes. It has been adopted by UNESCO.

International Society for Technology in Education standards for students and educators are widely adopted in the U.S. K-12 system and have some traction in adult education. ISTE's SkillRise Profile of a Lifelong Learner adds a framework for adult learners that fits well with the goal of digital resilience.

The DQ Institute's Digital Intelligence (DQ) Global Standard, vetted by the Organisation for Economic Co-operation and Development (OECD), aggregates more than 25 digital literacy and skills frameworks and distills them into 24 competencies across eight areas with an aligned self-assessment.

Training and assessment tools such as Northstar, Certiport's IC3, and CASAS COAAPs organize curriculum, badging, and certification by standards and competencies.

Opportunities for Impact

Definition of the digital skills that constitute digital resilience, to help educators shift from teaching digital skills as steps to take (click here, then there) to fostering confidence and capacity to learn to use new technologies.

Clarity on the digital skills needed for employment, including the skills needed to find work and perform work responsibilities. This is especially important given that learners themselves have expressed that access to better employment opportunities is a top motivating factor for improving their digital literacy.

Development of a commonly adopted framework that bridges the foundational skills defined in existing frameworks to more aspirational goals for developing digital resilience.

Badging and validation of skills or competencies based on a shared framework, to create opportunities for learners to document the skills employers and educational providers recognize.

Ongoing collaboration with employers, education and workforce partners, and community-based organizations to update frameworks, to provide a current and deeper understanding of diverse learners' digital skills needs.

Inducements for providing digital literacy instruction in future legislation reauthorizing WIOA, including an updated articulation of digital skills from a digital resilience perspective.

Revised frameworks that reflect the increasing use of mobile devices, screen interfaces on machines, and even new technologies such as virtual reality headsets. An overemphasis on computer-based skills for application in an office or academic setting could result in programs and assessment methods not recognizing the digital competencies learners may already have or a failure to teach the skills learners need immediately.

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2. Advancing Digital Inclusion and Equity

Digital divides reflect long-standing inequities in American society, such as income and wealth gaps and uneven access to high-quality K-12 education.[11] Black and Latinx workers represent a disproportionate share of workers with no or limited computer skills, as determined by an OECD assessment.[12] Spanish-language-dominant Americans are less likely to report having high-speed internet at home.[13] Individuals with disabilities are adopting technologies and using devices at lower rates regardless of age.[14]

Some 18 million households in the United States do not have internet access of any type, and only about half of households on tribal lands have high-speed internet service.[15] This is not just a rural problem: 76 percent of households without home internet are in urban areas and primarily in low-income neighborhoods.[16] For this reason, new reports on closing the digital divide emphasize that while improving the physical broadband infrastructure is important, investments in digital equity must "prioritize people over networks" and that the digital divide is "not primarily a technological problem but instead a social problem."[17]

Improving learners' access to the internet and devices, including the giving or lending of hotspots and larger-screen devices such as tablets and laptops, emerged as a top need for educators instructing adults on how to effectively learn, study, and communicate online. Unfortunately, as discussed by

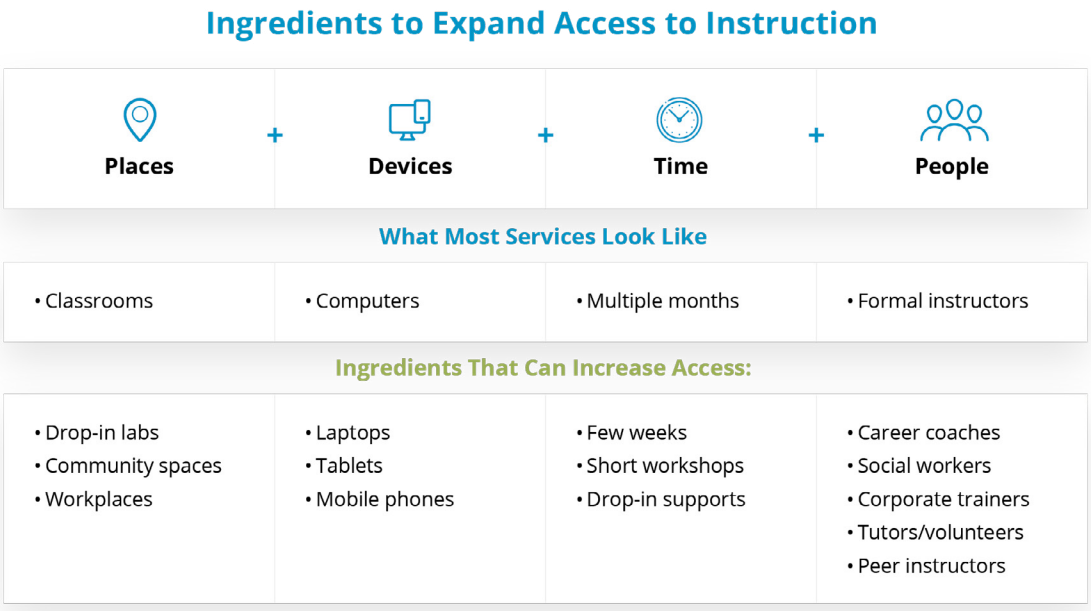
18 Million
households in the US do not have internet access of any type

