Digital Literacy and Equity
A Synthesis of Findings for Covered Populations

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Table of Contents

Introduction

In the spring of 2023, a research team led by the PEER Group at the Friday Institute for Educational Innovation conducted a review of literature and resources relevant to digital equity and literacy from the last ten years. Team members searched ProQuest Education Database, ERIC, Google Scholar, and other relevant databases for peer-reviewed articles. At the same time, programs and resources which addressed the issues of digital literacy and equity were documented. The studies, programs, strategies, or other projects found addressed not just K-12 populations, but also the "covered populations" as defined in Digital Equity Act Sec. 60302(8), which includes veterans, people who live in rural areas, people with disabilities, people with low literacy, English learners or whose first language is not English, and racial and ethnic minorities, aging populations, incarcerated individuals, and low-income populations (150% of the Federal Poverty line or below). The research team utilized constant consultations (at least once weekly) to address overlaps and divergences, and reconcile differences through peer debriefing. The material was compiled using Google Forms and Sheets, then edited and organized for ease of access by future partners.

This compilation summarizes information from the resulting annotated digital literacy and equity spreadsheet, and provides a snapshot of information from recent years about each of the covered populations. Some questions the team aimed to answer include:

- What are fundamental digital skills for this group?
- How does digital upskilling fit in and is it effective?
- What has been found to be ineffective (and why)?
- What research still needs to be conducted to better understand "what works" in digital literacy? and
- What are some best practices for selecting and supporting digital literacy providers?

The snapshots here are not intended to be comprehensive, but an orientation to the groups of interest, providing readers with details which may aid their own search for information relevant to current projects. The covered populations are presented in order of need for information; that is, the populations which were addressed least in the literature appear first, increasing in representation to the most covered populations. The final section contains recommendations based on the information analyzed.

Figure 1: Percentage of materials addressing covered populations.
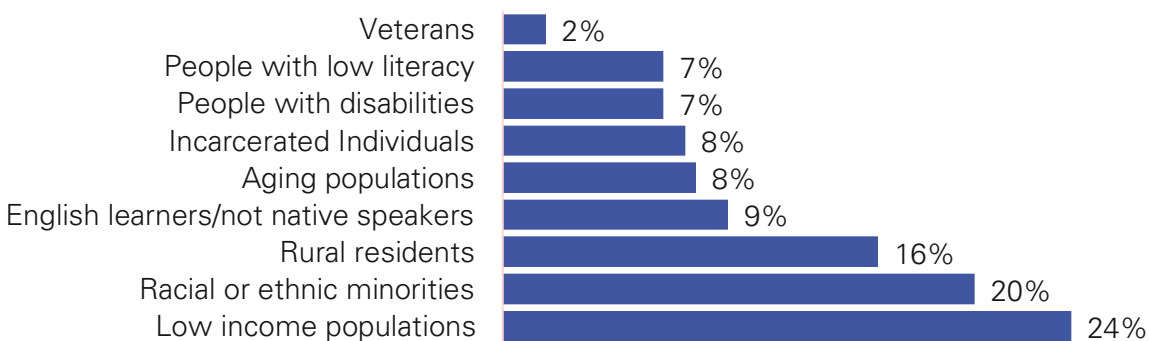
Veterans

Veterans are those who served in the United States armed forces in times of war or peace. In 2021, there were around 19 million veterans, representing less than 10% of the total population in the U.S. The number of veterans is projected to continue to decline over the next 25 years, though the numbers of females and racially/ethnically diverse veterans will increase (Schaeffer, 2021). Some key areas of digital equity concerns for veterans include telehealth, digital privacy, and job skills training. Regarding concerns of telehealth, there is a lack of access to both the technology and communications skills needed for telehealth appointments. Federal grants have recently targeted distribution of devices and broadband access for veterans to connect to VA health professionals to ensure they are able to fully access the healthcare benefits of their veteran status (Reentry Coordination Council, 2022). Outside of connection to healthcare services, some states have created programming to distribute technology to veterans as well as training them on avoiding online scams or in-job training (Washington State Department of Veterans Affairs, n.d.). Job training skills in IT-focused careers have been especially beneficial for the veteran population (Tech For Troops, n.d.). However, in some of these programs, there has been evidence that the distributed technology were not used for their intended purposes and other programs or incentives may be necessary (Veterans Health Administration, 2022).

