SAN FRANCISCO
DIGITAL EQUITY

PLAYBOOK

Version 1.0

April 2018

sfcoit.org/digitalequity

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DIGITAL EQUITY

The San Francisco Digital Equity Playbook is aimed at agencies who serve vulnerable populations most at-risk of being digitally excluded. It consists of a collection of ideas, or "plays," for these organizations to better understand their clients' digital needs, help them get connected, and build their digital skills.

This Playbook is a work in progress and will continue to evolve as more organizations put it in practice. Consider this Version 1.0, a starting point for trial and improvement.

We are grateful for the contributions of the many organizations involved in its development, including the Office of Economic and Workforce Development, Mayor's Office of Housing and Community Development, Mayor's Office on Disability, San Francisco Public Library, Community Technology Network, St. Anthony's Tech Lab, San Francisco Tech Council, America Works, FACES SF, and Goodwill.

BACKGROUND

Digital equity is the idea that everyone should have the information technology capacity needed for full participation in our society, democracy, and economy. The San Francisco Digital Equity (SFDE) program is a collaborative effort among City agencies and nonprofits to bridge the digital divide and achieve digital equity in San Francisco.

The ability to access and use the Internet, computers, and related technology has become essential in today's world. Technology is transforming the most important areas of our lives, from employment to education to health. In employment, nearly all Fortune 500 companies post job openings and take applications exclusively online, and 80% of jobs in the next decade are projected to require digital skills. In education, students need digital technologies to complete homework and parents are increasingly expected to engage with teachers and school officials online. In healthcare, patients can now communicate with their doctors via email and video calls and view their own medical records online. And yet an estimated 100,000 San Franciscans still lack Internet access at home, with seniors, people with disabilities, and lowest-income residents most at-risk.

Apart from access, digital skill presents a major barrier. Research from national studies remind us that technology adoption and skill exist on a continuum. A 2013 national survey found that 29% of Americans have low digital skill levels, and no surprise, seniors and lowest-income residents were three times more likely to have low digital skills than high. A 2016 Pew Research Center survey found that disabled Americans are much less likely to report having high levels of confidence in their ability to use the Internet and communication devices.

The following plays are the product of our research efforts, having conducted focus groups with residents at 6 public housing and workforce centers and interviews with subject matter experts. In sum, the digital divide is a combination of several different issues, with digitally excluded individuals facing different barriers. Some don't know how to use technology at all. Others have the basic digital skills but need situational help, maybe navigating a complicated job portal or troubleshooting a malfunctioning smartphone. Finally, there are those with all the skills but are unable to afford adequate connectivity and devices. Like a workforce program helping high-barrier jobseekers gain employment, a successful digital equity program needs to identify and address the barriers specific to each digitally excluded client.

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[1] Available at: John Horrigan: Digital Readiness

[2] Available at: Pew Research Center: Disabled Americans are less likely to use technology

Chapter 1
Understand your audience

Play 1: Use the Digital Equity Intake Questions

It is important to understand the digital needs of your entire client population. We encourage the use of our simple needs assessment questions at client intake. With 1 question on access level, 4 questions on skill level, and 1 question on interest in services, you can quickly sort out which clients need informational resources only compared to those who could benefit from more in-depth trainings and assistance. Feel free to use our online or paper questionnaire or simply add the questions to your existing intake forms.

- Online (Google Form)
- Paper version

Sample Questions

- **Which of the following services would interest you?**

  Select all services you're interested in.

  ☐ Training on the basics of using computers and Internet, including how to protect your privacy and avoid fraud online.

  ☐ Training on computer skills for work, including using programs like Word, Excel, PowerPoint, or Google Docs

- **Please tell us how strongly you agree or disagree with the statement below**

  Overall, I am confident in my ability to use the Internet

  Not at all confident   ○   ○   ○   ○   ○   ○   ○   Very confident

Chapter 2
Help People Get Connected

Play 2: Know about free connectivity options

The City and various non-profit agencies provide free public Internet and computer labs at parks, rec centers, libraries, and outdoor areas throughout San Francisco. We developed this map for clients to find somewhere nearby with free Wi-Fi or computer access.
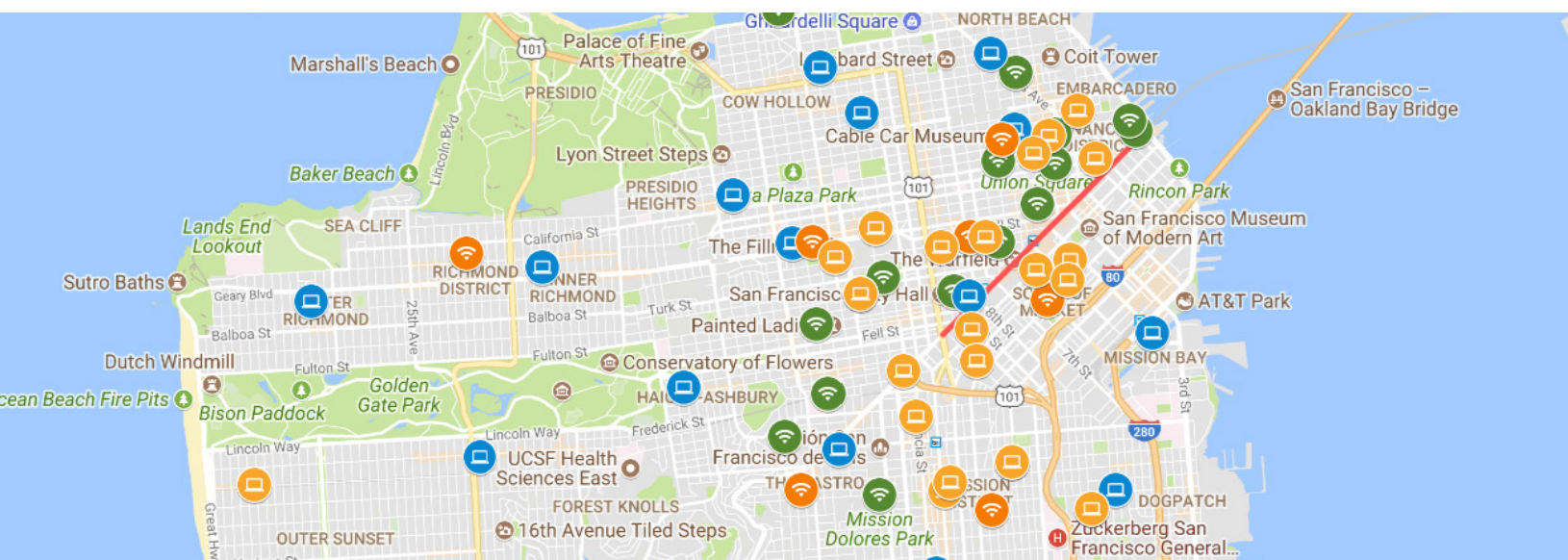
The **San Francisco Public Library (SFPL)** also started the Tech'd Out pilot program to allow library patrons to check out laptops and mobile wireless Internet hotspots for use outside the library for 3 weeks at a time. These bundles are currently available for checkout and return at the following SFPL branches:

- Bayview Library
- Main Library
- Ocean View Library
- Visitacion Valley Library

Play 3: Know about the Internet discount programs

AT&T, **Comcast** and **PCs for People** each currently offer Internet for roughly $10 a month to eligible San Francisco residents.