Only ~50%
of households on tribal land have high-speed internet service

76% of households without home internet are in urban areas and primarily low-income neighborhoods

many of the experts interviewed for this landscape scan, there is a lack of explicit focus on technology access and use in many adult education programs despite digital literacy being recognized as a key activity for removing barriers to employment and achieving WIOA's mandate to help workers develop essential skills for employment. As a result, program and institutional access to the internet, ownership of devices, and the capacity to use them in instruction can vary greatly, disadvantaging rural and impoverished areas in particular. There is similar variance in the organizational capacity to maintain technologies and provide adult learners with access to tech support.

With adult education programming servicing less than 10 percent of the foundational digital skills instruction needed, there is a deep need for funding to reach and support more learners.[18] But continued expansion of classroom-based instruction won't reach adult learners with barriers such as limited time or transportation. Adult education and library programs, digital inclusion organizations such as the National Digital Inclusion Alliance, and diverse community-based organizations must continue to make supports accessible to more adults through new models of both recruitment and provision of instruction.[19]



Source: "Building a Digitally Resilient Workforce: Creating On-Ramps to Opportunity." May 2020 Report. Produced by Digital US.

Models and Approaches to Increase Access

Community partnerships for recruitment:

Intentional community outreach that leverages trusted community members and organizations is essential to build trust, mitigate embarrassment or comfort issues students might have around digital literacy instruction,[20] and encourage participation.

Digital navigator services:

Just-in-time, flexible supports help learner-workers access devices and the internet and use an array of online services. Digital navigator services can be offered as standalone services but are most effectively provided by trained staff or volunteers embedded in trusted formal and nontraditional service settings, such as health clinics, laundromats, libraries, educational institutions, employment services, or housing services. They help meet adult participants' digital inclusion needs as part of the provision of other services.[21]

Learning lounges:

Learning lounges offer dedicated drop-in spaces staffed with individuals who are comfortable assisting adults in using mobile devices and other technology and self-paced learning resources.

Remote instruction:

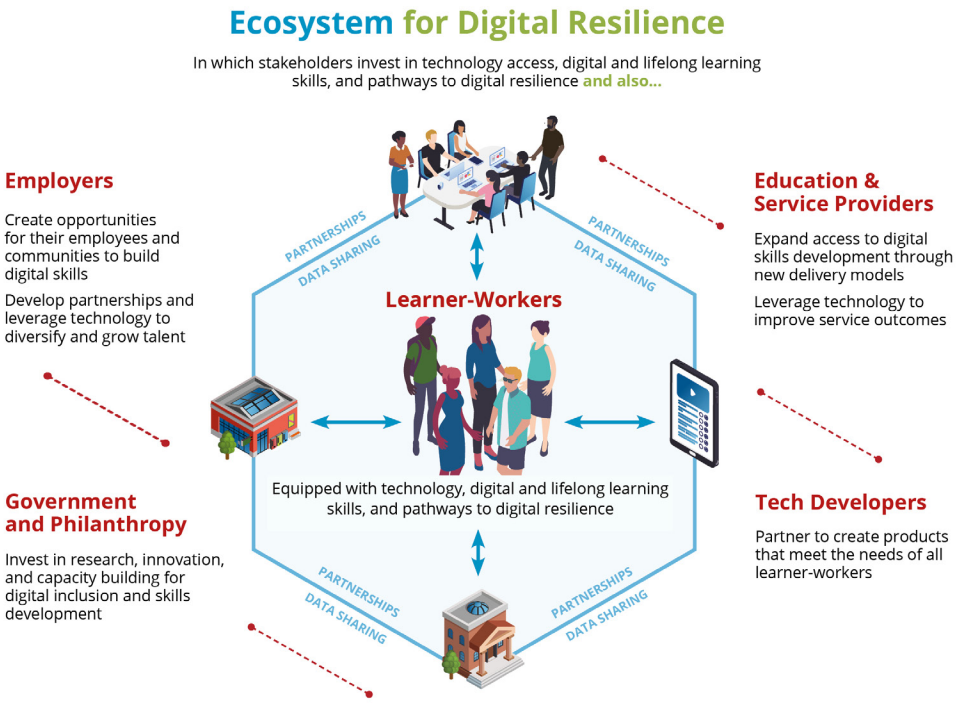
Online learning has the potential to provide digital skills instruction to millions more adults. As technologies improve, there are better ways to support independent learning, such as through screencasting, mobile apps, augmented/virtual reality (AR/VR), and gamification.

Learning circles:

Learning circles bring together learners who are working on developing similar digital or other skills in a peer support group, which can increase retention and completion of online courses. The model is also used to serve learners on waitlists for classes.