Other potential concerns regarding solutions to digital equity challenges for veterans include lackluster implementation of programs leaving veterans struggling to still find employment, means-tested programs that limit veteran participation based on income level, and a mismatch of population needs and healthcare offerings. Digging deeper into program eligibility concerns, there are problems for both veterans making too much money to qualify for programs, or making too little for programs that require a certain base level of income to participate since veteran disability benefits are not considered as income (Washington State Department of Veterans Affairs, n.d.). Lastly, there are concerns of mismatch in the system between what government services are offered and what services veterans need. In particular, there is evidence from Dang, et al. (2022) that highlights an exacerbated digital divide in the high risk and high need population of veterans as almost half of the surveyed participants were unwilling to use telehealth as a component of their health services, and even among those willing to utilize telehealth appointments, only 20% of this high needs-high risk population had access to the necessary technology for effective telehealth appointments.

To help guide services for this population, future research should continue to analyze ongoing interventions and determine the best fit models and timing of these programs to meet the needs of veterans (National Telecommunication and Information Administration, 2013). There is also little research on the most vulnerable subpopulations of veterans including homeless/unhoused, disabled, or racial minority veterans that may face increased challenges and exclusion from digital equity resources.

People with Low Literacy

While not as severe as complete illiteracy, up to 20% of the United States adult population lack skills sufficient to compare and contrast information, paraphrase or make low level inferences (US Dept. of Education NCES, 2019). For this reason, digital literacy and equity programs

designed for the needs of their recipients will need to take into account low levels of literacy as part of readiness for digital skills. Difficulties with writing and reading may make these people reluctant to pursue information and training, and may surprise digital providers and educators, who will need to adjust materials and curricula to match (Pew Research Center, 2016). Fundamental skills of digital equity and inclusion for people with low literacy include basic computing skills such as would be used in a K-12 classroom (Power et al., 2020), access to healthcare and telehealth services that are linguistically and culturally inclusive (Eruchalu et al., 2021), and skills and employment upskilling (Lyons et al., 2019). In addressing these key areas of digital skills, classroom instruction of 1:1 device to student ratios with individualized instruction, student-centered teaching practices, and engaging environments have shown promise (Power et al., 2020).

Unfortunately, not all programs and policies are specifically designed to include those with literacy needs, and research by Lyons and colleagues (2019) suggests that unless policies explicitly address digital inequities in this population or other vulnerable populations, there is a high risk of increasing inequities and unemployment. Additionally, more research is needed on how to include culturally and linguistically diverse elements in digital platforms, especially for telemedicine (Eruchalu et al., 2021). Key programmatic areas for future research include connectivity deployment, how to promote digital skills acquisition in formal and non-formal educational settings, and how to link skills training better to the labor market (Lyons et al., 2019).

People with Disabilities

People with disabilities are a widely heterogeneous group of individuals, although there are shared challenges regarding accessibility and equity concerns of digital resources. Equal access in educational spaces is a common challenge (Park et al., 2019). Online class resources are commonly not accessibility friendly and lack basic features such as downloadable lectures with subtitles, alternative text formats for originally non-text media, and bypass buttons for those with visual impairments (Park et al., 2019). Khanlou and colleagues (2021) created a framework to analyze accessibility in digital equity for those with disabilities and found four key domains: education, daily living, integration, and employment. Additionally, in response to many aspects of digital technology being inaccessible, there is some evidence that digital learning advocacy groups can be effective (Ali & Herrera, 2020).