AT&T's Access

AT&T's Access program is available to households with at least one resident who participates in the U.S. Supplemental Nutrition Assistance Program (SNAP) OR at least one member who receives Supplemental Security Income (SSI) benefits. The household needs to have no outstanding debt for AT&T fixed Internet service within the last 6 months. Clients who are interested should visit AT&T's Access website for complete details.

Comcast's Internet Essentials

Comcast's Internet Essentials program is available to households with at least one child who qualifies for the National School Lunch Program (NSLP) OR who receive housing assistance through HUD, OR with a resident age 62 or older receiving federal or state public assistance specific to the area where they reside, OR can provide documentation outlined in the "Acceptable Eligibility Documentation" section. The household needs to have no outstanding debt to Comcast less than a year old and no subscription to Comcast Internet service within the last 90 days. After subscribing to Internet Essentials, customers have the option to purchase a low-cost computer for $149.99 (plus tax). Clients who are interested should visit Comcast's Internet Essentials website for complete details.

PCs for People

PCs for People, a national non-profit based in Minnesota, offers unlimited 4G LTE hotspot Internet service for about $10 a month (plus a one-time device fee of approx. $80). To be eligible, clients must be below the 200% poverty level or be currently enrolled in an income-based government assistance program, including employment services, food support, Head Start, Medicaid, the National School Lunch Program, Section 8, or SSD/SSI. Visit PCs for People's sales page for more.

Play 4: Know where to get free or low-cost computers

Although new laptops and tablets can now be purchased for under $300, we know that many clients still are unable to afford them. For clients who can benefit from owning their own laptop or desktop, there are several non-profit organizations that can help.

The Computer and Technology Resource Center (CTRC) is a non-profit, environmental charity with offices in Berkeley and Novato. Low-income residents can apply to receive a free, refurbished computer. Current wait times are typically 1-3 months and computers will need to be picked up from their office. Clients should visit CTRC's free computer page for complete details.

PCs for People offers refurbished desktops for as low as $70 and refurbished laptops as low as $100. Visit PCs for People's sales page for more.

Note: San Francisco Digital Equity is planning to start its own computer refurbishment program in 2018. This section will be updated after program implementation with more details.
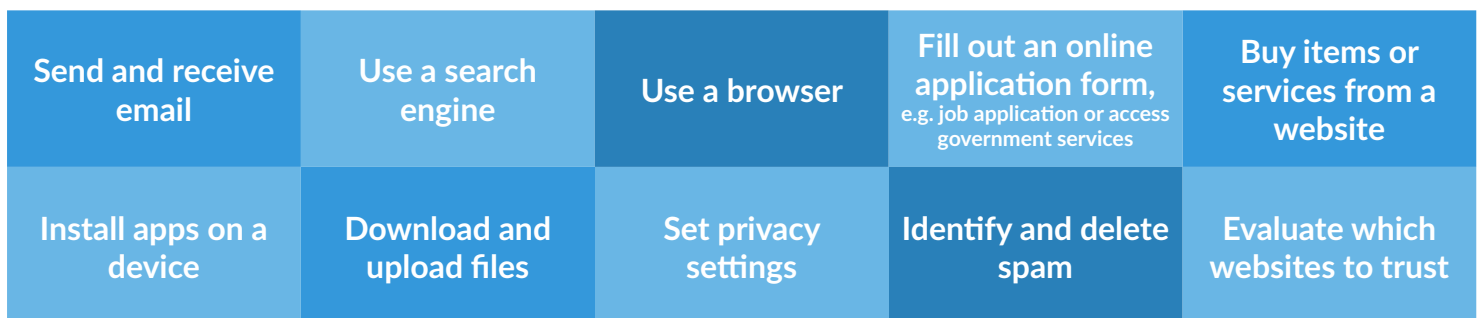
Chapter 3
Teach Digital Literacy

This chapter is for organizations ready to teach digital skills. We strongly encourage any organization serving vulnerable populations to consider incorporating digital skills training into your services.

Play 5: Prioritize the basics

You will likely have clients asking for trainings on more advanced digital skills, but given the constraints on staff time, we recommend prioritizing teaching basic digital literacy to those who need it. The goal is to ensure all clients have the skills and confidence to use technology independently. How do we define basic digital skills? Borrowing from research conducted by the UK government and others, we divide basic digital literacy into 4 general buckets:

Communicate online	Find things online	Share personal information online	Keeping safe online

Those who have basic digital skills should be able to perform these activities without help:

Send and receive email	Use a search engine	Use a browser	Fill out an online application form, e.g. job application or access government services	Buy items or services from a website
Install apps on a device	Download and upload files	Set privacy settings	Identify and delete spam	Evaluate which websites to trust

By focusing first on just the basics, we can get non-users onboarded with technology in a relatively short amount of time.

As a starting point, **Community Technology Network (CTN)** developed a 4-session curriculum for beginner learners. Each class meets once a week for 4 weeks and additional drop-in sessions are provided for learners who need more help. This class efficiently covers the minimum basic skills while emphasizing online job search and application for job-seekers. Here is CTN's basic course outline. You can find additional curriculum and class materials for basic skills instruction in the **Resources** section at the end of the Playbook.

To teach the class, you should have no more than 10 learners to 1 instructor. A projector or large TV display is needed for presentations, and of course, computers connected to the Internet are needed for each learner for hands-on practice.

Play 6: Incorporate the smartphone

Instructors should find opportunities to incorporate smartphone-based skills. Many residents rely on smartphones as their sole means of connectivity but lack the digital skills to fully utilize its capabilities. CTN incorporates smartphone lessons throughout the curriculum. Building on that, we suggest assigning smartphone-based activities after each session for learners to try outside of class. This would help learners gain practice with new skills using devices they likely already own.

Another way to take advantage of the smartphone's near universality is to introduce easy-to-use productivity apps to help learners stay organized (remember: digital skills require organizational skills). Apps like **Google Keep** and **Calendar** can help learners store notes, checklists, and appointment reminders in one place.

