

Inclusive Design Principles for Learning and Employment Records: Co-Designing for Equity

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April 2022



Acknowledgments

The Digital Promise Adult Learning Initiative owes our deepest gratitude to the many frontline workers who inspire our work and are at the center of this report. We are incredibly grateful for their willingness to share their stories and reflect on the topics mentioned in this publication. Throughout this report, we will refer to these individuals as participant-advisors.

Our appreciation goes to several partners who led recruitment efforts, including Holly Kurtz and Orlando Cazarez of Center for the Future of Arizona, Alexandra Rudnick of Generation USA, Luther Jackson of NOVAworks, and Luis Quinones of UnidosUS. Their support made it possible for us to connect with numerous frontline workers throughout the U.S., and we are immensely thankful for their partnership.

We are equally grateful to our innovative design team, including Adha Mengis of Digital Promise, Malliron Hodge of Malliron L Hodge Education Innovation Consulting, LLC, and Daniel Huffine, Lauryn Goodlett, and Nick Vega of Vantage Point Consulting. Their commitment to constructing an empathetic environment for participant-advisors to express themselves was vital to our work. We are incredibly thankful for their human-centered design and facilitation.

Throughout this research, a group of dedicated technical advisors provided their expertise, thought partnership, and insights. We have the highest appreciation for their time with us over the last several months, asking thought-provoking questions, providing critical resources, and offering invaluable feedback, which enabled us to reflect more deeply on our approach to this work. We would like to extend a heartfelt thanks to Harold Tran of Vantage Point Consulting, Kerri Lemoie, Ph.D. of Badgr, Madison Jacobs of Edtech Equity Project, Michele Spires of American Council on Education, Nidhi Hebbbar of Edtech Equity Project, Phillip Long, Ph.D. of RHZ Consulting, LLC, and Taylor Kendal of Learning Economy Foundation.

We are thankful to Jason Tyszko and members of the U.S. Chamber of Commerce Foundation's T3 Innovation Network for their ongoing partnership and shared commitment to creating equitable learning and career pathways. We want to acknowledge the contributions of our Learning and Employment Records (LER) pilots affiliated with the T3 Innovation Network, including Kimberly Linson Wilson and Marty Reed of RANDA Solutions, Suzanne Carbonaro of HelioCampus, and Tracy Korsmo of the North Dakota Information Technology Department. Their LER knowledge and perspective was essential to understanding the implications for our work, and we are thankful for their collaboration.

We would also like to acknowledge the contributions of our Digital Promise colleagues whose support reached beyond our expectations. Our profound thanks to Daniel Parker, Ph.D., Kelly Page, Ph.D., Kimberly Smith, Kristen Franklin, Parker Van Nostrand, and Sierra Noakes for their collaboration, thought partnership, data analysis, research, and report review. Thanks to Brian Raszka, Corinne Colgan, Crystal Williams, Marsha Choc, and Sarah Martin for their creative design and production support. Thanks to DeLisha Tapscott, Kathryn Petrillo-Smith, Lindsay Gratton, and Sangyeon Lee for their help coordinating budgets and stipends, and many others who made this work achievable.

This work was made possible with funding provided by Walmart. Special thanks to Sean Murphy for providing thought partnership, inviting collaboration with the Walmart.org [Center for Racial Equity](#) and Marvin Carr, and promoting collective impact toward a more equitable workforce system.

About Digital Promise

Digital Promise is a nonprofit organization that was created with a mission to accelerate innovation in education to improve opportunities to learn for all learners.

We believe that each person at every stage of their lives should have access to inclusive, powerful learning experiences based in fact that affirm and honor all identities, perspectives, and cultures. Through these experiences, learners can acquire the knowledge and skills they need to thrive in an ever-changing world.

Education is a civil right. Working at the intersection of education leaders, researchers, entrepreneurs, and developers, we bring together stakeholders from across the sector to improve learning and opportunities to learn with the power of technology and innovation. As such, this position confers us, our networks, and our partners with significant responsibility to influence systems, practices, and policies to ensure all learners the opportunity to achieve their highest human potential.

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Suggested Citation

Cacicio, S., Tinsley, B., Miller, A., & Luke Luna C. (2022, April). *Inclusive design principles for learning and employment records: Co-designing for equity*. Digital Promise. <https://doi.org/10.51388/20.500.12265/154>

Introduction

Today, leaders in government, education, and industry are developing new, digitally-mediated ways to capture, document, and verify skills and competencies of employees with technology-based solutions, such as Learning and Employment Records (LERs). LERs are comprehensive digital records of an individual's skills, competencies, credentials, and employment history that may present a more complete picture of education and work experiences. They have the ability to strengthen or reinvent resumes by including verifiable and immutable data about an individual's experience, achievements, and capabilities. Ideally, this information is updated over time and is interoperable across data systems.

LERs could better connect individuals to education and career opportunities in the [skill-based future of learning and work](#).¹ They could be used to increase learner agency in tracking their skills and mitigate biases in employer hiring and promotion practices.² But like many new technologies, LERs also pose a threat to equity. If designed without the inclusion of individuals who are most marginalized in the workforce—particularly Black and Latina women who are overrepresented in low-wage jobs³—they could reproduce existing inequities in the talent pipeline or introduce new ones.⁴

There is an immediate need to address inequities in our education and workforce systems. For example, retail is the second largest industry for Black employment in the United States. Black workers make up [11%](#) of the retail labor force but just 6% of managers.⁵ As Hanleybrown et al. (2020) makes clear in [Advancing Frontline Employees of Color](#), racial equity efforts in the workplace need to go beyond traditional diversity, equity, and inclusion training.⁶

Increasingly, employers and education providers are exploring ways to create more equitable, skills-based hiring and training practices. LERs could be used to support this shift as well as verify on-the-job skills training for current and prospective employees, but the design of these solutions matters. As more LERs enter the market, we must learn to recognize design processes that are “structured in ways that make it impossible to see, engage with, account for, or attempt to remedy the unequal distribution of benefits and burdens they reproduce” (Costanza-Chock, 2020).⁷

Digital Promise collaborated with workers in frontline sectors along with leaders in higher education, design, and technology to explore how LER technology could be used to promote greater equity across education and workforce systems. Drawing on our [Inclusive Innovation Model](#), we engaged frontline workers, referred to as participant-advisors, in a series of design sessions to understand their perceptions of emerging LER technology and identify potential gaps in the design for developers. Participant-advisors expressed interest in the idea of LERs as a way to keep track of their information, communicate their skills more effectively, and connect to opportunities to grow their career. They also raised critical concerns for developers and other key stakeholders to consider, such as privacy, accessibility, inexperience with technology, and discrimination in the workplace. Throughout the process, we documented the stories and lived experiences of our participant-advisors who truly stand to gain from a more equitable, transparent, skills-based workforce system.

The result of this work is a set of **Inclusive Design Principles and user profiles for LERs** created for technology developers and issuers. These tools will serve to inform and motivate developers to take into account educational and career trajectories that may substantially differ from learners and/or workers for which they are typically designing. In efforts to influence development, we invite technology developers to

reflect on the principles and user profiles shared here and address potential gaps in their design related to equity, access, and inclusion. More broadly, we aim to engage education and training providers, employers, policymakers, nonprofit leaders, funders—and others exploring the integration and use of LER technology—to consider what it will take to design tech-based solutions, such as LERs, for greater inclusion.

Our vision for this work is that LERs are developed to promote a more equitable, transparent, and skills-based system with and for workers at every career stage. This vision is not possible without the substantive inclusion of workers in the design, implementation, and scaling of these technologies.⁸ This report outlines the process for creating Inclusive Design Principles and user profiles for LERs, as well as key learnings and implications for future work.

Design Framework

The premise of Digital Promise's [Center for Inclusive Innovation](#) is that existing research and development models for solving challenges in education often fail to meet the needs of the people they are designed to serve: historically marginalized populations, such as Black, Indigenous, and people of color (BIPOC), as well as people experiencing poverty. The power of Inclusive Innovation is that it does not simply invite marginalized voices and perspectives to the conversation; rather, it places them at the center of design, development, and implementation.

In collaboration with our design partners at Vantage Point Consulting, we held a series of rapid design cycles to generate principles and user profiles with approximately 30 entry- and mid-level workers from frontline sectors, prioritizing the participation of historically marginalized people in the U.S. workforce, including Black and Latina women. We then iterated on these tools with members of our Technical Work Group as well as three LER pilots affiliated with the [T3 Innovation Network](#)—emerging projects focused on developing use cases, harmonizing public-private data standards, and processes for sharing records between employers and education, training, military, or credentialing partners. We created opportunities to reflect on and examine the potential for biases in their design, with a focus on racial biases. In addition to design and iteration within the work group and pilots, we developed and conducted a survey to gather feedback on LER value and use from individuals in the broader learning and work ecosystem (i.e., workers, employers, and education providers). Based on our learning, we revised our design principles and user profiles.