Unfortunately, challenges remain to bring accessible technology to this population. MOOCS in particular have been slow to incorporate meaningful accessibility features (Park et al., 2019). Teachers have also not received many professional developments or workshops to teach them how to help students with particular disabilities in the classroom (Khanlou et al., 2021). Additional areas have been historically under-researched when it comes to understanding the particular needs of this population. For example, mobile phone applications need more serious accessibility evaluations to ensure apps are easy to use for a range of disabilities (Park et al., 2019). Effective parent resources and strategies to support caregivers of children with disabilities need more research as well as programs where funding opportunities exist to help support infrastructure or schools with funding needs to support this population. Also, better resources to guide web design to be fully inclusive for various disabilities are needed. It is

important to mention that social inclusion, or improving the ability, opportunity, and dignity of those who are disadvantaged to take part in society, is also digital inclusion for people with disabilities or learning impairments (Khanlou et al., 2021).

Incarcerated Individuals

Incarcerated individuals have spent time away from free access to society which has moved along without them. Depending on the amount of time away, this can have a great effect on their ability to participate fully in digital aspects of society, which continue to evolve rapidly. The National Skills Coalition reported that 92% of jobs now require digital skills, and one-third of workers have low or no digital skills due to underinvestment and structural inequities (National Skills Coalition, 2023). Incarcerated individuals and those formerly incarcerated need digital access and skills including how to obtain free or low-cost connections to the internet and devices; how to navigate through various online systems for banking, utilities, healthcare and more; and perhaps most critically, how to determine the value and veracity of information they find when they are connected.

Evidence was found in a case study of incarcerated learners in New Orleans that participation in a digital literacy program was associated with reduced rates of recidivism (Withers, et.al, 2015). A literature review by Zivanai and Mahlangu (2022) emphasized the incarcerated individuals' needs in relation to returning to a digital society. Giving those individuals access to training during and after their time away can potentially positively influence their employment prospects, mental health and attitude, and family relationships. The review discusses fostering a "new reality of prison rehabilitation". The twenty-nine sources they explored covered four factors: digital society, digital rehabilitation, re-entry, and post-prison life. Some specified needs emerged through the literature including "soft skill" development, such as confidence in accessing and using the internet (Prison Scholars Fund, 2023). Providing this first level of access can help prisoners stay connected to family, and this has been shown to help reduce recidivism rates (Thaler et al., 2022). Finally, re-entry programs need an expanded curriculum, beyond basic internet skills, giving learners more confidence in their digital skills and a better chance at stable employment (Grow With Google, 2023).

To address the needs of those affected by incarceration, there is a need for more programs that address digital skill development without charging fees. One avenue for exploration to assess this need would be an inventory of programs offered to prisoners across the United States, both during and after incarceration, and what percentage of those offer digital access instruction. The North Carolina Department of Information Technology (DIT) is currently working to survey all organizations in the state that offer digital equity and inclusion support. This will include inventorying existing programs which are offered in NC jails and prisons.

Aging Populations

Aging populations may be those typically expected to have less digital access, but they may be motivated by social connectedness rather than a desire for using or learning digital technologies (Ma et al., 2020). Among older populations, there is typically a distinct gap in digital literacy and

digital inclusion due to technology anxiety and technophobia (Ma et al., 2020; Lee & Kim, 2018) and lack of access to internet and video-capable devices (Dang et al., 2022). Older users can be intimidated by digital literacy training, even those geared towards inexperienced users (National Telecommunications and Information Administration, 2013), and this, in turn, can make them less likely to take advantage of telehealth opportunities (Dang et al., 2022), especially among racial and ethnic minority populations (Mitchell et al., 2019). Additionally, older users are more likely to have a lack of access to internet and video-capable devices (Dang et al., 2022) and to be more concerned with the cost of the experience rather than benefits (Ma et al., 2020).