Finally, if many of your clients need to learn smartphone basics but are unable to complete a basic digital skills class, we suggest offering standalone workshops focusing on smartphone skills only. **St. Anthony's Tech Lab** offers 3 highly popular Android workshops, each one lasting 1.5 hours. Here is a link to their workshop slides and handouts.
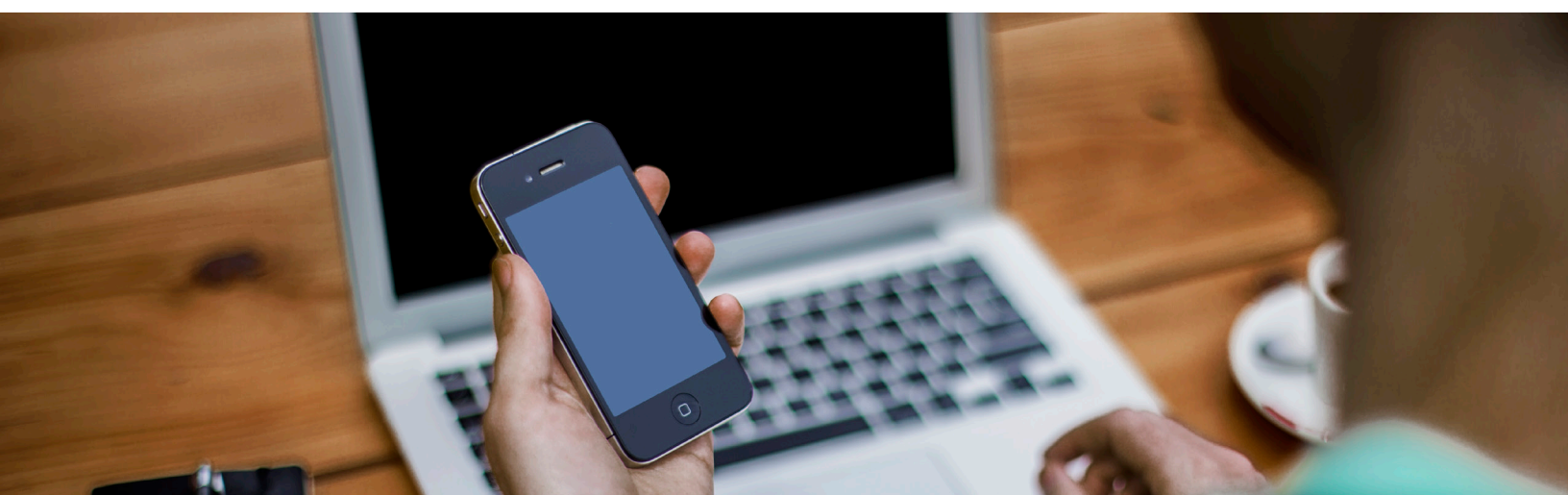
Play 7: Personally relevant hands-on activities

Adults do best when learning new skills that are immediately relevant to their own interests and goals, which will differ for each individual. Leave room in your lessons for learners to explore using technology for personally relevant purposes. You can introduce specific apps and digital services to pique their interest:

Housing

Those interested in the City's affordable housing options should check out the DAHLIA SF Housing Portal.

Health Information

Medlineplus.gov is the National Institutes of Health's website to provide information about diseases, conditions, and wellness issues. Unlike other medical advice websites, MedlinePlus does not have ads or sponsored content.

Healthcare Portals

Those who use the San Francisco Health Network for healthcare should know about the MYSFHEALTH Patient Portal.

Transportation

Those who rely on public transportation can explore the many route planning tools on Google Maps and MUNI and BART's websites. Drivers can plan their trips using apps like Waze and Google Maps.

Personal finance

EARN's SaverLife program is an online community that offers financial rewards for consistent saving, 24 weeks of digital financial coaching, and other resources and information. EARN is a national non-profit dedicated to helping low-income families save and invest in their futures.

SFUSD Parents

Parents can learn about the new SFUSD Family Portal. Note: The Family Portal, also known as Gradebook for All, launched in 2017 and has not been fully implemented across all SFUSD schools. Parents can learn about the system but should talk to their school about availability.

Beyond these, also offer lighter tasks for learners to try the fun side of technology, e.g. searching online for tutorials on hobbies they always wanted to learn. Such activities could help reduce the anxiety some people associate with technology and create a more stress-free learning environment.

Play 8: Refresh and reinforce

Adult newcomers to technology often find it hard to acquire and retain new skills. During each session, instructors should incorporate ways to reinforce previously covered topics. We suggest starting each session with a "warm up" hands-on activity to practice skills learned in previous sessions. Another idea is to email learners outside of class with a summary of tips; this tactic also encourages learners to further practice using email during the week. As with learning any new skill, repetition is key for gaining digital literacy. Finally, online platforms like **Goodwill Community Foundation's** GCFLearnFree and the **Public Library Association's** Digital Learn offer short video tutorials on many basic digital skills. Consider linking your learners to relevant videos to reinforce what they learned in class.

Play 9: Provide validation

It is important to provide validation, through some type of recognition or reward, to learners as they make progress. Validation need not be elaborate. Even an instructor's positivity and words of encouragement throughout the training can reassure "technophobic" learners that they're making progress. To motivate learners to stick with the trainings, completion incentives are also vital. At a minimum, provide training completers with a certificate of completion to recognize their effort and improvement. At CTN, class completers also receive a graduation celebration and a $25 gift card. At workforce center trainings, refurbished computers are raffled off on graduation day, with participants receiving a raffle ticket for each session attended. Well-funded digital literacy classes in the past provided all completers with a new or refurbished computer to take home.

With validation, it is also important to help previously digitally excluded individuals recognize ways that they are now more connected and integrated in today's society as a result of their new skills.

Play 10: Incorporate Assistive Technology

Assistive Technology refers to devices or computer-based accommodations to assist people with disabilities. With an estimated 11% of San Francisco residents and 39% of residents age 65 or older having a disability, it is important to know when and how to incorporate Assistive Technology for your learners. For learners with vision loss, simply learning how to change the size of text and icons on their display or how to use Windows' built-in Magnifier tool can make a big difference. Other Assistive Technologies include screen readers, voice command functionality, text-to-speech software, and large character keyboards and specially designed mice.

The **SFPL Main Library** has a wide array of Assistive Technology for patrons to use. **Independent Living Resource Center San Francisco's** Assistive Technology program provides information and training about Assistive Technology to consumers with disabilities. They even have a Device Lending Library where people can try out the latest technology and bring it home for a test run.

Refer to the **Assistive Technology** section in **Resources** at the end of the Playbook for tools and referral destinations in San Francisco.

Play 11: Assess

It is a best practice to assess a learner's digital skill level before and after the trainings to ensure improvement has occurred. We developed a standard assessment that asks learners to rate how confident they are with basic digital tasks on a 7-point scale. Comparing the point totals before and after the trainings allows us to estimate the overall degree to which digital skill and confidence has improved for each learner. The assessment also asks learners to perform a hands-on digital task involving searching for information online and emailing an attachment to the instructor.

The pre-training assessment also asks about the learner's personal goals and interests in learning digital skills. This information can help instructors make trainings more personally relevant and immediately useful (Play 7).

Pre-training

- Online form (Google Form)
- Paper version

Post-training

- Online form (Google Form)
- Paper version (For reference only. Learners should only complete the post-training survey via online form)

Chapter 4
Onramp to advanced skills

Remember that digital skill is a continuum. For class completers and clients who have the basics covered and are interested in learning more advanced skills, there are plenty of additional topics and training delivery options. Commonly requested skills include business software (like Microsoft Word, Excel, and PowerPoint), digital media, computer repair, and basic coding. Clients can also gain more in-depth knowledge on ways to leverage technology towards broader life outcomes in income, education, and health.