Inclusive Design

The purpose of our design sessions was to gain insight from workers in frontline sectors about their experiences in pursuing education, training, and employment opportunities. Specifically, we wanted to understand their perceptions on how LERs could be designed to help or harm workers. Sessions generated ideas for addressing issues of **accessibility** (i.e., language, digital skills and devices, and knowledge of the technology), **discrimination** (biases experienced in the job search and workplace, related to race, gender, age, immigration status, parenting status, work history, etc.), **value** (communicating skills, curating credentials, and connecting to life-sustaining opportunities), and **use** (data agency, control, sharing, and technical support).

Throughout the process, we documented the stories of individuals, which remained central to the design and iteration process. Facilitators from both Digital Promise and Vantage Point led the design sessions over several months. Participant-advisors, residing across multiple time zones, were divided into three cohorts, which met a total of three sessions on a bi-weekly basis via video conferencing. In an effort to remain conscious and accommodating of the alternative work schedules of participant-advisors, one cohort met on Sunday afternoons. Participants who were unable to attend bi-weekly sessions participated in a subsequent fourth cohort. Those who may have missed a session were allotted the ability to provide feedback individually, as their schedule permitted.

"The nature of [learners] being able to tell their own stories in real time as their goals, skills, and the labor market evolves ... this opens doors for developers to create products that speak to the realities of a complex, dynamic world."

— Taylor Kendal, President, Learning Economy Foundation

During design sessions, we were intentional about creating a space where participants felt safe to share the successes and struggles of their employment history by being 1) laid back, 2) inclusive, and 3) facilitating collective ownership. Accordingly, we made efforts to have a relaxed environment, ensuring that participants were open to comfortably share positive and negative experiences, as well as relay narratives that might be contrary to those of others. Though discussion topics were important and sensitive, attempts were made to create a fun and affirming environment. To promote *inclusivity*, facilitators validated and celebrated various opinions and experiences, as well as adapted sessions to the information that was shared within and across sessions. This practice also lent to the sense of *collective ownership* by remaining adaptive and ensuring that participants felt as if they were contributing to the creation/design process, instead of *subjects*.

“Design spaces often have little input for the products designed ‘for’ workers. To get a product that serves the needs of frontline workers, they have to be part of the conversation. Making the shift from being designed ‘for’ to being developed ‘with’—that is the way to get to more impactful products.”

— Malliron Hodge, Inclusive Design Consultant and Co-Facilitator

In an effort to adhere to the notion of equitable pay, we compensated participant-advisors at the same rate that we compensate other consultants with whom we collaborate. In accordance with standard rates, participant-advisors received \$200 per session.

Iteration

Based on our learning from sessions with participant-advisors, we drafted a set of Inclusive Design Principles and user profiles from LERs. We collaborated with members of our Technical Work Group and LER pilot partners to review and revise several drafts with the goal of making worker-led recommendations actionable for developers. We provided reasoning to support each principle based on participant-advisors’ experiences as well as relevant research and development efforts in LER technology. The Technical Work Group met regularly and provided collaborative (over Zoom) and asynchronous feedback on multiple sets of drafted items. The Technical Work Group advised on framing the principles and made critical connections to LER technology infrastructure and data standards to ensure more effective application. Subsequently, we administered the survey to gather broader perspectives on potential design to mitigate experienced biases in education and workforce systems. Finally, we revised the Inclusive Design Principles and user profiles for LERs.

Evaluation

In an effort to further validate findings from design sessions as well as solicit additional stakeholder perspectives, we surveyed a broader sample population of workers, employers, and educational providers concerning their perspectives on potential LER value and potential methods of implementation. To analyze survey results, several Chi-Square Tests of Independence were conducted via SPSS, a statistical analysis software, to assess the relationships between demographic variables, such as race/ethnicity and experiences of discrimination while at work as well as gender and experiences of discrimination while at work. Across the design sessions and survey, an important aspect of feedback that we sought to consider were the challenges that users may deem possible as a result of the design and implementation of this new

technology. Given their lived experiences, garnering the input of workers and taking into consideration potential methods of mitigating the replication of their past negative encounters was pivotal to assessing the potential benefits. Importantly, understanding these lived experiences can assist in locating *gaps* in awareness that designers may have, given that their education and career trajectories may be significantly different than users for which they are designing.

Communication

In addition to creating the LER Inclusive Design Principles and user profiles, Digital Promise produced a video featuring frontline workers from the design sessions to tell their own stories. In a series of informal interviews, workers conveyed their genuine concerns as well as their visions for themselves and others who may stand to benefit—or not benefit—by the implementation of such technology. This [video](#) informs prospective LER end users about the potential value of this technology if developed and leveraged equitably. This report and several presentations are also part of the comprehensive communications campaign intended to raise awareness about the need for equitable LER design.

Collaborators

Digital Promise believes in the power of technology to advance equity and social mobility. In line with our Inclusive Innovation approach, we partnered with key stakeholders in the LER ecosystem to co-generate the Inclusive Design Principles for LERs and user profiles, including workers in frontline sectors, recruitment partners, design partners, technical advisors, and critical networks in the learning and work ecosystem.

Workers

We prioritized the recruitment of entry- and mid-level workers in frontline roles who are most impacted by job instability, displacement, or workforce disruptions, such as the COVID-19 pandemic. This includes Black, Latina/o, Indigenous, and immigrant workers, women, and those with a high school diploma or less.⁹ We partnered with several organizations to reach individuals in industries such as retail, restaurants, hospitality, healthcare, and manufacturing. These organizations are described below as recruitment partners.

Design participants included a total of 27 workers, a group predominantly composed of women of color 18–45 years old working in retail, hospitality, and food service. Approximately half of the participants worked full-time, and 44% worked two or more jobs. The overwhelming majority of participants reported earning between \$10,000–40,000 annually (48%) or less than \$10,000 annually (37%). Many participants were not comfortable with Zoom and interactive platforms, such as [Google Jamboard](#), for design sessions, and 11% reported no computer access, reflective of larger [digital access divides](#) in the U.S.¹⁰ These participants joined sessions by phone in groups or individually. Finally, most participants reported updating their resume or credentials only when looking to apply to another position.

Recruitment Partners

A critical piece of this work was to generate buy-in and participation among workers. To start, we did not assume that individuals would want to participate in inclusive design or trust that their feedback would be valued and utilized to promote greater equity. For this reason, we partnered with several trusted organizations that provide direct services to adults to support recruitment efforts, including the following:

[Center for the Future of Arizona](#) (CFA) is a nonprofit, nonpartisan organization that brings Arizonans together to create a stronger and brighter future for our state. In partnership with major retail employers, CFA's workforce development programs combine education, training, and support systems to strengthen Arizona's workforce, advance innovative employment practices, and help workers develop skills that will benefit them throughout their careers.

[Generation USA](#) is a national organization dedicated to transforming education to employment systems to prepare, place, and support people into life-changing careers that would otherwise be inaccessible. Their approach includes a rapid launch process, bootcamp-style training and placement, and individualized education plans with resources and support for unemployed individuals, including returning citizens.

[NOVAworks](#) is a nonprofit, federally funded employment and training agency that provides customer-focused workforce development services. They work closely with local businesses, educators, and job seekers to ensure that programs provide opportunities that build the knowledge, skills, and attitudes necessary to address the workforce needs of Silicon Valley.

[UnidosUS](#) is the largest Latino civil rights organization in the United States. They lead research, policy analysis, and state and national advocacy efforts, as well as program work in communities nationwide through a network of nearly [300 affiliates](#) across the country.

Design Partners

The Digital Promise Inclusive Innovation Team partnered with [Vantage Point Consulting](#) to co-develop an inclusive design paradigm specifically for this project. Vantage Point works with collaborative partners across industry, education, government, and nonprofit sectors to remove barriers to career and education access and advancement through design, data, and technology. Sessions were co-created and facilitated by Digital Promise and Vantage Point lead designers.

Technical Work Group

Digital Promise established a Technical Work Group to leverage expertise in human-centered design, racial bias in education technology and AI, [Blockchain and other distributed ledger technologies](#),¹¹ digital badging and certification, [higher education and workforce systems](#),¹² and research and communications. Key activities included: supporting with ongoing data analysis to review emergent themes and co-generate preliminary design principles for LERs and user profiles based on participant-advisors' design sessions; co-establishing equity agreements to examine our individual roles in mitigating racial biases in LER technology; working with pilots involved in U.S. Chamber of Commerce Foundation's T3 Innovation Network as described below; providing expertise on decentralized technologies, open standards visibility, and alignment, and challenging the ways that LER technology may reflect and reinforce systemic biases against workers. We met regularly to affirm our shared commitment to equity in inclusive LER design, adoption, and use, prioritizing racial and gender equity.

T3 Innovation Network and LER Pilots

We aimed to ground this work in existing efforts to advance equity and transparency. For this reason, we partnered with members of The U.S. Chamber of Commerce Foundation's [T3 Innovation Network](#) to learn about and connect to several LER pilot projects. The T3 Innovation Network consists of more than 500 organizations exploring the emerging technologies and standards in the talent marketplace to create more equitable and effective learning and career pathways. The T3 Network is supporting the scalable pilot testing of dozens of LER pilot teams and more than 50 organizations nationwide engaging in the LER Resource Hub. To explore opportunities to make real-time design decisions, technical adjustments, and reflections based on learnings, we engaged three LER pilots across the network: The Lifelong Learner Project powered by Teachers, North Dakota Learning and Employment Record, and Lifelong Learning Initiatives at Johns Hopkins University.