Workplace instruction:

Partnering with employers to train workers at their worksites can also expand access to technology and digital literacy instruction for frontline workers and other demographics with schedule, transportation, and other barriers.[22]



Source: "Building a Digitally Resilient Workforce: Creating On-Ramps to Opportunity." May 2020 Report. Produced by Digital US.

Opportunities for Impact

Prioritization of digital inclusion as an essential element of adult education, accompanied by sufficient state and program-level funding. Funders can require submissions of plans for ensuring digital equity and effective technology integration in applications for adult education and other funding.

Funding for flexible delivery models, including the institutional and systemic funding needed to sustain new program models and practices designed to reach and better serve adults with barriers to participating in traditional classroom-based instructional models.

Braided and flexible funding to enable programs to fill gaps in meeting learners' needs. The new Infrastructure Investment and Jobs Act (IIJA) is an opportunity for adult education to express the needs of its programs and learners during state and regional planning to spend Digital Equity Act funding.

Diversification of the adult education workforce, which can inform programming and provide representation and foster trust with Black, Indigenous, and other students of color, thus supporting recruitment efforts and more equitable program outcomes.[23]

Partnerships and collaboration between adult literacy programs and workforce centers, libraries, K-12 schools, community-based organizations, tech developers and employers, and more to create an ecosystem for digital resilience. For example, in Southwest Minnesota, multiple stakeholders came together to broadcast adult basic education (ABE) classes to reach learners in rural areas.[24]

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3. Instructional Approaches and Practices

Adult learners have an overall sense that they will be left behind without technology skills, and they desire to develop these skills to secure a better future for themselves.[25] OCTAE investments to support digital literacy in projects such as LINCS's Integrating Digital Literacy and Problem Solving Into Instruction and the Teaching Skills That Matter (TSTM) initiative offer adult education practitioners strategies to support effective instruction.

Through a research literature review and learner and educator interviews and questionnaires, the landscape scan identified several general effective instructional approaches and practices that can foster digital resilience.

Yet, it is important to note that a fundamental issue in the areas of teaching and learning is a dearth of research. Though teachers may have clarity on what is working well for their students, it is challenging to gain momentum for policy shifts and funding if there is no empirical evidence on effectiveness on adults' learning and outcomes. While it is important to recognize valued instructional practices in digital literacy and honor the practitioner knowledge that underlies them, it is also important to conduct empirical studies to evaluate them and best determine for whom and under what conditions different strategies and resources work best.[26]

"Why did you begin studying technology skills?"

"To forge a better future."

- Student response

Effective Instructional Practices

The landscape scan identifies several effective instructional approaches and practices, including:

Contextualization:

Providing learning experiences that are embedded in a context that is relevant to learners' lives and goals.[27] Integrating digital literacy into other services or the instruction of other skills is one way to do this.

Choice, relevance, and motivation:

Giving learners opportunities for choice on what skills to learn and the contexts for practicing that will be most relevant to their lives.

Strength-based approach:

Building on learners' existing skills and knowledge, the tools learners already use (e.g., social media), and what they do with those tools.

Differentiated and targeted instruction:

Focusing on individualizing instruction to learners based on an assessment of their existing knowledge and skills and which skills they need to develop.

Recycling skill instruction for transferability:

Learning and practicing the same skills in a variety of contexts to support transferability of skills. For example, filling out forms online can easily be part of school, health, and work digital contexts as well as many others.[28]

Fostering flexible mindset and resilience:

Developing confidence and strategies to adapt when confronted with a new or changed technology or interface as well as when something goes wrong. Instructors can model how to identify their own digital literacy gaps, critically evaluate resources for addressing their gaps, take risks, and ask others for help.

Self-efficacy and self-directed learning:

Helping learners determine which technological tools should be used for what purpose and to have confidence and capacity to use them to achieve their goals. This includes driving their own learning process by making goals, creating a plan, and monitoring and reflecting on progress.

Practice engagement theory:

Supporting adult learners to apply their emerging foundational skills outside of the classroom in personally meaningful contexts and practices, which has shown to have a greater long-term impact on learning gains than time in class.[29]

Incidental or informal learning:

Acknowledging and leveraging the unplanned or unintentional learning that happens during the pursuit of some other task. This is important in developing problem-solving skills in a digital environment and fostering lifelong learning skills.[30]

Peer-to-peer collaboration and mentoring:

Providing formal or informal opportunities for learners to develop their skills as contributors in learning communities by helping teach or support others in their own classes, classes they have already taken, or outside of class.

Coaching:

Supporting one-on-one relationships between a coach and a learner in which the coach acts less like a teacher and more like a "guide on the side,"[31] which helps learners construct knowledge through their own experience.

Integrating Digital Literacy Into Other Skills Instruction

Integrating digital technologies into the instruction of other skills enriches learning and creates opportunities to extend learning activities while building digital skills.[32] There are many kinds of ABE classes, including English for speakers of other languages (ESOL), high school equivalency as well as specialized classes for integrated education and training (IET) programs, in which learners improve their basic skills while simultaneously preparing for job training. Each of these classes has unique challenges and opportunities in terms of digital literacy integration. The scan explored how this integration can play out in different adult education content areas, with additional details on strategies and examples in the deep dive for this section.