Additional skills for this population in terms of digital equity include the ability to promote seniors' autonomy and independence as they age using technology, even skills for employment and how to search for jobs online (National Telecommunications and Information Administration, 2013). Observational training and behavior modeling in a near-peer environment have been effective for aging populations (Ma et al., 2020). Research has also shown that intergenerational interactions and individualized training can serve to reduce older adults' anxiety about technology and increase their confidence when learning digital skills (Lee & Kim, 2019). Digital literacy/skills workshops conducted by community anchor organizations such as public libraries have also proven effective in meeting the needs of aging populations due to experiential or active learning in a highly structured environment with access to one-on-one assistance (Detlor et al., 2022). One program implemented by the Durham County library paired seniors at a community center with digital navigators in a drop-by format at predictable times, which increased the seniors' knowledge, skills, and access to the internet (Davis, 2022).

Additional research is still needed for this population including how to expand universal access to technology, what inclusive digital literacy sources should look like for aging populations, how to scale collaborations with community anchor organizations, how to conduct a needs assessment to drive user-driven needs, and how to highlight the benefits of technology to aging populations.

English Learners or Those Whose First Language is Not English

English language learners have a unique set of challenges when it comes to digital equity, literacy, and access. There are gaps in many areas, especially for healthcare and education access. In particular, there is a gap in healthcare outcomes between those fluent in English and those learning English. Many healthcare phone apps, telehealth appointments, and health information online are not in their native language. As healthcare becomes delivered more often online, the disparities in health outcomes widen (Craig et al., 2021). Additionally, during the early days of the COVID pandemic, disparities in educational resources were made clear. As kids transitioned to online learning at home, certain challenges for this population became evident with regards to digital equity. Many English language learners did not have simple access to technology for online school, or their parents did not have the digital skills to help them access their school work online (Katz et al., 2017). Other times, the resources or assessments available online are only given in English (Bergson-Shilcock, 2020). Also of note, children in the foster care system who are English learners often have limited access to

technology and broadband and often "fall through the cracks" in accessing these resources (Workie et al., 2022). More research and interventions are needed in the foster care system to ensure these children are able to access digital technologies.

There have been some promising interventions to help bridge digital equity divisions between English language learners and those fluent in English. Public libraries have emerged as key community resources for this population for several reasons (Cancro, 2016). Libraries are able to provide the basic access to technology and internet that some English learners do not have access to at their residence, provide workshops to help increase more effective use of technology and the internet, as well as improving confidence in using technology. Local nonprofits have also helped fill the divide by providing resources (e.g., refurbished devices) and workshops for English learners and have worked with school districts to expand access to technology to give to students. In the healthcare system, some apps have been developed to function in multiple languages, and interpreters are made available for some telehealth appointments, but there still remains work to be done on closing health disparities in digital health access (Saeed & Masters, 2021). Other areas of research that have been understudied for this population include how to design technology services that are easily accessible in diverse ways, including linguistic diversity as well as how to continue bolstering community anchor institutions (e.g., schools, libraries, and medical/healthcare providers) in supporting technology and broadband access to populations that have low rates of digital utilization (National Telecommunications and Information Administration, 2010).

Rural Residents

Rural areas in the United States vary greatly in terms of population and geography, ranging from densely populated small towns to isolated regions with sparse populations (Ratcliffe et al., 2016). Regardless of the specific characteristics of a rural area though, a common challenge faced by residents is the lack of reliable internet access. This issue is primarily caused by the high costs of the service resulting from low population density, a lack of competition among telecommunication companies to provide service, and inadequate fiber optic infrastructure (Reddick et al., 2020). The absence of a stable internet connection has significant implications for rural residents, impacting their ability to work, access education, and communicate effectively. Despite the critical importance of possessing fundamental digital skills in today's digital era, it is challenging for individuals in rural areas to utilize these skills effectively without a reliable internet connection (Lai & Widmar, 2021; Reynolds et al., 2022).

Some fundamental digital skills for this group include ability to connect to websites and search for information, especially regarding health services (Weaver, 2022). Maintaining cybersecurity to protect personal information will also be an important skill moving forward as the types and amounts of cyber scams and attacks constantly change (Livingstone, Mascheroni, & Stoilova, 2023). For these reasons, beyond a connection point and device, rural residents have been effectively serviced by community-based support, such as digital literacy training and digital learning coaches or navigators. For example, the Tech Talent South program in Louisiana provided workforce development for women and people of color, leveraging community resources to provide for those in need (ITU News, 2021). The Digital Works program achieved 1000 job placements as of August 2020 as a result of its workforce and economic development

efforts towards providing digital training and assistance with securing online positions (Digital Works, 2021).