Key Learnings

Design Sessions

Design sessions proved to be an extremely valuable means of soliciting information from participant-advisors. Actively creating a space in which participants understood that the perspectives they were sharing were both valuable to the design process—and that they were safe in doing so—was pivotal in this process. This was gauged by participants' willingness to consistently and openly share sensitive experiences. The initial design session for most participants included several exercises during which they participated in creating a collective vision that incorporated multiple career pathways. It was clear that participants were knowledgeable of their respective industry sectors and had adopted a range of skill sets that showcased creativity, marketing, customer engagement, and empathy.

"It's essential to include the communities you build for during the design and development phases of any product. This ensures that their perspectives and concerns influence not only the development of a product, but also the objectives it strives to achieve—to ensure the technology is truly built for their benefit. In order for LERs to effectively empower a diverse set of working people, we needed to develop with working people, hear their challenges, understand their goals, and incorporate their feedback in many stages of the project."

— Nidhi Hebbar, co-founder, *The EdTech Equity Project*

Participant-advisors expressed that their job titles did not fully capture the breadth of experiences and skills that they developed. This was evidenced by the facilitated exercises, during which participant-advisors shared the varying perspectives that others in their social circles have of their job roles. These collective efforts resulted in the building of relationships and an establishment of trust among cohort members and facilitators.

Recording, transcribing, and analyzing the design sessions yielded five key themes:

- a) needs and challenges that arise during application processes and employment,
- b) experiences of biases and discrimination,
- c) use of digital platforms to assist in locating employment and organization credentials,
- d) concerns regarding presentation of information, and
- e) recommendations for LER development.

Capturing these stories and experiences while co-developing and revising the Inclusive Design Principles and user profiles for LERs facilitated a direct line of communication between participant-advisors and technical advisors as well as LER pilot programs.

"LERs must be easy to use, composable into a data-driven story, and allow the users to tell their story in a way that expresses their best selves. LER pilots represent the iterative attempts to meet these essential user requirements because the marketplace user experience always trumps technology."

— Phillip Long, LER network facilitator, T3 Innovation Network

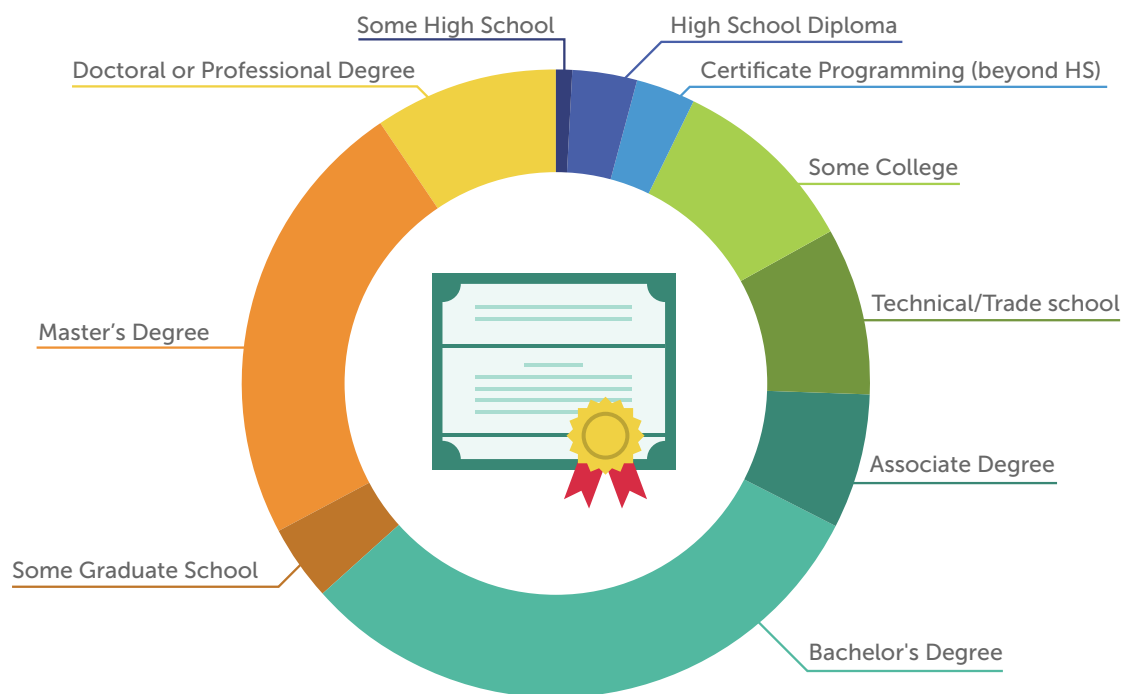
Survey

In order to better understand the perspectives of broader populations, we conducted a general survey to a wider audience, which included frontline workers. For each survey question, participants were permitted to check all available response options. Participants also had the option of watching a brief [video](#) embedded on the front page of the survey about LERs, produced by the U.S. Chamber of Commerce Foundation, in the event that they were unfamiliar with the topic.

Participants

The sample included 315 valid respondents, of which 299 were within the United States and 16 indicated that they were outside of the U.S. Approximately 48.1% identified as women, and 49.4% identified as men. One respondent identified as 'non-binary,' while 7 respondents indicated that they would rather not respond to the question. Participants ranged in ages 18–25 (8.4%), 26–35 (38.3%), 36–45 (32.5%), 46–55 (14.5%), 56–65 (5.5%), 66–75 (1%). Approximately 49.2% of respondents were BIPOC, while 46% identified as White.

Table 1. Highest Level of Education for Survey Respondents (N=310 Respondents)



Approximately 56.1% indicated that they were an educator, administrator, or specialist in the field of education who provides, tracks, or evaluates credentials of students/earners/program participants, while 21.9% indicated that they were an employer (e.g., hiring manager or HR specialist) who is responsible for reviewing, tracking, or assessing credentials of applicants or potential workers for an employing organization/intuition/company. The remaining 21.9% of respondents were workers who did not identify themselves as employers or education providers.

Approximately 71% of respondents indicated that they were familiar with LERs. Participants were subsequently prompted, “Based on your previous experience using electronic learning and employment records, please briefly share your thoughts about which aspects make you feel uncomfortable.” The majority of respondents indicated that they believed that too much information could potentially be seen by other organizations.

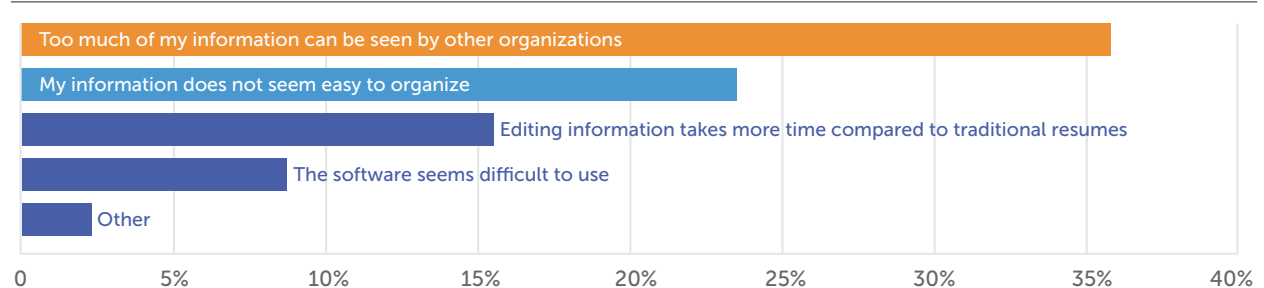
Design Sessions and Survey Results

Needs and Challenges

Design Sessions. In the design sessions, several participant-advisors indicated that they were unsure of how to present the skills that they have previously learned, while others expressed a desire to learn additional skills in order to obtain the career path that they want to pursue. Furthermore, some participants recognized a need to improve their communication skills.

Survey. Approximately 41.7% of respondents indicated that the idea of using LERs was uncomfortable because they believed that too much of their information may be seen by other organizations, whereas approximately 27.4% of respondents indicated that their information did not seem easy to organize.