Instructional Area	Resource Example
ESOL	The TSTM Digital Literacy Toolkit[33] offers guidance on integration of digital literacy instruction and technology use in workplace English language classes.
Civic education	Many of the Civic Objectives and Additional Assessment Plans (COAAPs) require the use of digital technology within the instruction and related assessment tasks.
Health literacy	The Network of the National Library of Medicine with Wisconsin Health Literacy has prepared a free Digital Health Literacy Curriculum. It can be downloaded from the Digital Health Literacy page on the NNLM website.
High school equivalency	The National External Diploma Program® embeds digital skills into content and tasks that are relevant to adult lives, such as conducting an online job search and researching information about postsecondary education and training.
Numeracy and financial literacy	The Alliance for Financial Inclusion has created a Digital Financial Literacy Toolkit to build the skills for managing online banking.

Meeting the Diverse Needs of Learners

In adult education, adult learners are diverse and enroll in programs with differing backgrounds, experiences, goals, and knowledge. Family background, education level, age, gender, country of origin, cognitive and physical abilities, and level of technology use at home or work are all factors that influence the starting point of digital literacy and determine needed learning and supports.[34]

Meeting the varied needs of learners must be intentional and have a direct correlation to student outcomes. Evidence-based strategies and resources for meeting the digital literacy needs of diverse learners are limited. In the forthcoming publication "Instructional Strategies and Approaches," we will discuss factors in meeting the needs of particular demographics such as citizens returning from the justice system, older adults, individuals with disabilities, learners with emerging literacy or English language skills, and parents.

> **"When you're teaching adults, you're teaching individual whole people. You're not just teaching, you know, those five subject areas."**
>
> – Practitioner response on questionnaire

Opportunities for Impact

Investment in research on effective strategies for developing digital literacy and digital resilience and to best determine for whom and under what conditions—in particular, strategies to help close inequities in outcomes by race or socioeconomic factors.[35]

Policies and incentives that prioritize integration of digital inclusion and digital skill development into the teaching of other adult foundational skills and IET programs as well as service delivery of diverse human services.

Improved screening of learners during intake to identify barriers using tools like Digital Promise's Adult Learner Variability Navigator to help educators identify the learner-centered instructional strategies that will be most effective.

Use of **Universal Design for Learning** guidelines when designing digital literacy skills lessons, to help instructors and materials designers create lessons that are as inclusive as possible for all students.

Development and dissemination of tools such as SkillBlox that help instructors create customized playlists of free, quality instruction content for learners or groups of learners and integrate digital skills into instruction of other skills.

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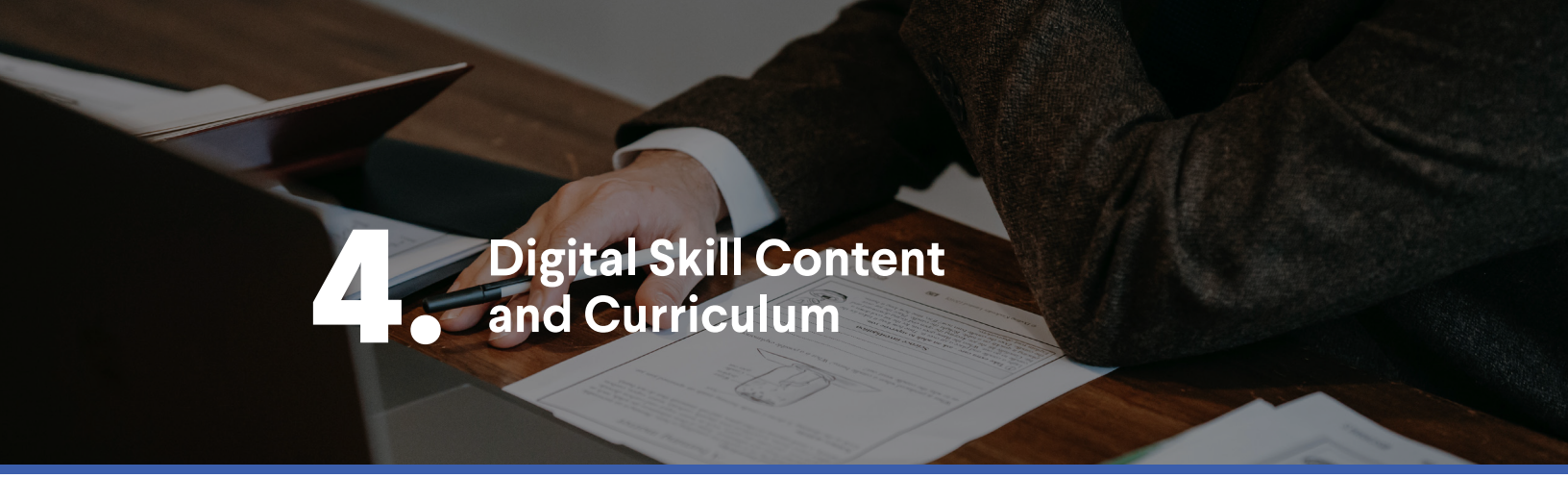

4. Digital Skill Content and Curriculum

While there is no one solution for developing adult learners' digital resilience, the landscape scan revealed a need for instructional content that is tailored to specific populations and levels of proficiency, available online and offline, and supportive of integration within various content areas. The questionnaire showed that while an increasing array of online tutorials, lesson plans, and instructional activities is available, there is room for improvement in both quantity and quality for practitioners spanning all roles as well as greater awareness of available resources.