Even with consistent community support, there are many barriers to closing digital gaps among those who live in rural areas. The gaps in services are often driven by the high cost to connect rural communities to broadband access, making it slim profit margins and thus undesirable for companies to invest in these communities (Schneir & Xiong, 2016). Even with rural communities with some internet access, being connected to this infrastructure varies based on how close a house or business is to the central area of the town. Additionally, there is little competition for broadband providers in rural areas, so residents are forced to accept and pay essentially monopoly prices and internet speeds without competitors to improve pricing or quality. Recent programs like Chicago Connected provide deep discounts to connect those in need, but unfortunately, low program awareness and complications with signing up hinder success (BCG, 2021).

Racial or Ethnic Minorities

The 2020 United States Census changed how race and ethnicity data were collected from previous years and provided what is thought to be a portrait of a more multiracial and multiethnic population than ever before. The data showed that the White alone population decreased by 8.6% since 2010, while the other groups, especially multiracial (+276%) increased (Jones, et al., 2021). Racial and ethnic status often intersects with other covered populations, such as English language learners. Fundamental digital skills for racial and ethnic minorities includes the ability to translate or access translated materials online, support at work environments for using technology for computer-based activities, similar support in school environments for using technology related to school work, basic computer skills such as setting up an email account, support for using technology to search for opportunities in the community, and training in social media tools for social connection and community online including connection to family in other countries. Examples of programs and policies that have been effective for this population include providing information in English and someone's home language, which is a basic barrier to many services online, especially for telehealth access. Also, targeted outreach via social media and community organizations is needed to deliver printed resources for those who do not have access to digital technology (Tinubu Ali & Herrera, 2020).

Community anchor institutions have been found to be effective in supporting some programs for digital upskilling as well as access to technology (National Telecommunications and Information Administration, 2010). Within programs, using family oriented and two-generation approaches to roll our technology has been found to be effective. Families should be empowered to select their own digital equity services within programs that best fit their needs (e.g. internet access, programs in local schools, library access, etc.). It is also suggested that every community should establish a digital learning center with inventories of digital technology for community members to use (Katz & Levine, 2015). Programs should also encourage family members in their programs to take the skills they learn back to their families. Lastly, incentives should be offered in digital literacy training programs, such as allowing participants to keep their

laptop if they attend the entire workshop series or certificates to those who complete certain modules (ASR Analytics, 2013).

Low-Income Populations

This was the group most often represented in literature related to digital literacy and equity. Many programs are envisioned with this broader group in mind but are also attuned to other critical populations (e.g., English language learners, veterans, or ethnic/racial minorities). In general, while some populations may have access to technology but not access to confidence or skills in using technology, many low-income individuals still lack basic access to technology (Tinubu Ali & Herrera, 2020). This is especially highlighted by challenges from students in families experiencing homelessness that may not be able to participate fully or at all in online learning.

Data on digital disparities reveal that nearly 20% of African American children ages 3-18 and 21% of families earning less than $40,000 per year have no access to the internet at home (Tinubu Ali & Herrera, 2020). Shifts in funding due to the COVID-19 pandemic should result in increases in broadband access in the near future, but even with increases, this population will always need assistance given the instability that comes with having a low income.

Producing content and communication for low-income families solely online is ineffective, as they do not always have necessary access or skills to find these resources. Wide use of Smartphones and mobile devices does not equal robust digital access and interaction. To reach potential participants, partnerships with community organizations need to be considered to distribute materials and help with recruitment. Promising programs have included partnerships between city governments, philanthropic partners, internet service providers, and community anchor organizations to create programs which provide long-term solutions to digital inequities in communities.