Table 2. Potentially Uncomfortable Aspect of LERs among Survey Respondents



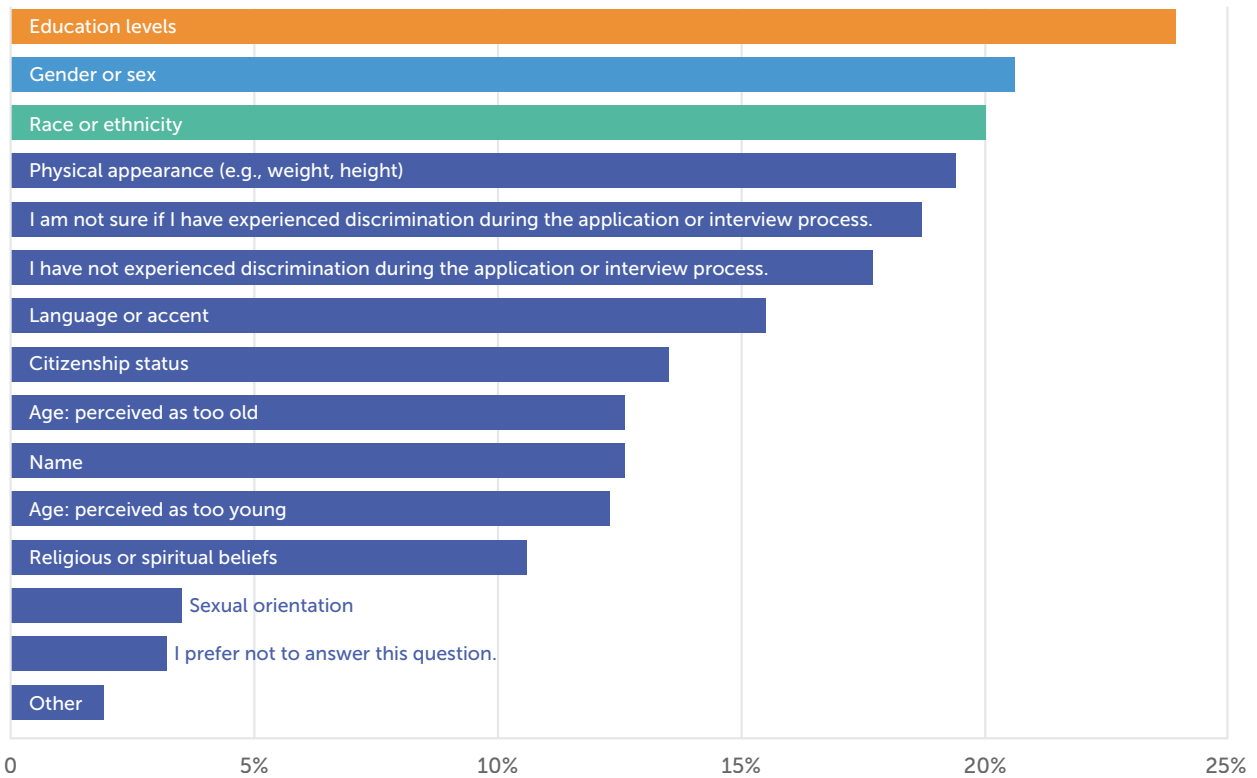
In addition, analysis of gender differences found that men indicated that they were less likely than women to effectively relay their social skills ($X^2(2, N = 310) = 11.84, p < .003$) and communication skills ($X^2(2, N = 310) = 7.69, p < .02$).

Biases and Discrimination

Design Sessions. Notably, participant-advisors communicated a range of experiences in which they had encountered multiple forms of bias and discrimination. These experiences included biases based on language, race/ethnicity, having a name of a different ethnicity, as well as age (i.e., being perceived as “too young” or “too old”).

Survey. Approximately 23.9% of participants indicated that during the application and/or interview processes, they believed that they had endured various types of discrimination because of their education levels. Approximately 20.6% indicated that they experienced discrimination due to their gender, while 20% indicated that they experienced bias due to their race/ethnicity while applying. These occurrences highlight the need for LER platforms to attempt to mitigate such events from happening.

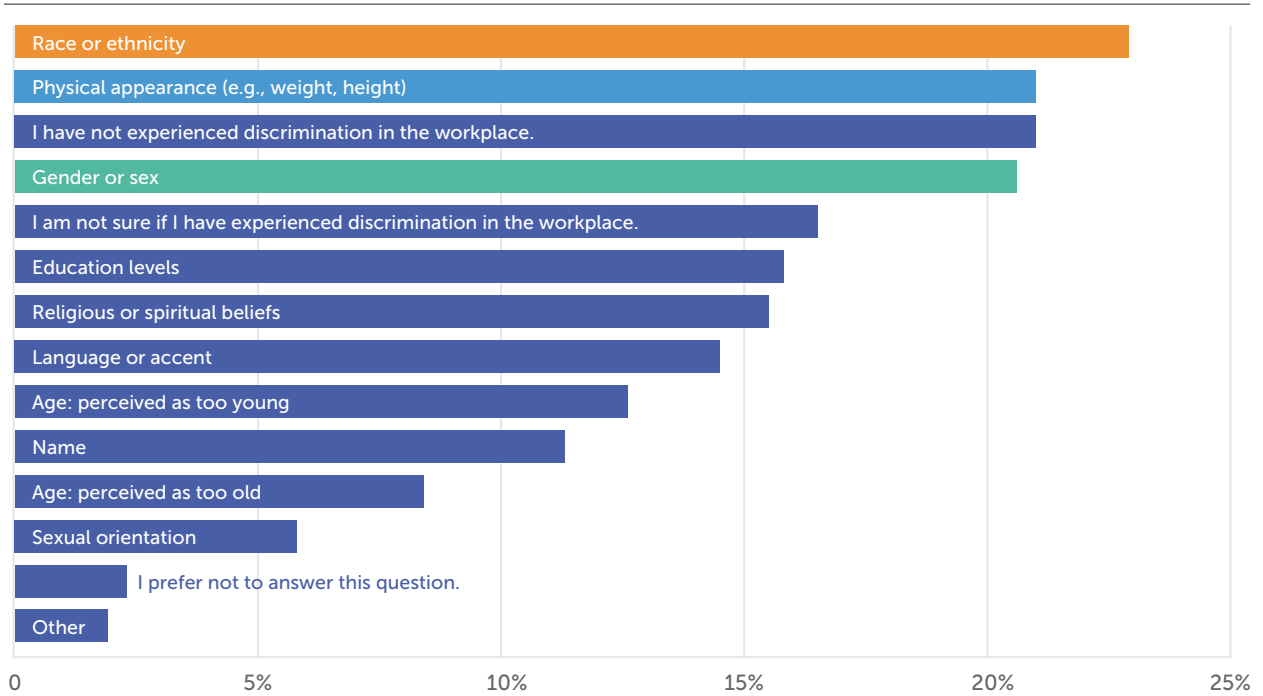
Table 3. Experiences of Discrimination During Application Processes among Survey Respondents



In addition, 22.9% of survey respondents also indicated that they had experienced discrimination based on race/ethnicity while at work. Approximately 21% indicated that they have been discriminated against based on physical appearance, while 20.6% indicated that they had experienced discriminatory treatment due to their gender or sex.

BIPOC respondents (n=155) were compared to White respondents (n=145). The difference between these groups was significant, $\chi^2(1, N = 300) = 14.28, p = .001$, affirming that BIPOC respondents were more likely to indicate having experienced an incident of racial discrimination.

Table 4. Experiences of Discrimination While at Work among Survey Respondents

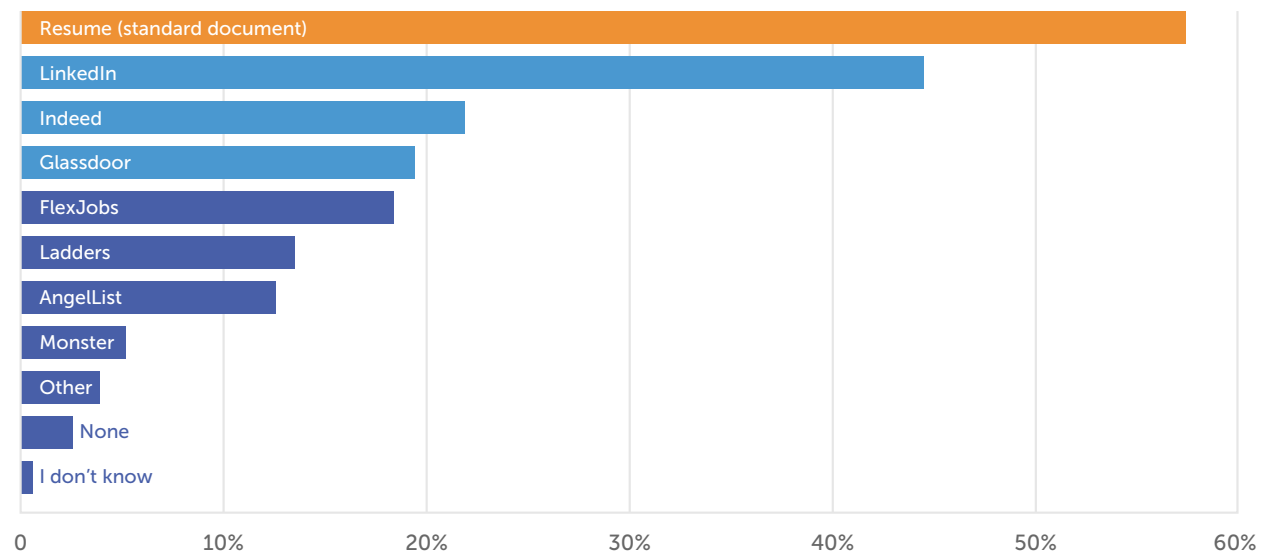


Digital Tools and Platforms

Design Sessions. The use of digital platforms was a consistent topic of interest and concern for participant-advisors. Given the availability of various platforms, participants conveyed their use of Facebook, Glassdoor, Indeed, LinkedIn, and TikTok in accessing information or tips about jobs.

