How Lack of Access to Technology Reinforces Inequality in Underprivileged Communities

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Introduction

Technology is an increasingly necessary component of life in the United States. Internet service is often required for school, work, and other necessary activities. Technological literacy is also often a prerequisite for essential tasks in work, school, and elsewhere. Given that underprivileged individuals often lack the same access to both technology and digital connectivity as their privileged counterparts, how does this affect inequality in an increasingly technological society?

Literature Review

Based on the literature reviewed for this topic, the most significant problem in terms of lack of access to technology in underprivileged and low-income communities appears to be lower rates of internet connectivity. According to HUD User, lower-income households are four times less likely to have an internet connection at home relative to middle- or upper-income households (HUD User, 2016).

The cost of broadband internet, which is typically an added utility cost on top of other essential services like phone service, electricity, water, etc., is an expense many lower-income households are unable to bear.

Increasingly, internet connectivity is necessary for education—particularly higher education—job searches, as well as accessing the social services of which low-income households may be the most in need. However, many of these households are unable to afford the technology costs of internet service, and so must depend on cell phones or attempt to use public-access options like the library (HUD User, 2016).

While there are many issues that arise from having lack of access to computers and the

Internet, one of the major ones is the difference in education between underprivileged communities with less access to technology and more privileged communities that have ready and easy access to technology.

In a more digital world, it is becoming the norm for teachers to assign homework that can only be completed online. This trend is not only true for higher learning like colleges and universities, but high schools as well. According to one federal survey, 70% of teachers assigned homework that needed to be completed online, and 90% of high school students reported being assigned internet-based homework (Rodriguez, 2018). Without easy access to technology, and the Internet in particular, many students find themselves unable to complete their assignments and are unable to view the resources readily available to their more privileged peers.

The effects of this lack of technological access can seriously affect those in underprivileged communities. Another study of this digital divide, "...suggests that students without computer access at home are less likely to graduate from high school than their technologically equipped classmates" (Rodriguez, 2018). As society becomes increasingly complex, and lower-skilled work is automated, people without high-school diplomas will have a much harder time finding work and providing for themselves and their families.

An additional problem identified during the literature review is lack of access to technology, where people risk becoming digitally excluded. Being digitally excluded can lead to individuals not being able to have access to education, work, or social communication as the Internet becomes the default communication (Beaunoyer, Dupéré, & Guitton, 2019).

As online communication becomes the norm, low-income households won't be able to afford internet access or even stable internet access without potentially sacrificing groceries, utilities, medications, and other necessities.

Based on the trends across different articles reviewed, it appears that underprivileged communities face challenges adapting to an increasingly technology-dependent world. Be it education, the job sector, or social interactions, underprivileged communities face being left behind as more privileged communities enjoy the benefits of technology. Left unaddressed, the digital divide will grow, and make it even harder for underprivileged communities to live meaningful lives moving forward.

Further research is needed on exactly how the digital divide is manifesting in underprivileged communities, such as what conditions contribute to this phenomenon. It is important to determine which specific communities, besides low-income, are affected by this gap, and how it affects their ability to function in a technologically driven society. More importantly, further study is necessary to figure out how the digital divide can be bridged by specific underprivileged communities, and what efforts are currently underway to do so.

Research Question

How does a lack of access to technology reinforce inequality in underprivileged communities?

Research Design

Key personnel at three sites (described below) were interviewed to answer the research question. The target audience for these questions will be anyone interested in gaining further insight into the challenges faced by individuals who lack access to technology, the effects of that lack of access, and possible solutions. All interview questions were asked and answered via email by October 6th, 2020. For each interview, six questions were asked of each interviewee:

- Do you believe the population you work with as an organization is negatively impacted by a lack of access to technology, and if so, how?
- Access to what technology, device, or service would most help the population you serve?
- What benefits would you expect to see for the population you work with if they had equal access to technology?
- Why is it important to you to help the population you work with bridge the digital divide, and why did you decide to help this group?
- How can you compare participants' success and awareness in the beginning of your program vs after exposing them to technology?
- Do you believe that if the digital divide never existed, meaning everyone had access to technology equally, would that be enough for underrepresented communities to have their own wealth and prosperity?

Conducting Research

At The Reading Tub, Terry Doherty, the site founder and operator, answered the interview questions (Appendix A). She is an ideal person to comment on these questions because she founded the site and also should have the most experience at the site with bringing literacy via free books to underserved populations.