This chapter offers ideas for any organization to help clients gain more advanced digital skills.

Play 12: Light lifts to go beyond the basics

Many commonly requested topics can be broken up and taught in standalone workshops. Examples include:

Excel Basics (1 hour): Here are course materials for the library's Excel Basics workshop, an effective class that can be taught in about an hour.

Intro to Music Production (2 hours): Mozilla's Web Literacy curriculum contains many workshop lesson plans to teach Web-related skills, including introduction to music production, a 2 hour workshop.

Image Editing 101 (1-2 hours): Goodwill Community Foundation's Image Editing 101 tutorial provides easy-to-grasp instruction on the basics of image editing. Depending on the amount of hands-on practice activities you include, a workshop can be completed in 1-2 hours.

You should also consider ways to integrate new digital skills when delivering existing services. For instance, a workforce client suggested that job-readiness training can have participants record and edit videos of their mock interviews, improving job-readiness and teaching digital skills at the same time.

Play 13: Leverage online training platforms

It would be unrealistic for your organization to teach every digital skill a client may be interested in, but there are several free online training platforms that would allow your clients to learn new skills at their own pace. For example, all SF Public Library patrons can use this link to access Lynda.com for free. Lynda offers a wide array of video-based online classes to help clients learn commonly requested skills like the Microsoft Office suite, web design, coding, and photo editing. See **Resources** at the end of the Playbook for links to more online training platforms.

To multiply the impact of online training platforms, consider organizing study groups or **Learning Circles** with your clients. A model developed by Peer 2 Peer University (P2PU) and Chicago Public Library, Learning Circles have been described as "book clubs for online courses." They are simply study groups for people to meet at the same place at the same time to take online courses. They can help create a more social learning experience, improve motivation to learn, and provide accountability. They are a great way for organizations to offer the support of in-person trainings but who lack the capacity to teach advanced skill topics.

P2PU recommends having groups of about 8 people meeting weekly to complete the same course together. For instance, your Learning Circle can learn the basics of building a website together on Lynda or choose from any number of free online classes from providers like Coursera or EdX. To get a feel for the classes other Learning Circles are working on around the world, take a look at P2PU's Learning Circle site. P2PU offers this Facilitator Handbook for anyone interested in organizing a Learning Circle.

Play 14: Make referrals

For clients who want to participate in formal advanced digital skill training programs, you can refer them to a number of destinations:

- **City College of San Francisco** offers programs in the [Computer Science](#), [Visual Media Design](#) and [Computer Networking and Information Technology](#) departments. Courses include: computer programming, databases, digital illustration, animation and gaming, and network administration.

- **OEWD's TechSF** initiative provides free education, training and employment assistance to both jobseekers and employers in San Francisco's thriving Tech Sector. TechSF offers moderate to advanced digital skills trainings throughout the city, focusing on topics like design, IT, coding and programming, software engineering, and more. Visit the [TechSF website](#) for more information on training locations and services.

- **Code Tenderloin** works with individuals left out of San Francisco's economic gains to prepare, stabilize, and teach them job readiness and life skills for entering the workforce giving members of our community radical opportunities. They offer a 4-week Job Readiness class and a 6-week Basic Front End Web Development class that teaches Javascript, HTML, and CSS. Interested clients should apply on [Code Tenderloin's website](#).

- **Gig Economy workshops:** OEWD partnered with [Samaschool](#) (a non-profit specializing in helping workers understand, access, and succeed in online gig economy work) to help city residents take advantage of gig economy opportunities. Workshops are currently available at the [Visitacion Valley Neighborhood Access Point](#) (FACES SF) and the [Western Addition Neighborhood Access Point](#) (Success Center). If your organization is interested in having Samaschool lead a workshop, fill out [Samaschool's interest form](#).

Chapter 5
Iterate

Play 15: Get daily feedback

All of our trainings and services, including this Playbook, can always be improved through constant feedback and iteration. One way is to use this simple daily feedback form to ask instructors and learners alike at the end of each class what worked, what didn't, and what should be changed. A suggestion box is also a good idea.

On a quarterly or annual basis, take time to analyze all feedback and make changes accordingly.

Sample Questions

- **Overall, how was today's training**

  Very poor ○ ○ ○ ○ ○ ○ ○ Excellent

- **What could be improved and why?**

Resources

Sample forms

Resource	Chapter	Notes
Intake Form (online) (PDF)	Ch. 1: Understand your audience	6 questions to assess the digital needs of your clients at intake
Pre-training survey (online) (PDF) Post-training survey (online) (PDF)	Ch. 3: Teach Digital Literacy	Surveys to assess a learner's digital skill level before and after basic digital literacy training to ensure improvement has oc-curred.
Daily feedback form (online)	Ch. 5: Iterate	A simple survey to use at the end of each training session or work-shop to measure satisfaction and get feedback

Internet and Computer Access

Resource	Chapter	Notes
SF Free Public Wi-Fi and Computer Lab Map	Ch. 2: Help People Get Connected	Map of free public Internet and computer labs at parks, rec centers, libraries, non-profits, and outdoor areas throughout San Francisco.
SFPL Tech'd Out Program	Ch. 2: Help People Get Connected	The library allows library patrons to check out laptops and mobile Internet hotspots for use outside the library for 3 weeks at a time. At select branches only.
AT&T Access discount program	Ch. 2: Help People Get Connected	AT&T's discount program offering home Internet for about $10 a month.
Comcast's Internet Essentials discount program	Ch. 2: Help People Get Connected	Comcast's discount program offering home Internet for about $10 a month.
PCs for People	Ch. 2: Help People Get Connected	The nonprofit PCs for People offers unlimited 4G LTE hotspot Internet service for about $10 a month. They also offer refurbished desktops and laptops for as low as $70-$100.
Free computers from the Computer and Technology Resource Center	Ch. 2: Help People Get Connected	Low-income residents can apply to receive a free, refurbished computer. Current wait times are typically 1-3 months and computers will need to be picked up from their office.

Curriculum & Course Materials

Resource	Chapter	Notes
CTN Basic Digital Skills	Ch. 3: Teach Digital Literacy	A 4-session basic digital literacy curriculum with a job-seeker focus.
SFDE Basic Digital Skills	Ch. 3: Teach Digital Literacy	A 6-session basic digital literacy curriculum based on CTN's curriculum. Modified with input from workforce center pilot sites.
St. Anthony's Tech Lab Smartphone Class	Ch. 3: Teach Digital Literacy	A series of 3 workshops to teach smartphone basics.
SF Dept. of Technology Online Safety	Ch. 3: Teach Digital Literacy	A short presentation and handout prepared on online safety prepared by the City's Department of Technology.
Microsoft DigiSeniors	Ch. 3: Teach Digital Literacy	Microsoft partnered with the City of Chicago to develop this 90 minute workshop curriculum designed to introduce seniors to technology. It covers the parts of a computer, using email, Windows accessibility settings, and Internet safety.
SFPL Excel Basics	Ch. 4: Onramp to advanced digital skills	Course materials for the library's 1 hour Excel Basics workshop.
Mozilla Web Literacy Curriculum Mozilla Music Production workshop	Ch. 4: Onramp to advanced digital skills	Mozilla's workshop lesson plans on a variety of web-based digital skills, including online music production tools.
Goodwill Image Editing 101	Ch. 4: Onramp to advanced digital skills	Goodwill Community Foundation's tutorial for learning the basics of imaging editing.
P2PU Learning Circle Facilitator Handbook	Ch. 4: Onramp to advanced digital skills	A handbook for organizing Learning Circles, or study groups, for online courses.