When asked what digital skills content they use, some practitioners responded to the practitioner survey with the name of a digital learning platform that does not have explicit digital skills instruction. Such responses show that instructors are contextualizing digital skills instruction by helping learners use technology to meet their goals (such as learning English) but may lack awareness of available resources to teach digital literacy.

Current content for digital literacy training and instruction includes skill-based training from basic to advanced digital literacy concepts and discrete skills, and contextualized curriculum that integrates digital literacy into workforce and life skills. Experts interviewed for the landscape scan emphasized the importance of materials that take a holistic approach focused on all of adults' needs for digital skills and not only on career and education. A few expressed concerns about the relatively high marketing budgets of corporate solutions selling their specific certificates.

Some resources, such as I-DEA and Northstar's Digital Literacy curriculum, are designed for in-person instruction; others, such as Google's Applied Digital Literacy Skills and the Microsoft Office Specialization program, can be self-paced and offered in a distance learning program. There are also a variety of text-based and video-based lessons that provide varying degrees of learner interaction and performance tasks. However, reliable high-speed internet and access to devices are major considerations for remote teaching and self-study.

Finally, some resources for English language learners, such as Digital Homeroom or GCFLearnFree and DigitalLearn, are translated into Spanish. Overall, a small set of resources is used consistently across programs (e.g., Burlington English, GCFLearnFree, YouTube, Northstar, and Google Applied Digital Skills), but a market scan conducted by the DRAW team revealed no noteworthy emerging products or resources beyond those listed here. A crowdsourced list of instructional content can be downloaded here.

One emerging trend to help instructors find resources is efforts to aggregate learning content around particular digital skill areas, such as Harvard University's Skillbase, World Education's Digital Skills Library, and ISTE's DigCitCommit website, which offers a range of learning resources around "digital citizenship."

The Digital Skills Library developed by World Education as part of its CrowdED Learning initiative is an open repository of free learning resources (OERs) designed to help all adult learners develop the digital skills needed to achieve their personal, civic, educational, and career goals. The library was created by committed practitioners from community colleges, adult education and literacy organizations, and workforce development agencies across the United States and beyond. Learn more about the library, how it can be used to create playlists in the SkillBlox app, and how the DRAW project contributed by adding resources to fill gaps in this blog.

Opportunities for Impact

Content that fosters **digital resilience** by intentionally teaching learners to transfer skills across platform and software environments and develop comfort with productive struggle and capacity in learning new technologies.

Curriculum for integrating **deeper learning** with digital skills instruction, such as using inquiry-based learning or design labs[36] or other strategies for fostering self-direction, problem solving, collaboration, creative production, and knowledge management.

More **holistic, culturally relevant, strength-based,** and **multilingual** resources. While some resources are available in other languages, questionnaire respondents frequently said there is a gap in bilingual resources.

Materials that are **adaptable** so they can be contextualized for the variety of adult learner needs and available for facilitated instruction as well as independent, self-access learning.

New **digital literacy solutions** that **engage** learners differently based on the ongoing evolution of technology both in the workplace and beyond, including use of AR/VR and screencasting.

Media literacy resources such as Media Literacy Education in Libraries for Adult Audiences or Digital Skills for Global Society, which provide resources for evaluating sources of digital information for credibility, bias, and influence.

Resources to prepare learners for using **technologies in the workplace**, including online platforms for employer-sponsored training.

Investments in **trusted literacy providers** to develop resources that meet the breadth of learner needs, such as Literacy Minnesota's development of Northstar.