Conclusion with Recommendations

Beyond equitable access to broadband internet, an essential service and critical infrastructure in the digital era, other benefits of essential technologies will only be realized by users capable of navigating the different devices and sorting through unending information. While the research group was able to compile many examples of recent research and programs from the last ten years, continued research is still critical to understand how the digital divide impacts various groups and what may be done to reduce disparities. By addressing digital equity, disparities may be reduced in other areas such as health care, access to education, and money management (Li, 2022).

Even though it was a challenging time, the COVID-19 pandemic instigated the current wave of interest in and efforts to provide digital access and training. These moves towards equity might realize even greater good by monitoring individuals' and groups' outcomes through the pandemic-era programs, determining the impact on both their digital skills and their lives. New digital literacy and equity programs should **think long-term by anticipating ways to stay in touch**

with participants and building in mechanisms for future evaluation. This long-path view, thinking ahead to plan for data gathering even after a project ends, will help multiply the value of future efforts by understanding how the interventions influenced lives and provided benefits after the funds ran out.

There are efforts underway in North Carolina to connect groups working on digital literacy and equity through resource databases, and groups seeking to provide digital literacy services will certainly benefit from **discovering what is in place already and planning to fill gaps and connect their own program to the wider network of digital equity services**. Information repositories such as this can be used to select digital access and literacy providers based on their prior experience and success, community connections, and willingness to listen and respond to the groups in need which they serve. These providers can use critical support in the form of money and attention, and maintaining the network will allow cross-promotion of a wider range of services by advocates in government, health care, and education.

About This Brief

This brief is part of a series of research products regarding digital equity and digital literacy. In addition to this brief, there is an annotated spreadsheet with 163 articles and resources from the last ten years focused on digital equity and literacy. Another brief was written about best practices, which can be found here. A concept map presenting key points from the research and links to the accompanying materials can be https://go.ncsu.edu/dedlmap. The work was commissioned by The NC Department of Information Technology (NCDIT) and the NC Office of Strategic Partnerships (OSP) and funded by the Duke Endowment.

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References

BCG. (2021). *Accelerating broadband adoption for remote education and low-income households*. https://www.bcg.com/publications/2021/accelerating-broadband-adoption-for-remote-education-low-income-households

Bergson-Shilcock, A. (2020). *The new landscape of digital literacy: How workers' uneven digital skills affect economic mobility and business competitiveness, and what policymakers can do about it.* National Skills Coalition. https://files.eric.ed.gov/fulltext/ED607391.pdf

Cancro, P. (2016). The dark(ish) side of digitization: Information equity and the digital divide. *Serials Librarian*, *71*(1), 57–62. https://doi.org/10.1080/0361526X.2016.1157424

Craig, S., Shen, A., Wallis, K., Pak-Gorstein, S., Yun, K., & Dalembert, G. (2021). *How health systems can help address language barriers to achieve digital health equity. Penn Leonard Davis institute of health economics blog*.

Dang, S., Muralidhar, K., Li, S., Tang, F., Mintzer, M., Ruiz, J., & Valencia, W. M. (2022). Gap in Willingness and Access to Video Visit Use Among Older High-risk Veterans: Cross-sectional Study. Journal of Medical Internet Research, 24(4), e32570. https://doi.org/10.2196/32570

Davis, R. (2022). *Durham County Libraries Digital Navigators Grant*. North Carolina State University. http://www.fi.ncsu.edu/

Detlor, B., Julien, H., La Rose, T., & Serenko, A. (2022). Community-led digital literacy training: Toward a conceptual framework. *Journal of the Association for Information Science and Technology*, *73*(10), 1387–1400. https://doi.org/10.1002/asi.24639

Digital works. (2021). *Celebration of jobs*. Retrieved May 20, 2023. https://digitalworksjobs.org/celebration-of-jobs/

Connected nation. (2023). 20 years of Service. *Image*. Retrieved May 1, 2023. https://connectednation.org/20-years-of-service.