Online Learning

Resource	Chapter	Notes
GCFLearnFree	Ch. 3: Teach Digital Literacy	Goodwill Community Foundation's online learning portal. Free video and text-based tutorials on basic and intermediate digital skills.
Digital Learn	Ch. 3: Teach Digital Literacy	The Public Library Association's online learning portal with free video tutorials on basic digital literacy.
Lynda.com (via SFPL)	Ch. 4: Onramp to advanced digital skills	SF Public Library patrons can use this link for free access to Lynda's wide array of video-based online classes. Includes many commonly requested skills like the Microsoft Office suite, web design, coding, and photo editing.
Gale Courses (via SFPL)	Ch. 4: Onramp to advanced digital skills	All SF Public Library patrons can use this link to enroll in Gale Courses, offering a wide range of highly interactive, instructor led online courses. Technology topics include Microsoft Office, Intro to Programming, and IT certification prep.
Gig Economy Starter Kit	Ch. 4: Onramp to advanced digital skills	OEWD partnered with Samaschool to create this series of free interactive training modules and videos to help residents succeed in the online gig economy.
Class Central	Ch. 4: Onramp to advanced digital skills	A search and reviews site for online classes.

Referral Destinations: Assistive Technology

Resource	Notes
Access Ingenuity	Provides accessibility services and solutions for people with disabilities and organizations that work with people with disabilities. They offer accessibility consulting services as well as training and support on a variety of assistive technology — from the JAWS screen reader to voice recognition software.
California Department of Rehabilitation	Assists individuals with disabilities pursuing continuing education and/or employment opportunities with counseling, coaching, needs assessment and funding for tools (including Assistive Technologies) and other resources that advance the individual's path to employment.
Independent Living Resource Center San Francisco's Assistive Technology program	Offers information and training about Assistive Technology to consumers with disabilities. They even have a Device Lending Library where people can try out the latest technology and bring it home for a test run.
Hearing and Speech Center of Northern California	Provides life-long professional services to support all people with hearing loss or communication difficulties in achieving their goals. There are many assistive listening devices available and apps that can help people communicate better.
Light House for the Blind and Visually Impaired's Access Technology program	Team of teachers and specialists provide assessments and trainings on Assistive Technology for individuals living with low vision or blindness.
SFPL Assistive Technology	Overview of the library's Assistive Technology services available.

Referral Destinations: Advanced Skills

Resource	Notes
City College: Computer Science City College: Computer Networking and IT City College: Visual Media Design	City College of San Francisco offers programs and courses in computer programming, databases, digital illustration, animation and gaming, network administration and more.
OEWD TechSF	OEWD's TechSF initiative provides free education, training and employment assistance to both jobseekers and employers in San Francisco's thriving Tech Sector. TechSF offers moderate to advanced digital skills trainings throughout the city, focusing on topics like design, IT, coding and programming, software engineering, and more.
Code Tenderloin	Code Tenderloin offers a 4-week Job Readiness class and a 6-week Basic Front End Web Development class that teaches Javascript, HTML, and CSS.
Samaschool	OEWD partnered with Samaschool to help city residents take advantage of gig economy opportunities. Workshops are currently available at the Visitacion Valley Neighborhood Access Point (FACES SF) and the Western Addition Neighborhood Access Point (Success Center).

Our Research

For a more detailed picture on the needs of our target population, we conducted focus groups and interviews with 61 residents across 3 public housing sites and 3 workforce centers. To learn more about challenges specific to people with disabilities, we interviewed staff from the Mayor's Office on Disability. They yielded many insights on how residents view and use technology in their daily lives.

Insights: Challenges

1. Affordability is the most commonly cited challenge

Internet and computers are too expensive for many public housing residents and workforce clients, leading to low subscription and ownership levels when compared to the city average. Only about half of participants have home Internet connections, with fewer having desktop or laptop computers. Instead, the majority rely on mobile devices and data plans for connectivity.

"I got one of those Obamaphones [Lifeline phone]. The connection can be slow at times but for the price, free, I can't complain. I do get frustrated though. Sometimes the videos hang up but I have to be patient. I can't afford $70 a month for Internet."

-- America Works workforce client
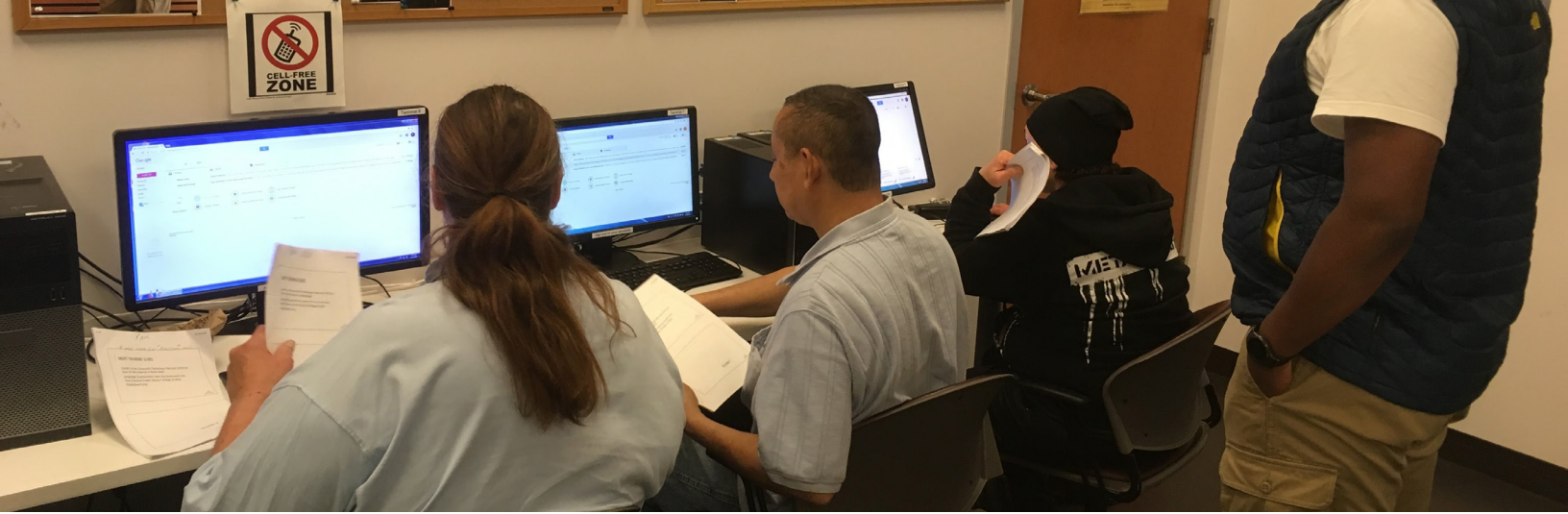
2. Usage is high, but confidence and skill levels vary. Many are easily frustrated with or intimidated by technology, especially because of its pace of change.