Survey. Respondents indicated that while approximately 38.4% use laptops or desktops to search for educational and job opportunities, 61% use a [mobile smartphone](#), tablet, or notebook to search for opportunities. This highlights the importance of LERs that are developed to function optimally with mobile devices for the [estimated 32 million](#) individuals who do not readily have access to standard computers.¹³ While most respondents use newer devices, about 9.7% use devices that are between six and 10 years old, underscoring the need to develop LERs that are compatible with older devices. Participants indicated that while they predominantly used standard resumes (28.7%), LinkedIn, Indeed, and Glassdoor were also important means of tracking skills.

Table 5. Digital Platforms Used to Regularly Keep Track of Skills and Credentials among Survey Respondents



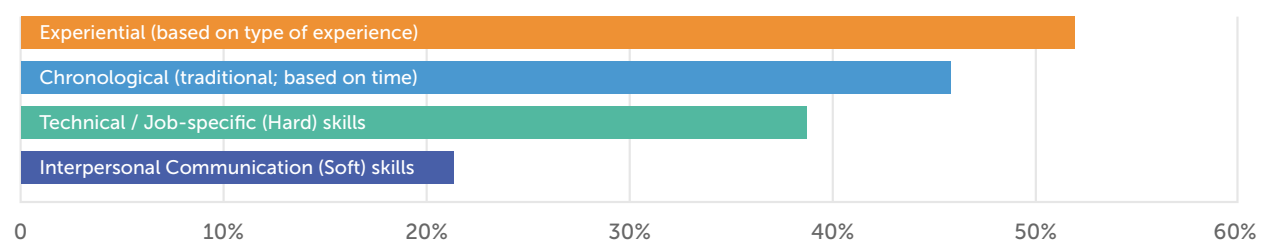
There is a significant relationship between race/ethnicity and digital tools used to keep track of skills and credentials. White respondents are more likely to use Glassdoor to keep track of skills and credentials, $\chi^2(1, N = 300) = 6.08, p < .014$.

Presentation of Information

Design Sessions. Participant-advisors expressed a strong desire to be able to control the shared personal information that would exist on the LER platform.

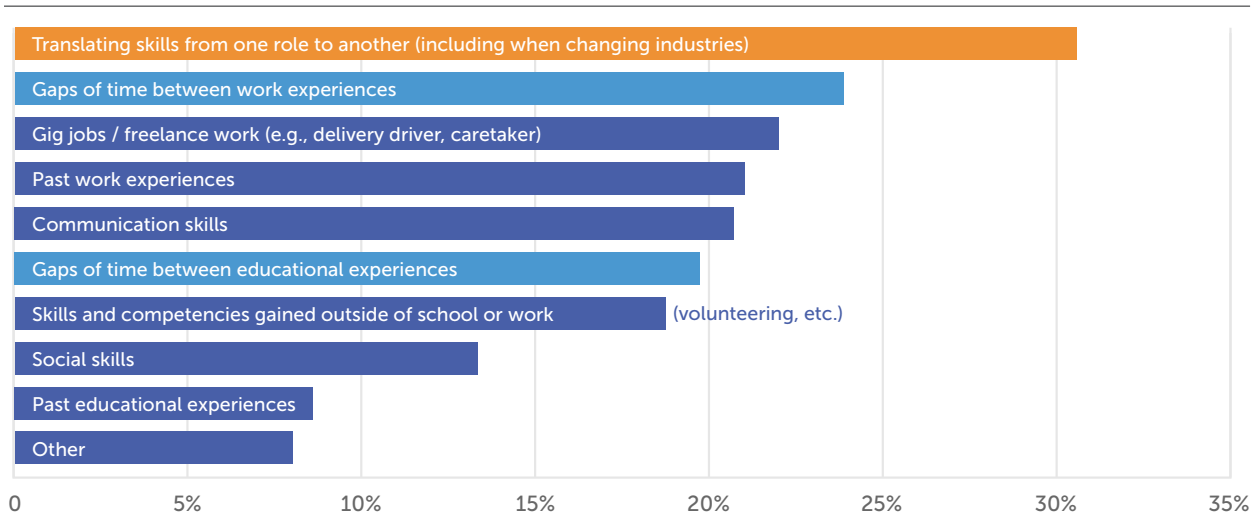
Survey. Respondents indicated that they would most prefer to present their information experientially (32.9%) rather than the standard practice of relaying employment history chronologically (29%), while a significant number indicated that they would rather present their skills based on technical/job-specific skills (24.5%). In addition, many respondents noted that complex language use and technical jargon presented difficulty during the application process.

Table 6. Preferred Method of Organizing Skills to Present to Potential Employers among Survey Respondents



Relatedly, 31% of respondents noted that the greatest difficulty when applying for jobs was the inability to translate obtained skills from a previous job into language needed for another job. Explaining gaps of time between work experiences (24.2%) and educational experiences (20%) were also sources of difficulty for respondents.

Table 7. Difficult Concepts to Explain to Potential Employers among Survey Respondents



Recommendations

Design Sessions. Participant-advisors recommended a multitude of recommendations. They stressed the desire for LERs to be easy to use, particularly as it pertains to interoperability with preexisting, popular digital platforms. In addition, participants requested to be informed about the history and reputation of prospective educational institutions and potential organizations of employment.

Survey. Respondents affirmed, via open-ended responses, that among the greatest points of interests were ensuring ease of use (i.e., an ability to operate and navigate the technology), robust search features to effectively seek out information and opportunities, as well as programming that accurately links user skills to information about potential employers.

Inclusive Design Principles and User Profiles for LERs

The purpose of the Inclusive Design Principles and user profiles for LERs is to provide insight into the lived work and learning experiences of workers who stand to gain the most from a more equitable, transparent, skills-based workforce system, particularly Black and Latina women who are often overrepresented in low-wage jobs.¹⁴ Throughout this project, we documented the stories of frontline workers at various stages in their careers, which remained central to the development and iteration of the principles.

We aim to motivate LER developers to actively reflect on the potential of their design to reduce or remove the biases described below. These principles may be used to identify potential gaps in knowledge in LER design and to more deeply consider issues of equity, access, discrimination, safety, privacy, accessibility, and usability for workers today. The Inclusive Design Principles for LERs should be used in tandem with the four user profiles outlined below.

Inclusive Design Principles for LERs

1

Demonstrate evidence of skills and competencies in addition to work history.



- **LER platforms should** provide the opportunity for users to communicate skills and competencies they have acquired via various jobs and experiences over time.
- **LER platforms should** enable people to verify and certify skills developed as part of a dynamic learning journey.
- **LER platforms should** allow for credentials to be self-issued and endorsed by third parties.

"I think we all undervalue ourselves so much. It's like, 'Why not me? Right? You can do that job. So, why not you?' I wish there was a better way, an easier way for us to value our skills and to know I might not do this professionally, but I know how to do this. And just because I didn't do it in a job doesn't mean that the experience isn't there."

— Hannah, mid-career
Current Role: Nonprofit worker
Experience in Sector(s): Retail, Food services

LER platforms should provide the opportunity for end users to communicate skills and competencies they have acquired via various jobs and experiences over time. This includes skills or roles that are often left off of traditional resumes due to a perceived concern that the experience is not valued by employers. Many participants involved in design sessions indicated that they had two or more jobs, [reflecting larger trends for multiple jobholders](#) across frontline industries, including healthcare, hospitality, food services, and retail. For example, many participants described acquiring interpersonal, digital, and business management skills while working gig economy jobs (e.g., rideshare and delivery services). However, participants indicated that they tended to leave out those roles on their resumes because they were concerned they would not be viewed as legitimate by prospective employers. Others shared that gaps in employment due to caregiving

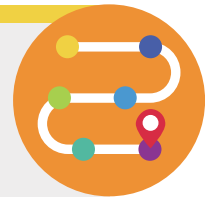
responsibilities, incarceration, or other life events prevented them from demonstrating in-depth experience and reliability. Encouraging the inclusion of this information may be mutually beneficial to both prospective employees and employers.

LER platforms should enable people to verify and certify skills developed as part of a dynamic learning journey. This includes recognition of skills and competencies earned in short-term, part-time, volunteer, or gig economy work. LERs have the potential to reduce bias against multiple jobholders, career changers, gig economy workers, and people entering the workforce. They could provide opportunities for individuals to demonstrate their skills and competencies—particularly those that transfer across various education and work experiences. They also have the potential to mitigate discrimination against people who have experienced significant gaps in full-time employment, such as working mothers, caregivers, and returning citizens, if designed to focus on skills and competencies acquired during significant gaps in full-time employment.

LER platforms should allow for credentials to be self-issued and endorsed by third parties. Work history is important to employers because it demonstrates evidence that a person is a good match for the role and can meet the requirements needed to deliver on company needs. Developing LERs in a way that provides workers with the opportunity to demonstrate evidence of their skills—through certifications, artifact/outcomes, endorsements, or work history—could equally satisfy employer needs while shifting the focus from work history alone.