Eruchalu, C. N., Pichardo, M. S., Bharadwaj, M., Rodriguez, C. B., Rodriguez, J. A., Bergmark, R. W., Bates, D. W., & Ortega, G. (2021). The expanding digital divide: Digital health access inequities during the COVID-19 pandemic in New York City. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, *98*(2), 183–186. https://doi.org/10.1007/s11524-020-00508-9

With, G., & Google. (2023). Digital skills training for people impacted by the justice system. Grow with google/justice impacted. https://grow.google/justice-impacted/

Jones, N., Marks, R., Ramirez, R., & Rios-Vargas, M. (2021). *Census illuminates racial and ethnic composition of the country*. https://www.census.gov/library/stories/2021/08/improved-race-ethnicity-measures-reveal-united-states-population-much-more-multiracial.html, *2020*. United States Census Bureau.

Katz, V. S., Moran, M. B., & Ognyanova, K. (2017). Contextualizing connectivity: How internet connection type and parental factors influence technology use among lower-income children. *Information, Communication & Society*, *22*(3), 313–335. https://doi.org/10.1080/1369118x.2017.1379551

Katz, V. S., & Levine, M. H. (2015). Connecting to learn: Promoting digital equity for America's Hispanic families. Retrieved May 2, 2023. https://joanganzcooneycenter.org/wp-content/uploads/2015/03/jgcc_connectingtolearn.pdf

Khanlou, N., Khan, A., Vazquez, L. M., & Zangeneh, M. (2021). Digital literacy, access to technology and inclusion for young adults with developmental disabilities. *Journal of Developmental and Physical Disabilities*, *33*(1), 1–25. https://doi.org/10.1007/s10882-020-09738-w

Lai, J., & Widmar, N. O. (2021). Revisiting the digital divide in the COVID-19 era. *Applied Economic Perspectives and Policy*, *43*(1), 458–464. https://doi.org/10.1002/aepp.13104

Lee, O. E.-K., & Kim, D.-H. (2019). Bridging the digital divide for older adults via intergenerational mentor-up. *Research on Social Work Practice*, *29*(7), 786–795. https://doi.org/10.1177/1049731518810798

Li, F. (2022). Disconnected in a pandemic: COVID-19 outcomes and the digital divide in the United States. *Health and Place*, *77*, 102867. https://doi.org/10.1016/j.healthplace.2022.102867

Livingstone, S., Mascheroni, G., & Stoilova, M. (2023). The outcomes of gaining digital skills for young people's lives and wellbeing: A systematic evidence review. *New Media and Society*, *25*(5), 1176–1202. https://doi.org/10.1177/14614448211043189

Lyons, A. C., Zucchetti, A., Kass-Hanna, J., & Cobo, C. (2019). Bridging the gap between digital skills and employability for vulnerable populations. In *The digital age*.

Ma, Q., Chan, A. H. S., & Teh, P.-L. (2020). Bridging the digital divide for older adults via observational training: Effects of model identity from a generational perspective. *Sustainability*, *12*(11), 4555. https://doi.org/10.3390/su12114555

National skills coalition. (2023). *New Report: 92% of jobs require digital skills, one-third of workers have low or no digital skills due to historic underinvestment, structural inequities*. https://nationalskillscoalition.org/news/press-releases/new-report-92-of-jobs-require-digital-skills-one-third-of-workers-have-low-or-no-digital-skills-due-to-historic-underinvestment-structural-inequities/

National Telecommunications and Information Administration. (2010). *OneCommunity case study report (Order Number D10PD18645)*. https://www2.ntia.doc.gov/files/onecommunity_case_study_report_order_number_d10pd18645.pdf

National Telecommunications and Information Administration. (2012). *Chicago Public Library: Broadband Technology Opportunities Program Sustainable Broadband Adoption Project (Round 2) case study report*. https://www.ntia.gov/files/ntia/publications/chicago_case_study_report_round_2_0.pdf

National Telecommunications and Information Administration. (2013). Broadband Technology Opportunities Program evaluation study. https://www.ntia.gov/files/ntia/blogimages/workforce_west_virginia_case_study_report_round_2.pdf (No, O. *D10PD18645*).