Nearly all participants use the Internet at least occasionally, viewing it as a necessity for everyday tasks. Some participants were fully digitally literate, but others were not confident or self-reliant users. A common perception among participants was that their children or younger relatives are more digitally skilled and are relied upon for help. Middle-age or older residents tend to stick to the few tasks they know well (e.g. checking email) out of fear of "doing something wrong" and "breaking it." Some challenges cited include: typing, uploading and downloading files, locating where files are saved on a computer, and understanding computer terminology and symbols or icons.

Technology is seen as not designed for older people because of its pace of change. Along with seniors, many middle-aged participants say their age makes it more difficult to learn and remember new things, making it a challenge to keep up with technology's constant updates. Those with developmental or cognitive disabilities find it especially difficult learning new technologies on their own, and those who develop disabilities later in life can lose confidence in using technology due to their disability.

"My sons are very good with computers, they love it. I'm not very comfortable with it when they're not around. It gives me high blood pressure. I like it for the first 10 minutes but after a while I get stuck, and then I have to ask my friend or my kids on how to continue, what to do on the keyboard. One time I just clicked on one wrong letter and everything just blanked out. And I had to start it over again."

-- Robert B. Pitts housing resident

3. Mobile connectivity and devices help, but usually aren't enough

Mobile-reliant participants appreciated the connectivity offered by their smartphones and mobile data plans but still felt their lack of computers and broadband put them at a disadvantage. 3 themes emerged with mobile:

1. Data throttling: Several participants mentioned having their entire family on a single data plan, leading to data rationing and a month-to-month usage pattern. Connections are fast at the beginning of the month but become throttled and unusable at month's end.

2. Tasks requiring larger screens: Mobile-reliant participants brought up the problems of using their phones to fill out credit applications, apply for jobs, and, among their children, perform research for school. One youth mentioned needing to write an essay on her phone after being unable to finish it at her school's computer lab.

3. Smartphones do not bridge digital literacy gaps: While smartphones are now nearly ubiquitous, many participants who own smartphones continue to lack the digital skills to fully utilize them. Owning the device is not enough -- digital literacy is still required.

"I have a smartphone. It was free. I was so happy when I got that phone, but I tried swiping a few times and couldn't figure it out. Every time I use it, it seems to break, so I stopped trying."

-- Holly Courts housing resident

4. Technology can add to pressure and anxiety

Participants, especially those at workforce centers, face significant pressures and anxiety in their lives to improve their personal situations or provide for their families. Several mentioned instances where challenges with technology added to these anxieties and became barriers to income and employment. A low-income resident lost money after falling victim to an online scam. Several unemployed job seekers struggled to submit applications on the myriad of employer portals and simply wanted paper applications. They recognized the need to learn digital skills but felt a formal training or class would take too much time. The problem is compounded for people with disabilities who are not familiar with assistive technology that can help navigate sites like employer portals.

"I'm trying to find work and it's a struggle. I'm 51. I really need a job, it doesn't matter what it is, I can learn it. I've been a grill cook and a pizza cook but I'll stoop down to bussing and dishwashing, it doesn't matter. [But with technology] it's so complicated to where you have to jump through so many hoops. Why does it have to be so difficult? Keep it simple. Simple is just keeping some applications in front so I can walk in and fill it out. Everybody doesn't know how to use a computer, and now all the jobs ask for an email address, a password, put the application in online. There are people who don't know that stuff. I just get so frustrated."

-- Goodwill workforce client

5. Digital skills require organizational skills

Learning to use technology requires the ability to organize information, which some participants seemed to lack. Many workforce clients had trouble keeping track of login information and the various technology tips they received from job coaches. This was especially difficult for a workforce client who had a learning disability. Without the ability to keep track of information, technology skill acquisition becomes more difficult and frustrating.

6. Cybersecurity and online safety

Concerns of cybersecurity and online safety were common. Many participants mentioned the presence of malware on their phones and not knowing how to remove it. Several had been victims of online fraud. Several immigrant participants said their concerns about the security and authenticity of online interactions made them wary of using digital services such as online banking or online job search.

"When I first came here I tried applying for jobs online. But in this country, there are lots of bad companies on the Internet. They scam you. They told me to apply and said I have a job for you, 8 hours a day, 5 days a week, it's not true. They just take your information and keep sending you spam to my phone and email. It's no good. This country has a lot of scam companies so I don't apply unless I really know the company."

-- FACES SF workforce client

7. Technology as a basic necessity

Nearly all participants agreed that technology has become a basic necessity in today's society and economy. Without adequate access or digital skills, they felt they would miss out on important services and opportunities. Additionally, some people with disabilities rely heavily on technology to navigate their environment or access information, especially those in the blind or low vision community.

"Well we need the technology, that's the way the world works now. Whether we like it or not, whether we're rich, whether we're poor. That's what they're doing now...It's getting to the point now where you gotta go online to get any kind of service, because they don't answer their phones on purpose. So you have to use the computer, it's almost like they're forcing you to do it."