If an employer fails to include skills and competencies associated with a job in a LER they issue, another avenue is to take advantage of self-issuing skills and competencies credentials. Credentials could be endorsed by credible third parties, such as the [American Council on Education](#) (ACE) which leads in validating learning and competencies gained through workplace and education and training providers and documents these experiences on a digital, [working transcript](#) in partnership with [Credly](#). Another example is Education Design Lab's [XCredit Project](#) which provides new ways of assessing and credentialing the informal learning of transitioning military members and veterans, as well as unemployed and underemployed job-seeking civilians. Individual skills and competencies may also be verified through online learning platforms issuing digital badges and micro-credentials, such as [Essential Skills Program](#) or [Digital Promise](#) or even an individual's supervisor or co-worker. This would require external sources to provide evidence for the self-assertion, assess the credential, and reference in their endorsement. Efforts are currently underway to connect LER and HR systems and to create new formats for individuals submitting job applications online.

Demonstrate learning progress over time, not just one point in time, such as degree completion.



- **LER platforms should** be designed to allow for the demonstration of learning in progress and the associated skills being developed throughout the journey.
- **LER platforms should** include a feature to present an individual's interests and aspirations in a career pathway.

"Paying for skills and being in debt for starting a program I couldn't complete because I couldn't hack it in the traditional university setting versus seeing what would actually get you a job ... I want to be a software engineer. So that's why I'm thinking, "Should I train myself, do solo learning, or should I go pay for a boot camp?"

— Zenaída, early career

Current Role: Line cook

Experience in Sector(s): Food services, Security

LER platforms should be designed to allow for the demonstration of learning in progress and the associated skills developed throughout the [journey](#). Learners and workers are often talked about as two distinct populations. In reality, many individuals, particularly those in frontline sectors, are pursuing education and training opportunities simultaneously. Many design session participants involved in our study have some college credit or are currently working toward degree completion. Traditional resumes, online profiles, or job applications do not always provide an opportunity to show current coursework, military experience, community service or volunteer work, civic engagement, or internship hours, for example. Rather than provide a holistic picture of an individual successfully balancing work and school responsibilities, participants expressed that their written resumes tended to focus on fixed examples of completed industry experience, length of employment, and educational attainment. LERs are digital records designed to convey achievements and potentially with evidence to support them. But what counts as an achievement can vary greatly and is not limited to a final credential that may have taken years to acquire, such as a degree. For instance, LERs could also include records such as digital badges, digital certifications, and PDF certificates.

LER platforms should include a feature to present an individual's interests and aspirations. Employers often make determinations about an individual's capabilities based on past achievements, affiliations, or experiences. Yet even in a traditional resume, workers often include a brief statement of purpose on what they seek to achieve, do, or become through the work for which they have submitted their application. LERs present a unique opportunity to make a collection of learning and employment records a living, multiple events description of not only what one has done but what one is learning and aspiring to learn and do in the future. These kinds of experiences from other facets of a person's life could easily map to transferable skills or attributes that prospective workers can bring to a job, adding both depth and dimensionality to an individual's abilities and aspirations. Ideally, workers would have flexibility and capacity to select only the information they would want to share with a third party, i.e. a set of relevant skills or credentials in response to a job posting, for example.

3

Provide individuals with control of how their information is presented and shared.



- **LER platforms should** offer the end user the option to remove and/or choose who has access to demographic or personally identifiable information and/or completion dates to avoid potential biases.
- **LER platforms should** allow end users to refer to it, update it, or hide any information that may cause them undue harm.

"I don't think my LinkedIn profile has my Afro in it, but if I did have my Afro in it, I know that mainstream America does not consider that to be professional. They may not think that I'm a professional despite all of my qualifications. So, I think it's more the image. Also, my name is kind of unique, and a lot of people with certain types of names get discriminated against."

— Astoria, early career
 Current Role: Victim Advocate
 Experience in Sector(s): Social services

LER platforms should offer the option to remove demographic or personally identifiable information and/or completion dates to avoid potential biases, which could prevent individuals from obtaining an interview. Understanding the use of selective disclosure, that is, allowing the individual to make choices about how much of their [personal data](#) is shared, is a principle that is of great value to workers and learners, particularly those who have historically faced biases. The majority of design session participants in this study identified as Black or Latina women. Their lived experiences reflected the trends we see when it comes to gender equity in the workplace: women of color remain [underrepresented](#) in high wage professional occupations. Participants raised critical issues related to bias and discrimination in the job market, especially on the basis of race, age, gender, parental status, immigration status, primary language, justice involvement, as well as previous education, and employment history. For example, many women perceived that their age was a decisive factor in their ability to advance or not. Younger women felt that entry-level positions often required some experience, which limited their capacity to apply and/or secure full-time, gainful employment. Older women felt that indicating the dates on their education or work history would highlight their ages and that prospective employers would assume they did not have the skills to keep up with today's changing job market and technical role requirements. While most participants showed tremendous interest in adopting LERs, they indicated that they would want control over how their information was presented.

LER platforms should allow users to refer to, update, and/or hide information that may cause undue harm. From a technical perspective, the concept of [self-sovereign identity](#) has begun to emerge as a key consideration for LER developers, which addresses user existence, control, access, transparency, persistence, portability, interoperability, consent, minimization, and protection. Individuals must have ultimate authority over their own identity. The ability for individuals to include or omit demographic or personally identifiable information such as race, age, and gender in the application process is essential. In terms of implementation, however, there is significant debate over how to apply this concept in a way that is mutually beneficial for LER stakeholders.

Address safety and privacy concerns, especially for historically and systematically marginalized individuals.



- **LER platforms should** be explicitly clear about who has access to an individual's information and how that information will be and is used.
- **LER platforms should** clearly communicate the potential benefits and limitations of using the technology.
- **LER platforms should** connect individuals to free, accessible, and readily available technical and information support services.

"I don't have a photo on my LinkedIn. But that's more of a safety measure that I've taken. I have had a lot of experiences with the tech space here where I've been the only true speck of color. I know that there are aggressive diversity, equity, and inclusion efforts—or at least that's what they're saying—where people want to diversify their workforce. Some of the things that I have seen in past trends, I'm not seeing as much with so many social justice conversations and combating racism dialogues happening at this time."

— Janelle, mid-career
 Current role: Recruiter
 Experience in Sector(s): Hospitality, Healthcare, Food services, Government

LER platforms should be explicitly clear about who has access to individual information and how that information will be and is used. Participants in our study raised several concerns related to employer access, including the fact that gaining skills might be viewed negatively by current employers who suspect an employee intends to pursue employment elsewhere. Many expressed that they did not want their current employer to know that they were pursuing an advanced degree or developing skills in a specific area because it might impact how they were treated. Participants indicated that discrimination in the workplace can still occur "even if there is verification of skills," which is critical for LER developers to consider. In line with Principle 3, several participants indicated that they would only want to use LERs if they have complete control of what information is visible and to whom. For those with extenuating circumstances, such as survivors of domestic violence or undocumented workers, it is important to note that they may be especially hesitant to share their information through digital channels for fear of being tracked or harmed.

LER platforms should clearly communicate the potential benefits and limitations of using the technology. From the perspective of the LER end user, the value of engaging with the LER should be transparent and publicly stated so all potential users understand the benefits—and drawbacks—of the technology. To further enable equitable use of LERs, video tutorials and other resources that define terminology and explore the LER's features should be available in multiple languages, and with available transcripts, to support learners using the tools to their maximum advantage while protecting the privacy and security of their data. LER platforms should assist users to increase employment opportunities by connecting

individuals to local, trusted intermediaries based on their location (e.g., high schools, adult and continuing education providers, institutions of higher education, workforce training centers, libraries, churches, parole offices, local employers) to promote awareness and understanding about the value and use of this technology. Additionally, LER end users must have the ability to speak to a representative to ask questions or report issues related to their account, information, and/or get technical assistance in using the technology.

LER platforms should connect individuals to free, accessible, and readily available technical and information support services. Ideally, LER end users would be able to ask questions or seek assistance if accessing or sharing their information through local, trusted intermediaries based on their location. They should understand their user rights and responsibilities, including clarity on how their information is stored and used. One strong model for this type of resource would be the [Digital Navigator](#) services model, developed by [DigitalUS](#), which provides local, on-demand technical support and relevant information to secure connectivity and devices, as well as access to foundational digital skills, learning, and job training.

5

Prioritize lifelong access and ease of use.



- **LER platforms should** be accessible, jargon-free, and easy to use.
- **LER platforms should** allow individuals to access and maintain their own LER, regardless of institutional or organization affiliation.
- **LER platforms should** include the option to show previously verified credentials that may have since expired or been replaced.

“Are employers really sitting down and looking at resumes? Let’s say you got 20 or 30 of these. I really don’t like the application process where you got to interview once and interview twice, and then if you don’t get hired for that job, then you have to start again and put in all of that information somewhere else. I’d rather have the skills—like get a set of skills—that I can put on my resume and get recruited somewhere. I want them to say, “Hey, we want to hire you for this because we know you’re qualified.”