Park, K., So, H.-J., & Cha, H. (2019). Digital Equity and accessible moocs: Accessibility Evaluations of Mobile moocs for learners with visual impairments. *Australasian Journal of Educational Technology*, *35*(6), 48–63. https://doi.org/10.14742/ajet.5521

Pew Research Center. (2016). Digital readiness gaps. https://www.pewresearch.org/internet/2016/09/20/digital-readiness-gaps/

Pleasants McDonnell, R., Fraser, S., & Sullivan, F. (2022, August 15). Digital Resilience in the American workforce: Findings from a National Landscape Scan on Adult Digital Literacy instruction. Retrieved April 28, 2023. https://www.jff.org/resources/digital-resilience-in-the-american-workforce-landscape-scan/. Jobs for the Future.

Powers, J. R., Musgrove, A. T., & Nichols, B. H. (2020). Teachers bridging the digital divide in rural schools with 1:1 computing. *Rural Educator*, *41*(1), 61–76. https://doi.org/10.35608/ruraled.v41i1.576

Prison scholars fund. (2023). *Our Work and Impact*. https://www.prisonscholars.org/what-we-do/our-work-impact/

Reddick, C. G., Enriquez, R., Harris, R. J., & Sharma, B. (2020). Determinants of Broadband Access and affordability: An analysis of a community survey on the digital divide. *Cities*, *106*, 102904. https://doi.org/10.1016/j.cities.2020.102904

Reentry Coordination Council. (2022). Coordination to reduce barriers to reentry: Lessons learned from COVID-19 and beyond. https://www.justice.gov/opa/press-release/file/1497911/download

Reynolds, R., Aromi, J., McGowan, C., & Paris, B. (2022). Digital divide, critical-, and crisis-informatics perspectives on K-12 emergency remote teaching during the pandemic. *Journal of the Association for Information Science and Technology*, *73*(12), 1665–1680. https://doi.org/10.1002/asi.24654

Saeed, S. A., & Masters, R. M. (2021). Disparities in health care and the digital divide. *Current Psychiatry Reports*, *23*(9), 61. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8300069/. https://doi.org/10.1007/s11920-021-01274-4

Schaeffer, K. (2021). The changing face of America's veteran population. https://www.pewresearch.org/short-reads/2021/04/05/the-changing-face-of-americas-veteran-population/

Tech for Troops. (n.d.). Our Service to veterans. https://techfortroops.org/services/veterans/

Thaler, O., Barkworth, J., & Howard, M. (2022). Implementing digital technologies in prisons: A qualitative study of inmate experiences. Corrections research evaluation and statistics. Corrective services NSW. *Research Bulletin*, *5*.

Tinubu Ali, T., & Herrera, M. (2020). Distance learning during COVID-19: 7 equity considerations for schools and districts. Retrieved April 28, 2023. https://southerneducation.org/publications/covid-19-digital-equity/. Southern Education Foundation.

U.S. Department of Education NCES. (2019) Data Point: Adult Literacy in the United States. Retrieved June 7, 2023 from https://web.archive.org/web/20200730223012/https:/nces.ed.gov/datapoints/2019179.asp

Washington State Department of Veterans Affairs. (n.d.). Digital navigator program. https://www.dva.wa.gov/veterans-service-members-and-their-families/digital-navigator-program

Weaver, D. J. (2022, December). Delivering on the promise of digital equity. *Digital Promise*. https://doi.org/10.51388/20.500.12265/166

Withers, E., Jacobs, G., Castek, J., Pizzolato, D., Pendell, K., & Reder, S. (2015). Corrections and reentry. Digital literacy acquisition case study. http://archives.pdx.edu/ds/psu/16519

Workie, E., Hinkle, L., deDufour, A., & Lacarte, V. (2022). *Advancing digital equity among immigrant-origin youth*. Migration Policy Institute.

Zivanai, E., & Mahlangu, G. (2022). Digital Prison Rehabilitation and successful re-entry into a digital society: A systematic literature review on the new reality on prison rehabilitation. *Cogent Social Sciences*, *8*(1). https://doi.org/10.1080/23311886.2022.2116809