-- Robert B. Pitts resident
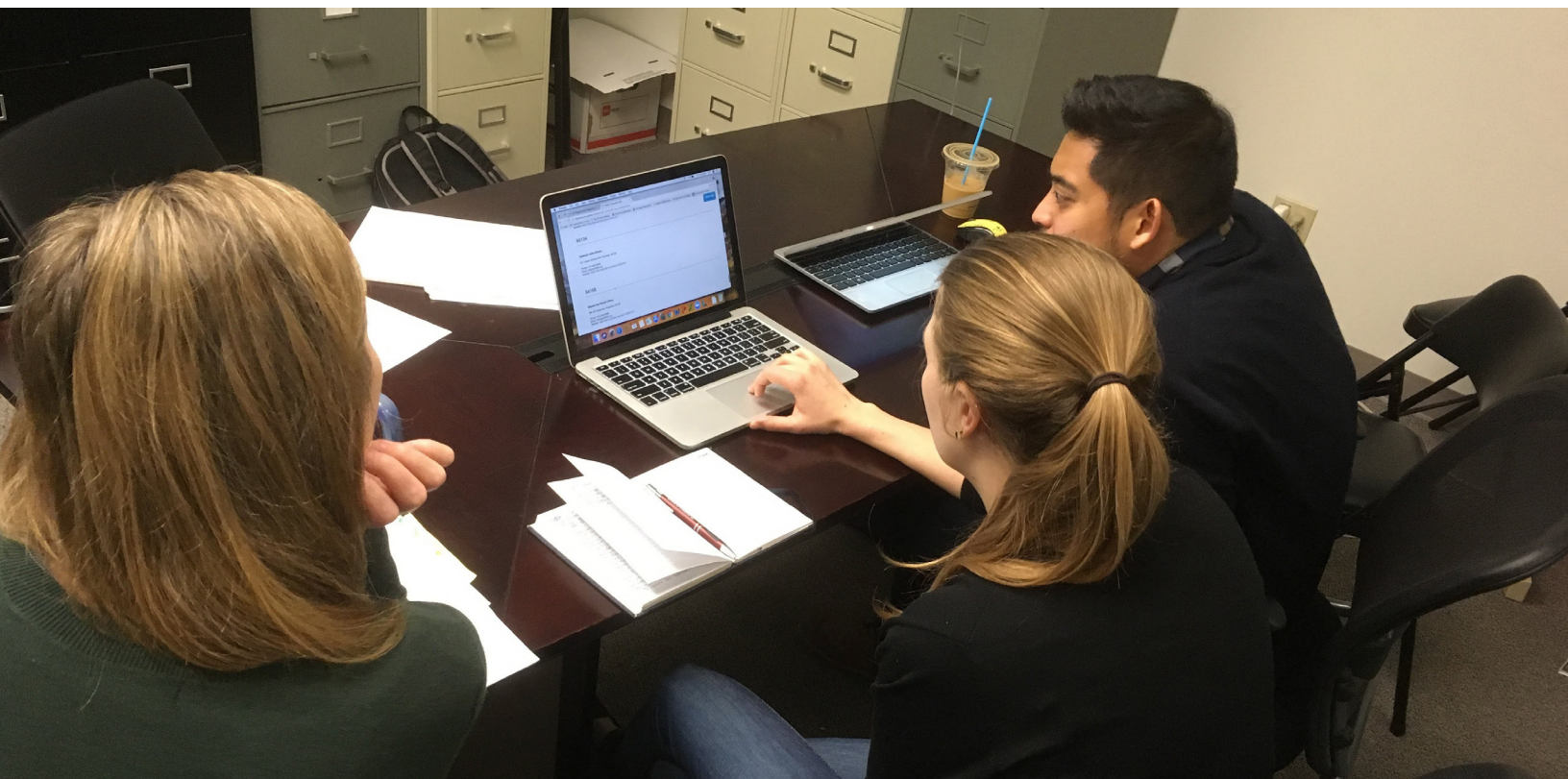
Insights: Bright spots

Many areas of opportunity rose to the surface during our interviews. In many cases, participants have already identified areas which they believe they can benefit from if they had more digital skills. Integration of these interest areas into a digital equity program would lead to higher engagement and retention.

1. Trust and community

Participants expressed a strong sense of trust for service provider organizations and the quality of help they were receiving. Workforce clients appreciated the patience of their job coaches and the welcoming facilities giving them the tools and space to focus on their job searches. One participant described her center as a "home away from home."

Participants at a public housing site felt their residential services staff has been successful in improving the community by organizing more programs and strengthening outreach. Provider organizations can take advantage of the trust they've built with residents to deliver digital inclusion services.

"My job coach here, she really helps me. I don't use Craigslist or the Internet to search for jobs. I'd rather come here. It's better because it's sure."

-- FACES SF workforce client

2. Technology can further strengthen communities

Participants at 2 public housing sites felt technology can play a role in strengthening their communities by improving communication among neighbors, sharing information about events, and allowing tenants to participate in meetings online. Technology can also help those who are homebound stay connected and is especially important for the Deaf community who rely on tools like web cameras, video phones, and email to communicate with friends and family.

"Make sure everyone in the community had a computer and Internet access at home. And then at the same time, you can have parenting class online amongst the residents, you can have resident meetings online, and residents can stay in their house and just pull it up instead of coming down here, because a lot of people don't feel safe."

-- Hunters Point West resident

3. Technology's relevance towards ambitious goals and interests

Many participants had ambitious long-term goals – attaining higher education, starting their own business, working at non-profits – and understood the relevance and importance of technology in achieving these goals.

"My goal is to work with youth. I've been in similar situations, the group homes, getting into trouble. It's bad and I want to make sure no one else goes through what I did. With a computer, I can go on and find where to help, where someone like me is needed."

-- America Works client

4. Activating these interests can create self-learners after they are on-ramped ramped

Participants were confident that they could continue learning more advanced digital skills on their own once they had reliable Internet access and knew the basics. Several mentioned using online tutorials to successfully learn how to do specific technology tasks when required by work.

"I wouldn't call myself an expert but I do like learning. I'm trying to do a business where I cook from home so I can definitely use a website for that. There are websites with tutorials to teach you and there are all types of things on YouTube you can watch on your spare time. It all comes down to having Internet access."

-- Hunters Point West resident

Appendix

Personas

There is no "one size fits all" solution to the digital divide - barriers vary from person to person. To drive the point home, we created a set of personas, fictional characters we developed based on our research to represent the different client types that might use our service. Creating personas helps us understand different client needs, experiences, behaviors, and goals. For us, personas describe the technology barriers of people you might meet in the community.

Use them to anticipate the variety approaches needed for different clients. To get the ball rolling, we listed potential service strategies for each persona below.

Carla: Time-Constrained but Already Competent

Age: 33

Education: High school graduate

Current employment: Part-time warehouse labor for FedEx

Access: Has a smartphone and a data plan through a prepaid carrier, which she shares with her 3 kids.

"An Excel class might be good and maybe help typing over 45 words per minute. A lot of employers like UCSF are now giving out tests for the good admin jobs to see if you really got the skills you say you do. But I got so much on my plate now. I just want time to sleep. If I really wanted to, I could probably learn it on my own."

Digital skill level: Uses smartphone all the time for social media, email, Google, and Netflix. Used computer at work for prior front desk admin job. Doesn't consider herself an expert but can figure out most things by searching online for tips. Struggles with Excel and calls herself a slow typer.

Barriers: Time -- has kids at home and works nights. Can't afford a computer or home broadband. Feels she can personally get by without it but needs to bring her kids to the library or aunt's house when a computer is needed for homework.

Personal Goals: Get a job in healthcare administration, which she feels offers better pay and more room for professional growth. Eventually, save up enough money to start her own beauty salon.

Potential service strategies: Provide Carla with information on low-cost connectivity options, such as discount Internet programs or the library's hotspot and laptop lending programs. Provide information on quality, self-paced tutorials online. Consider hosting a 1-day workshop on Excel basics.

Edgar: Eager to Learn
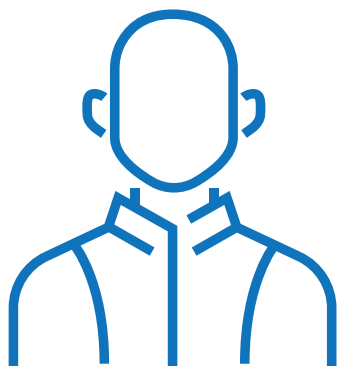
Age: 50

Education: High school dropout

Current employment: Unemployed

Access: Has a smartphone and small data plan through the Lifeline program.