— Giancarlo, early career
Current Roles: Warehouse worker, Server
Experience in Sector(s): Hospitality, Food service, Manufacturing

LER platforms should be accessible, jargon-free, and easy to use. There should be free, clear, and public-facing orientation and onboarding materials, such as video tutorials on Facebook, LinkedIn, Instagram, TikTok, or Twitter, for how to access and use this technology. This information should be available in multiple languages and meet [Web Content Accessibility Guidelines](#). To this day, approximately [10% of Americans](#) do not have a computer at home; however, [85% of Americans](#) have a smartphone. Participants in our study recommended that LERs be mobile-friendly, to be used on various smartphones (e.g.,

iPhone, Android) and other devices that people own or have access to, such as tablets or laptops. Workers suggested that users be able to update information while offline, which would later be synced once they are able to access the internet. It is recommended that LERs are designed to be interoperable with platforms that many users know how to access and use (e.g., Indeed, Glassdoor, LinkedIn and Google Suite, etc.). Participants also expressed interest in the potential to leverage LERs to readily locate information and employee satisfaction ratings about potential employers or educational institutions.

LER platforms should allow individuals to access and maintain their own LER, regardless of institutional or organization affiliation. As it stands, if an employer requests verification of degree, certificate, and/or employment history of any kind, an individual must manually curate their information from disparate platforms and resources, from hand-filed manila folders to complex postsecondary institution systems. In some cases, individuals need to pay for access to their own information. In the case of official transcript requests from higher education institutions, for example, students must pay for verification of the courses and credits that they have already paid for and earned. In frontline sectors, workers are often required to demonstrate evidence of mandatory training, such as [Occupational Safety and Health Administration \(OSHA\)](#) in healthcare and/or manufacturing or [Training for Intervention Procedures \(TIPS\)](#), or [ServSafe Food Handler](#) training in restaurants and hospitality. End users should be able to seamlessly access their records even if they are no longer actively enrolled in an education or training institution. The same applies to employer-led LERs in that employees should be able to access any skills, training, or experiences acquired during their time of employment.

LER platforms should include the option to show previously verified credentials—[standardized, digital certificates that make it easy to share information online in a private and secure way](#)—that may have since expired or been replaced. For example, there is still value in knowing whether an individual took a course, passed, and held an EMT license, even if it expired, or no longer chose to work or seek work directly as an EMT. The successful award of that credential is still meaningful and has value even if expired. In that way, LER developers, as well as intermediary organizations who contract to use the LER platform, should not delete, archive, or diminish access to expired credentials. Instead, LER platforms should display issue and expiration dates. In addition, issuers of credentials or skills— including both employers and education providers—should be willing to reissue and/or verify skills in development.

User Profiles for LERs

LER pilot programs are expanding rapidly across higher education institutions, the Department of Defense, as well as large-scale employers, but more LERs on the market does not mean greater equity in access and use for workers.¹⁵

In addition to the Inclusive Design Principles for LERs, we co-generated a set of user profiles to provide worker-generated examples of the dynamic learning and employment journeys that a majority of today's workers face. The user profiles shared here include individuals with one or more of these experiences:

1. working multiple part-time jobs with little experience in one sector,
2. getting back into the workforce after a multi-year gap,
3. trying to make the shift from hourly to salary, and
4. transferring in-demand skills like customer service to attain higher-paying jobs.

Importantly, the profiles provided here reflect new research showing that [nearly a third of U.S. workers](#) make less than \$31,000 a year, with people of color, women, and single parents being disproportionately impacted by low wages.¹⁶

With these user profiles, we aim to provide developers with the insights to develop LERs for the most marginalized and take into account educational and career trajectories that may be significantly different than the learners for which they are typically developing. In addition to the four user profiles provided here, we encourage developers and other stakeholders building in the LER ecosystem to hear directly from workers about their experiences in this [video](#) produced by Digital Promise in collaboration with participant-advisors.

No. 1	Nicole
Title	Young Professional
Description	<i>Multiple part-time jobs, few verified experiences in one sector</i>
Profile	Who
Identity	Nicole (24) lives in an urban area in Florida, identifies as Latina, and is bilingual in Spanish and English. Nicole was recently hired as a petitioner for \$23 per hour through a staffing agency. She also drives for Uber Eats. She connected with the staffing agency based on a friend's recommendation after her hours at a large retail warehouse kept getting cut. She is also considering applying to work as a bank teller, which she heard could have flexible hours during the day and might look more professional than having several short-term jobs.
Biases Experienced	Age; challenge in verifying skills for part-time gig work; lack of education completion; lack of experience in career field of interest
Learning	Context
Skills and Education Experience	In addition to working two jobs, Nicole is currently pursuing her associate degree in marketing and has plans to pursue a bachelor's degree in the field. Nicole said marketing makes sense as a career pathway since she identifies her top skills as being a fast learner, providing high quality customer service, and understanding customers' wants and needs. She also indicated that she has strong interpersonal skills with diverse populations. Nicole recently earned a certificate in customer service through a career training program that also provided tips on crafting a high quality resume and cover letter and finding employment.
Needs	She said she has to manage her time, deal with customers, and use technology effectively to do all of her jobs but does not necessarily get credit for any of those skills because they are not listed on her resume.
Challenges	While she is pursuing a degree in marketing, she does not have any internship or official work experience in that area and is concerned about finding a job after completing her AA and eventually her BA.
Employment	Context
Work and Employment Experience	Nicole was recently hired as a petitioner for \$23 per hour through a staffing agency. She also drives for Uber Eats.
Needs/Wants	In search of an "office job" with consistent, but flexible hours that can help build transferable skills to a career in marketing.

Challenges	<p>Nicole feels that her biggest hurdles to gainful employment include not having completed her bachelor's degree and having too many part-time jobs on her resume.</p> <p>Members of the staffing agency have told her to leave off Uber Eats and other part-time, short-term positions because it makes her look unreliable or unable to hold down a "real job." Notably, there is no way to indicate that Nicole is currently studying marketing.</p>
Digital Tool	Context
Currently Used	Indeed profile
Experience	She currently uses Indeed but struggles to narrow down industries and titles for an effective job search.
Needs/Wants	She does not necessarily get credit for any of her skills because they are not listed on her resume.
Challenges	Even if she were to list all of her current roles, the skills would not be explicitly named.

No. 2	Jasmine
Title	Mid-Career Female Professional
Description	<i>Getting back into the workforce after a multi-year gap</i>
Profile	Who
Identity	Jasmine (41) is a single mother of three who lives in San Jose, California. She identifies as Black. English is her primary language. She has worked several part-time jobs in various industries over the last 18 years, including in retail, food services, restaurants, government, and, most recently, as an enumerator to help collect census data. She describes herself as a stay-at-home mother and mentioned that she struggles with finding high-quality job opportunities due to gaps in employment and inconsistencies across industries. She said that potential employers aren't willing to give her a chance because her experience is so varied.
Biases Experienced	Gaps in work experience; full-time hours do not align with family responsibilities, age, race.
Learning	Context
Skills and Education Experience	Jasmine considers herself to be extremely reliable. She identifies her top three skills as adaptability, effective communication, and emotional intelligence, which she believes allow her to be highly effective at "meeting people where they are." Jasmine earned a bachelor's degree in business and management.
Needs	She has been researching certifications in human resources.
Challenges	She is unsure about what kind of program is most suitable for her interests and skills.
Employment	Context
Work and Employment Experience	Several part-time jobs in various industries over 18 years, including in retail, food services, restaurants, government, and other short-term or seasonal positions, such as an enumerator to collect census data.
Needs/Wants	She said she is seeking opportunities with flexible, "mom-friendly" hours, ideally with fully remote options. Now that her children are getting older and becoming more independent, she is trying to figure out her next career move. Jasmine said she is increasingly interested in a career in HR.
Challenges	She mentioned that she struggles with finding high-quality job opportunities due to gaps in employment and inconsistencies across industries. She said that potential employers aren't willing to give her a chance because her experience is so varied. Jasmine feels she "lacks experience" because she has not had time to gain long-term work experience or develop expertise in a specific field.

Digital Tool	Context
Currently Used	Indeed, LinkedIn
Experience	She currently uses Indeed and LinkedIn, although her profiles are very general, without much detail or a photo.
Needs/Wants	She wants to be able to showcase her skills and competencies in a way that tells the whole story of her life and skill sets, rather than highlight her list of jobs, which do not tell the whole story of her life and/or skill sets.
Challenges	She is also unsure about how to present the skills and work experience that would interest most employers.
LER Idea/Concept	She embraces the idea of Learning and Employment Records (LERs) and would like to be able to showcase her skills and competencies.