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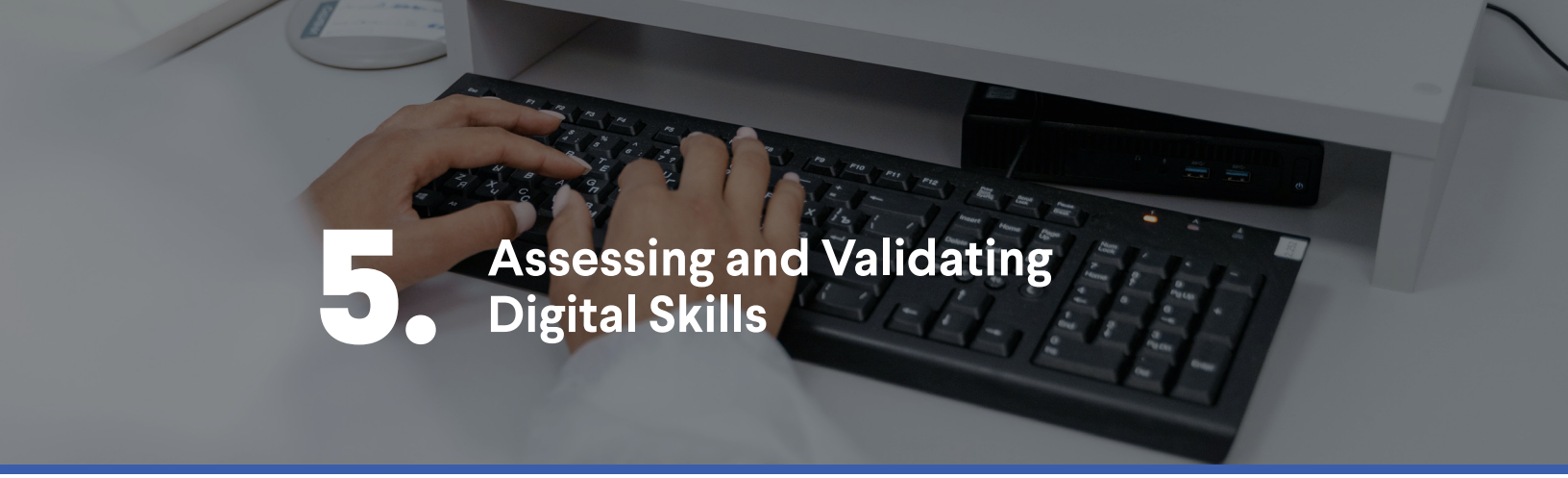


5. Assessing and Validating Digital Skills

Assessments are tools that collect learner data on digital literacy skills to inform orientation and instruction, measure progress and outcomes, and/or create accountability measures. Assessments can come in various forms and serve different purposes: self-assessments and inventories; performance- or competency-based assessments; portfolios; and formative, summative, or diagnostic assessments. Instructors rely on assessments to evaluate their own digital resilience and determine how they can effectively integrate technology to develop the digital literacy of their students.

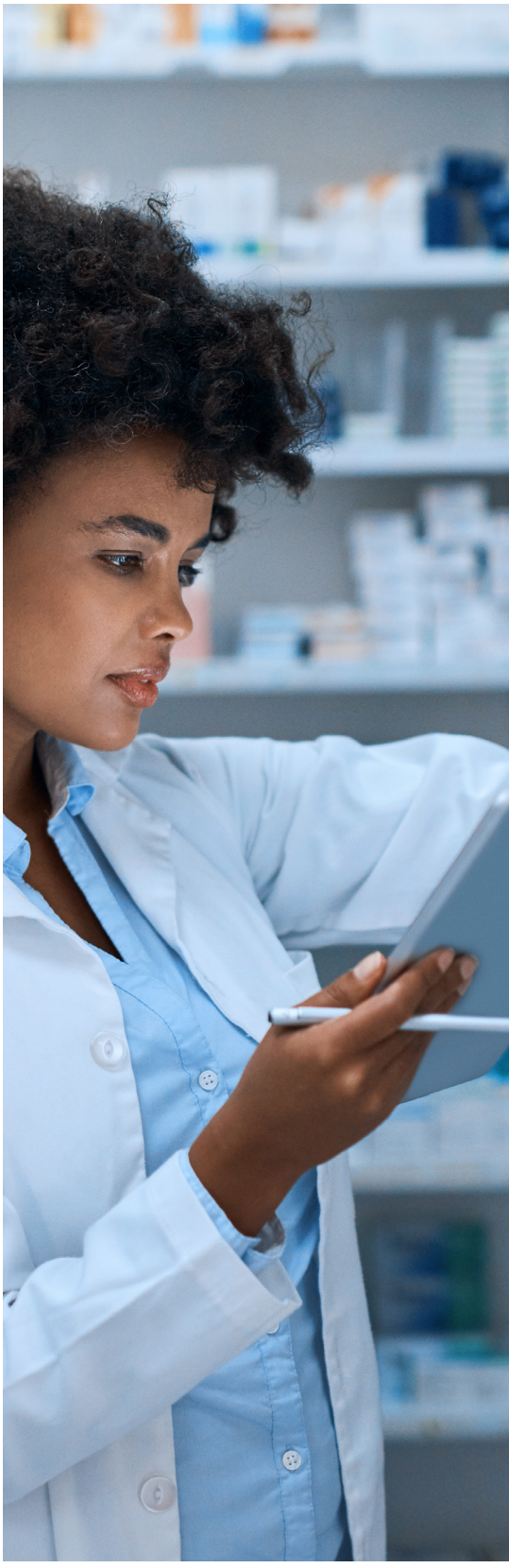
However, limited use of assessments, combined with lack of alignment in digital skills frameworks across stakeholders, and rapid changes in technology hinder programs' ability to accelerate learning and identify, share, and scale what works.[37]