"I've been looking for work but in order to get a good enough job for where I want to go, I need more computer skills. I'm 50 years old and all I know is how to turn it on and check mail. I see people doing 5 things on the computer at once and want to do that too. It will open more doors for me."

Digital skill level: Uses messaging apps on his smartphone. Tried learning to use a computer before but found it too difficult to teach himself. Really wants a class to learn from the ground up.

Barriers: Lives in transitional housing which makes having a computer and home broadband infeasible. Finds it hard to remember things. Needs an instructor who wouldn't make him feel embarrassed to ask the same question 2 or 3 times. Memory problems also makes him miss appointments and forget usernames and passwords.

Personal Goals: Find a well-paying job to sustain himself while he attends City College. Ultimately wants to become a case manager to help others from a similar background.

Potential service strategies: Leverage Edgar's motivation to learn by providing basic digital literacy training. During training, be sure to address his learning barriers with 1-on-1 attention and a low-stress teaching environment. Help him maximize his smartphone.

Robert: Needs a Refresher

"A lot has changed but it's easy for me to learn it. I just need someone to show me all the new things I should know. Like the other day someone said I need to use LinkedIn and I've never even heard of it."

Age: 55

Education: High school graduate

Current employment: Unemployed

Access: Has a smartphone and small data plan through the Lifeline program.

Digital skill level: Was proficient with computers and Internet before his incarceration. Feels tech has changed a lot in 20 years, but is confident he can get up to speed quickly.

Barriers: Affordability. Says he can learn on his own if he could afford a computer and Internet at home. Knows of classes at City College but doesn't want to drive across town to attend.

Personal Goals: Find a job that pays enough to allow him to live in the Bay Area.

Potential service strategies: Present Robert with basic digital literacy curriculum and have him identify sessions to attend. Provide Robert with information on low-cost connectivity options.

Rose: Reluctant User
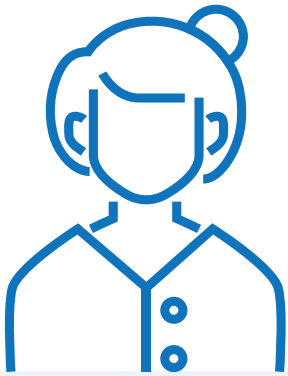
Age: 42

Education: Basic education in home country

Current employment: Unemployed

Access: Has a computer for her sons and discount Internet at home. Has a smartphone.

"I have a computer at home but I never used it. But now, the school changed and they said we have to sign up for all these communications using the computer. I don't think it's right that they're forcing us on it but I have to learn."
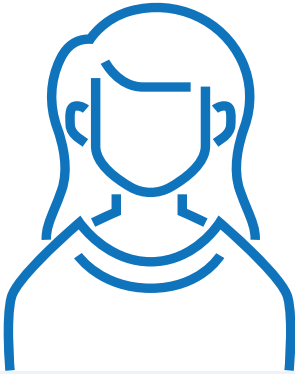
Digital skill level: Just started learning to use computers and Internet with her sons teaching her.

Barriers: Has "technophobia" -- fears and doesn't trust technology.

Personal Goals: Make sure her sons stay out of trouble and get into good colleges.

Potential service strategies: Similar to Edgar, provide basic digital literacy training with plenty of 1-on-1 attention and a low-stress learning environment. Take advantage of her having a computer and Internet at home by giving her small, personally relevant assignments to do on her own time between classes.

Anne: The Tech Advocate

"If they don't know how to use a computer, they're limiting themselves in terms of what they can do for themselves or for a company. A lot of friends and relatives have to ask me to help them look up things using a computer. It's almost like having a disability in certain cases."

Age: 24

Education: Some community college

Current employment: Participates in the gig economy and assists friend with freelance photography

Access: Has a smartphone and data plan through a prepaid carrier. Has a laptop but no broadband at home.

Digital skill level: A confident technology user who used her laptop throughout school and for digital marketing. Taught herself basic Photoshop and helps with her friends' social media campaigns. Thinks training in coding or graphic design could help her, but is also passionate about helping others in her community learn the basics.

Barriers: Lack of formal qualifications and certifications.

Personal Goals: Find full-time employment in the tech sector to allow her to afford an apartment in San Francisco.

Potential service strategies: Connect Anne to advanced digital skill training programs offered by the City or its partners. Leverage her enthusiasm for digital inclusion by having her assist in classes or outreach in the community.

Ellen: Competent but needs support

Age: 45

Education: College

Current employment: Unemployed

Access: Has a smartphone and computer.

"I used my smartphone and computer regularly up until I lost my vision. Now I feel I have to learn everything over again. I'm confident that I can do it, I just don't know where to begin."

Digital skill level: Was confident using the Internet and a computer but now is not sure how to apply her skills.

Barriers: Needs access to Assistive Technology and affordability. She does not know what technology is available for her to use and does not know how to use it. She is also concerned that she cannot afford the technology she needs.

Personal Goals: Learn how to use Assistive Technology and obtain a full-time job to support herself.

Potential service strategies: Connect Ellen with a service provider who can evaluate what assistive technology would be beneficial for Ellen's level of blindness and provide training on how to use the technology. Evaluate funding options for the technology chosen. Identify resource centers where the technology is available for public use.

Workbook
Personas

What are some approaches you would take for each persona?

Persona	Your Ideas
Carla: Time-Constrained but Competent	Example: Provide information on low-cost connectivity options. Provide information on quality, self-paced tutorials online and consider a 1-day workshop on Excel basics.
Edgar: Eager to Learn	
Robert: Needs a Refresher	
Rose: Reluctant User	
Anne: The Tech Advocate	
Ellen: Competent but needs support	

Workbook
Plays

What are some ways you'd carry out the plays in the Playbook?

Play	Examples	Your Ideas
Play 6: Incorporate the smartphone	Introduce apps to help people stay organized… consider standalone workshops on smartphone basics	
Play 7: Personally relevant hands-on activities	Introduce specific apps and digital services to pique interest… leave room for learners to explore the fun side of tech	
Play 8: Refresh and reinforce	Start each session with a warm-up hands-on activity based on previous lessons… email learners outside of class with tips	

The Process

The SFDE Playbook began as a collaboration between the Committee on Information Technology (COIT)'s Digital Inclusion Officer and the Mayor's Office of Civic Innovation (MOCI). It was developed with the Human Centered Design process at its core, placing heavy emphasis on first understanding the residents we are trying to serve. After reviewing existing literature on the digital divide, we conducted qualitative research with residents in public housing and workforce centers throughout the city. This research was invaluable in helping us understand how residents currently engage with technology and how they would benefit most from greater access and digital skill. With some findings in place, we convened workshops with workforce center providers to develop ideas on how to best address the needs that emerged. Finally, we developed the Playbook by merging these ideas with proven curricula and best practices from digital literacy experts.