No. 3	Sandeep
Title	Hourly Worker Interested in Upskilling
Description	<i>In search of stable wages: making the shift from hourly to salary, but how?</i>
Profile	Who
Identity	Sandeep (32) is a delivery dispatcher earning \$21 per hour just outside of Dallas, Texas. He identifies as South Asian-Indian. English is his primary language. In addition to his job as a dispatcher, Sandeep is a rideshare driver working mostly in the evenings. He has a high school diploma with some postsecondary coursework and years of experience across various industries, including retail, banking, and building maintenance. For example, Sandeep has worked as a call center agent at a telemarketing firm, a warehouse worker at a large retailer, a maintenance assistant, and a forklift operator. He considers customer service to be one of his top skills.
Biases Experienced	Challenge in verifying skills for gig work; lack of education completion; lack of computer skills
Learning	Context
Skills and Education Experience	He has a high school diploma with some postsecondary coursework. He considers customer service to be one of his top skills.
Needs	He is currently looking into training opportunities but is not sure what skills employers are looking for.
Challenges	He struggles to identify in-demand skills and career pathways.
Employment	Context
Work and Employment Experience	Sandeep is currently a delivery dispatcher and rideshare driver working mostly in the evenings. Sandeep said that he is earning good money as a rideshare driver but does not include that on his Indeed profile because he doesn't think employers recognize it as valuable experience.
Needs/Wants	After 10 years of working at hourly rates, during odd hours, in many frontline industries, Sandeep is interested in making a career change to an "office job," preferably in banking or customer service. He wants to start a family and have more flexibility on evenings and weekends, with a stable income and retirement options. Sandeep also heard that there are many jobs in security, so he is considering that as a next career pathway.
Challenges	Sandeep said that one of his biggest hurdles to life-sustaining employment is a lack of computer and digital skills experience. Since most of his work has been more hands-on or over the phone, he has not taken much time to learn software like Microsoft Office or other platforms.

Digital Tool	Context
Currently Used	Indeed profile
Experience	He said that he is currently applying for 10–15 office jobs per week via Indeed where he recently created a profile.
Needs/Wants	Sandeep is interested in making a career change.
Challenges	He struggles with how to organize his online resume. He does not think employers in an office setting, such as customer service in a bank, will see his experience in warehousing or telemarketing as valuable.

No. 4	Kim
Title	Retail worker with hospitality experience interested in redirecting career
Description	<i>Looking to leverage skills in customer service to earn more money at a values-aligned company</i>
Profile	Who
Identity	Kim (48) is currently a cashier in a southern US state. She was born and raised in a neighboring county and identifies as Black/African American. In past years, throughout her educational journey, she also worked in the hospitality industry at various hotels, serving as a front desk agent to receive guests. She credits obtaining her past positions to her strong interview and customer service skills. She stopped working in hospitality and left her last job at a large retail store until she figures out her next career move; however, she uses Glassdoor and Indeed to look around for positions and read ratings about different companies once in a while.
Biases Experienced	Challenge finding a dedicated employer that is honest about working conditions; lack of leadership; high employee turnover; low employee morale
Learning	Context
Skills and Education Experience	She attended community college and transferred to a local university but stopped after one semester to work full-time. In past years, throughout her educational journey, she also worked in the hospitality industry at various hotels, serving as a front desk agent to receive guests. She credits obtaining her past positions to her strong interview and customer service skills.
Needs	She wants to demonstrate evidence of learning even though she did not complete a formal degree.
Challenges	She knows she is skilled in customer service and management but does not know how to take that next step.
Employment	Context
Work and Employment Experience	She is currently a cashier in rural Alabama earning \$38,000 a year, approximately 90 minutes from Birmingham. She also worked in the hospitality industry at various hotels, serving as a front desk agent to receive guests.
Needs/Wants	She stopped working in hospitality and left her last job at a large retail store until she figures out her next career move. Kim has witnessed a lot of employee burnout at the hotels at which she has worked. She wants to be able to comment about and rate employers given how vastly different her experiences at previous organizations, both in the hospitality industry and retail sectors she has worked.

Challenges	<p>Kim also is very concerned about salary transparency. She experienced leaving positions and subsequently seeing them posted at lower salary ranges. She would rather workers not be “low-balled” by companies that she believes engage in such tactics.</p> <p>She has also known newer employees to come on board earning more than she was, though they had similar experience. She believes that such tactics inhibit ability to negotiate salary.</p> <p>She shared a past story about working at a store for over a year and finding out that new cashiers were making more per hour, though her employer discouraged employees from discussing wages.</p> <p>She conveyed that she gave her employer an “ultimatum” for higher pay when she realized that she was making \$12.50/hr while new employees started at \$14/hr. Though she was successful, at the time, she told herself that she would never try that again.</p>
Digital Tool	Context
Currently Used	Indeed and Glassdoor organizational employer ratings; gig app performance ratings
Experience	She uses Glassdoor and Indeed to look around for positions and read ratings about different companies once in a while.
Needs/Wants	She thinks that it would be incredibly valuable to have easy access to employee ratings of companies linked to the organizational profiles.
Challenges	She is seeking opportunities to share information with other employees and job-seekers, in addition to employers.
LER Idea/Concept	Ensure interoperability with the skill and professionalism ratings given by gig app profiles (which also provide badges), prioritizing platforms that include rating systems, which allows users to utilize agency in their selection of prospective employers.

Next Steps

Co-generating a set of Inclusive Design Principles and user profiles for LERs is an important first step to promoting equitable design in LER technology. As more LERs enter the market, it will be critical to develop clear structures for evaluation.

Digital Promise plans to adopt the Inclusive Design Principles for LERs as [criteria for certifying](#) equitable design. Awarded LER vendors and platforms will signal to learners and workers that the tool has been designed to help to mitigate biases and promote inclusion in education and workforce systems. We will continue to prioritize accessibility for minoritized groups. This initiative will provide guidance and technical assistance for LER developers to adopt a more inclusive and evidence-based design and implementation framework.

Simultaneously, we aim to move beyond LER design to focus efforts on equitable implementation. Building on the inclusive design framework developed here, we plan to engage individuals who are currently involved in LER pilot programs to explore issues such as accessibility, [digital resilience](#), usability, and trust.

“There are real challenges in building trust among learners, workers, employers, academic institutions, and technology developers. Credentials should be endorsed by third parties, but it’s crucial to understand and recognize the third party making the endorsement to create trust. Bottom line, this is about learners first. We need to mitigate predatory practices and ensure their success.”

—Michele Spires, assistant vice president, American Council on Education

We anticipate identifying challenges to adoption such as hidden costs or access to [broadband](#), digital literacy and skills training, or [digital devices](#), given that [half of Americans](#) still say they are not comfortable with using technology to learn.¹⁷ This is evidenced by findings in a preliminary usability study for [Blockcerts](#) at Georgia Tech where students were confused by the application, frustrated by the unfamiliar terminology, and did not trust that their academic records would be maintained or shared safely.¹⁸ LER pilot users wanted more context, more guidance, and more clarity on how to effectively use the technology to their advantage.

Broader Impact

The value of LERs remains in their potential to transform the learning and work ecosystem by leveraging data and technology to connect people across institutions, industries, and opportunities. Still, the distance between transforming systems and transforming individual lives remains vast.

Participants across design sessions and the survey demonstrated interest in the opportunity to curate and validate their knowledge, skills, aspirations, and lived experiences through technology. Workers want a platform to communicate what they know and what they aspire to achieve to potential employers. At the same time, many workers raised concerns about employer access to information and retaliation for suspecting they may be pursuing opportunities elsewhere.

In addition to technology infrastructure and data standards, considerable work is needed to build trust between key stakeholders in the LER ecosystem, including workers, employers, education and training providers, as well as third-party credential issuers and evaluators.

“Finding the right balance between user agency and employer utility is essential for a successful LER ecosystem. Workers who use LER systems value their privacy and the ability to control what data is shared, and some employers may be resistant to adjust their processes to adapt to this new paradigm—building trust and demonstrating value to all stakeholders will be crucial for widespread adoption.”

—Harold Tran, vice president of education strategy, Vantage Point Consulting

For workers, transparency in understanding the ethics and flow of how their information is being used, presented, and shared is critical. LERs may be developed in many formats, according to different standards or no standards at all, and leverage various technologies, such as verifiable credentials, [digital wallets](#), decentralized identifiers, and decentralized ledgers such as blockchain, “a particular class of digital distributed ledger technologies that share records of sequenced information or transactions simultaneously in an immutable and secure manner across a network” (LaPointe and Fishbane, 2018).⁴⁹ LER developers need to make all of this information clear to build trust among workers and the employers and education providers supporting them.

“Technologies such as verifiable credentials and decentralized identifiers can provide rails to build more trustworthy LER systems. But to truly increase the trustworthiness and usefulness of LERs, it boils down to the relationships applications and platforms nurture with workers. Put workers at the center of the design, engage them in decisions about data usage and technology choices, and support them with informative, useful, and easy to use UI.”

—Kerri Lemoie, Ph.D., director of digital credentials research & innovation, Badgr

As LER technology and culture continues to evolve, workers must be included as co-leaders—and critics—to inform effective, ethical, and inclusive implementation. Their stories and experiences are central to informing technology developers, education and training providers, policymakers, funders, and others about how to achieve equitable recognition for their learning in the new skills-based economy.

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