Assessments can also help leaders understand the scope of digital literacy skill gaps. With states now embarking on planning for spending new digital inclusion funding through the IIJA, they are struggling to assess and find data to help them understand the state of their population's digital skills to guide their investments. The National Governors Association's Workforce Innovation Network, in partnership with World Education, the National Digital Inclusion Alliance, and the National Skills Coalition, developed a guide, "Using Data to Advance Digital Skills: A State Playbook," to assist states in measuring digital skills in response to what it called a "dearth of digital skills data."[38]

DRAW practitioner questionnaire responses indicate that assessment of digital skills is a great need for instructors and learners alike, especially given that adult education programs funded through WIOA Title II do not currently have an approved system that allows them to measure digital skills learning as measurable skill gains. In particular, our landscape scan identified a need for guidance on determining when digital literacy assessments are a good fit for different goals and contexts. To meet this need, the DRAW project developed a checklist for selecting an assessment, including questions about the purpose of the assessment (e.g., placement and developing a learning plan), modality, frequency of assessment, and costs.

A challenge in digital skill assessment is moving beyond discrete digital skills and measuring proficiency with the application of skills in real contexts, as well as digital resilience, or adaptability and problem solving when confronting new technologies.

The landscape scan also revealed a need for skills validation and signaling through badges, certificates, and credentials. Coursera, Google, and Certiport IC3 have integrated these types of skills validation and signaling in their courses to demonstrate achievement as well as motivate learners. Northstar and Microsoft have also done so, and their certificates have proved to catalyze career path opportunities for adult education learners.[39] Some professional development programs for educators, such as the Texas Center for the Advancement of Literacy and Learning (TCALL), offer digital skill badges for educators on their digital skills and tech integration.[40]



Examples of Assessments for Foundational Digital Skills

The Northstar Digital Literacy Assessment is currently the most used across adult education with deep impact to date. A program of Literacy Minnesota, Northstar defines, measures, and teaches foundational digital skills using primarily discrete digital skills assessments.

Other assessments include:

- The National External Diploma Program, a competency-based assessment, measures digital literacy skills including use of presentation software, spreadsheets, Word documents, internet navigation, and online research and citation as elements of the adult high school diploma program.
- The Program for the International Assessment of Adult Competencies Survey of Adult Skills was first implemented in 2012 and includes assessments on literacy, numeracy, and problem solving in technology-rich environments. The PS-TRE problem-solving survey measures the cognitive skills required to carry out technology-enabled, non-routine tasks.
- The International Certificate of Digital Literacy (ICDL) and the Europass self-assesssment are both compatible with the DigComp framework.
- The DQ Institute has a free self-assessment that provides a Global Standards for Digital Intelligence score that can be used as a starting point for future conversations on a learner's digital skills and habits.
- California uses COAPP performance-based assessments, many of which require the use of digital technology. For example, one objective is "effectively use online tools to learn, communicate, and collaborate with others."

Opportunities for Impact

Development of **competency-based assessment models** paired with performance assessments or rubrics for tracking demonstration of skill for defining learner progress, including in the application of skills in real contexts and digital resilience.

A comprehensive **digital badging system** for learners to demonstrate these core competencies to employers and educational institutions to signal readiness and "transferable" skills.

Assessments that **gauge teachers' digital skills**. Several states have teachers take Northstar assessments. Other states, like California and Massachusetts, use more qualitative self-assessment checklists that ask teachers to rate their skills and comfort on a range of digital skills.

Strength-based assessments. Learners have skills that can be built upon, and assessment should take into consideration learners' prior knowledge. Taking an asset-based approach to assessment requires looking at how people use digital skills across their life in diverse settings and different technologies, not just in the workplace or on computers

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6. Professional Development for Practitioners

Professional development focused on instructor digital skills and resilience development emerged as a top need across multiple components of the landscape scan, including the practitioner questionnaire. Research indicates that adult educators must have both strong digital literacy skills and the ability to effectively integrate technology in teaching and learning.

Educators also need high digital literacy self-efficacy (the ability to make informed choices about tools in accordance with their goals), an understanding of how digital platforms work, and training in integrating technology. When teachers lack these skills, or project their fears in the classroom, their learners will continue to struggle.[41]

Finally, teachers need support to apply learning within their classroom context. For example, while access to quality digital skill frameworks, content, curriculum, and assessment can help inform, guide, and support educators to plan their instruction, many experts and practitioners responding to our questionnaire emphasized the importance of professional development in how to select the best ones for their contexts and how to use them.

The need for teacher training is clear, but the challenges are complex. There is great variability across state agencies in the amount of PD required and offered as well as the quality of instruction, leading to inequity in the level of services available for adult learners. Scheduling, budgets, and capacity to train instructors are common challenges across adult education providers, especially

with many instructors working part time or with multiple organizations to piece together full-time hours. Adult education leaders and other industries must therefore invest in effective PD practices to meet staff where they are, build a culture of growth mindset, and provide safe, non-punitive learning opportunities for practitioners to hone digital skill development and build digital resilience in themselves so they have the capacity to integrate digital skills instruction in content.

Effective PD Models

Building teacher digital skills and comfort with integrating digital skills into instruction begins with understanding practitioners' current skills and mindsets, including attitudes around technology.[42] Teachers may need help in developing and modeling digital resilience, including feeling safe sharing when they do not know something.[43] Program leadership can reinforce that it is OK to learn alongside students and that, in fact, they can "learn together, grow together."[44]

A variety of PD models and content, local and statewide, have intentionally focused on the development of instructors' digital skills and resilience.

These models are a mix of mandatory and voluntary, in-person and hybrid, and fixed and self-directed training opportunities.

Like learners, instructors need the flexibility of one-on-one help, shorter learning segments, and the option of asynchronous and synchronous learning opportunities. Similar instructional strategies—such as inquiry-based, project-based, or situational learning—also work for educators seeking to build their own capacities to support digital literacy learning.[45] Finally, PD needs to target what instructors value. For example, many questionnaire respondents expressed a desire for "grab and go" customizable resources that can support practitioners with building learner digital resilience.[46]

State-level leadership and support for comprehensive PD should align with Darling-Hammond's well-articulated and researched PD framework.[47] Based on a meta-analysis of 35 rigorous studies that examined the link between PD, instructional practice, and student outcomes, the framework calls for PD that integrates the following characteristics: contextualized content, active learning, collaboration, practice using clear models, coaching, feedback and reflection, and sustained duration.

PD Content

There is existing, quality professional development for teaching digital skills and tech integration frameworks for states and programs to use in their professional development.

Examples of Professional Development Content for Adult Educators

- OCTAE's TSTM initiative provides guidance and examples with detailed lesson plans for the integration of digital literacy and technology into instruction. Its approach focuses on developing learners' digital problem-solving skills.
- OCTAE's Integrating Digital Literacy Into English Language Instruction suite of PD resources offers self-paced learning modules and other resources leading to a certificate.
- The Center on Inclusive Technology & Education Systems created an evidence-based field guide to help leaders in the areas of assistive technology, educational technology, and IT.
- ISTE's SkillRise initiative offers an online Upskill With Edtech course and related case studies to guide technology adoption and development of learning opportunities at adult learning organizations.
- The Promoting Digital Literacy for Adult Learners: A Resource Guide, recently developed by the Barbara Bush Foundation for Family Literacy and Digital Promise, focuses on a whole learner approach.
- World Education's Transforming Distance Education (funded by OCTAE) is a self-paced online course for adult education teachers and administrators that provides strategies and resources for both setting up and implementing distance or blended education.
- World Education's Innovating Distance Education in Adult Learning (IDEAL) Consortium offers PD and technical assistance for state-level leaders in the WIOA-funded system.

Opportunities for Impact

Increased **funding** and **prioritization** for PD focused on helping adult education practitioners and leaders develop their own digital resilience and capacity to support their learners' digital inclusion and digital skill development, including through effective integration of technology in instruction.

External **validation and signaling** of instructor competencies to support skill development, demonstrate the experience and knowledge of educators, motivate teachers, and serve as an incentive for PD.

Peer mentorship, in which instructors visit other instructors' classes and learn from their peers or enlist the mentorship of a seasoned instructor as they develop their instructional practice.

Service learning and project-based PD, such as CrowdED Learning's EdTech Maker Space, which helps instructors learn how to create resources using popular EdTech tools while considering effective strategies for implementing these resources in instruction, or the IDEAL Consortium's Building an EdTech Strategy Toolkit, a project-based PD course in which instructors design sustainable EdTech routines.

Expanded use of tools and frameworks to support **planned technology integration**. For example, the Substitution, Augmentation, Modification, and Redefinition Model helps practitioners explore how teaching and learning experiences can be altered through the use of computer technology. The WorkforceEdTech.org website offers a detailed criteria list for evaluating possible tools.

PD for leaders, including training on partnership development to increase programs' reach in providing digital literacy learning programming to adults in the community. PD is also needed for trainers who provide support to teachers and administrators at varied levels of digital skills and resilience.

Collaboration on PD among states at the national level and among programs within each state. National examples bringing together adult education leadership include the IDEAL Consortium, focused on tech integration, and NASDAE. A state example is the Hamline ATLAS collaboration with Literacy Minnesota.

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Conclusion

The digital skills divide is a global problem, one that requires a multisector approach to solve, with all levels of government, education providers, learners, and employers working in concert to recraft policies and priorities. Access to technology is essential for learners to attain academic goals, obtain meaningful employment, and fully engage in civic life. The pandemic has made it clear that digital access and digital skills development must be seen as a priority for adult education.

The DRAW Landscape Scan identified a strong base of resources and approaches that can support the goal of increasing digital literacy for an adult learner population. We also identified areas where new resources, activities, and investments are needed—in particular, assessment and employer engagement. The scan also confirmed the need for more robust and comprehensive professional development for adult education professionals, including instructors, coaches, and leaders.

The next phase of DRAW provides an opportunity to share what we have learned with the adult education field through public-facing reports, resources, and professional development.

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