At EConnextUs, the founders, Pam Bundy (Appendix B) and Bill Bundy (Appendix C), are especially suited to answer questions regarding special-needs and autistic individuals because they have a son on the Autism spectrum and have been active in the autistic support community for over two decades.

At Dev Mission, both the Executive Director, Leo Sosa (Appendix D), and an instructor

of the program, Yaritza Perez (Appendix E), were interviewed. The Executive Director is an ideal person to comment on these questions because he not only founded the site, but has been a part of programs similar to Dev Mission. The instructor and mentor of the program is an ideal person to comment on these questions because she, like the students she teaches, was once unaware that programming could be a career.

Service Organizations

The first site, The Reading Tub, located in Virginia, aims to increase literacy for underserved populations by providing books to these students. The organization maintains, in Excel, a list of books to be reviewed for potential distribution to students. Robert is developing a full-stack web application to make that book list easier to update and organize.

The second site is EConnextUs, located in San Diego. EConnextUs's goal is to offer a site for special-needs and autistic adults to meet potential partners and new friends—essentially a dating site for people on the autism spectrum. Andrew is helping to develop the website for EConnextUs before it is launched, working with both the client directly and also the company hosting the site, SkaDate, to sort out disputes with the client and to answer any questions the client has about information provided by SkaDate.

The third interview site is called Dev Mission, located in San Francisco. Dev Mission aims to train untapped youth ages 16-24 to help them to pursue careers in tech by teaching them web development, IT skills, and soft skills. Christian will be building a full-stack web application to provide community members and local residents of how to properly dispose of single-use items.

Findings

Based on the interview responses, The Reading Tub believes that for their mission, which is to bring literacy to underprivileged youth, technology is only minimally necessary. Terry Doherty, who directs and runs the site, stated that for the population she works with, "...access to a smart phone is sufficient." She did not seem to believe that technology access beyond this device was especially important, and can even be counterproductive, to achieving youth literacy (T. Doherty, personal communication, October 2, 2020.) For example, she notes that excessive screen time may take away from time a child would otherwise spend reading a book.

For Terry's work, technology can be a boon, but can also detract from achieving youth literacy. She believes that outside of basic internet access, a child is better off with a book in hand than a screen.

In interviews with EConnextUs's founders, Pam and Bill Bundy, both state the importance for special-needs and autistic adults to have friendship and romantic partners, and the challenges for these adults in finding either. This is what led them to create EConnextUs, a dating and friend-finding site for this community. Pam states that special-needs adults "…have a difficult time connecting with each other due to lack of social skills, transportation, or technology" (P. Bundy, personal communication, October 6, 2020).

EConnextUs's mission to provide special-needs adults with dating and friend-finding services relies heavily on technology in order to operate. According to Pam (2020), current technology is expensive, out of reach, and potentially dangerous for autistic adults to use. Bill elaborates that lack of access is limiting to those on the Autism spectrum, and that access and technological proficiency would be crucial for helping special-needs adults have access to more mainstream technologies (B. Bundy, personal communication, October 6, 2020).

Both Pam and Bill (2020) believe that increased accessibility and understanding of technology would benefit special-needs and autistic adults. Currently, training and access is primarily a state responsibility, according to Pam (2020), and that by increasing both access and understanding of technology, special-needs adults, including those on the spectrum, could be more independent, mainstream, and self-worth.

Based on the interview responses, Dev Mission believes in their mission of trying to close the technological gap and bringing wealth and prosperity by teaching tech skills to communities who wouldn't have access otherwise. For example, Yaritza Perez, an instructor and mentor for the program, states that a lack of access to technology negatively affects a person's ability to use these devices which can lead to individuals not being able to apply to jobs and fill out forms (Y. Perez, personal communication, October 6, 2020).

The Executive Director, Leo Sosa mentions how important it is to have access to technology or computers to really be able to benefit all the software and services that exist out there (L. Sosa, personal communication, October 6, 2020).

Observed Trends Across Sites

All three sites stressed that having access to at least a smartphone or laptop would be valuable for their respective underprivileged communities. However, there was a difference of opinion between sites regarding the appropriate levels of access.

The Reading Tub's site director believed that too much technology can be a hindrance to achieving literacy in books, due to the distractions it provides. However, the interviewees from EConnextUs and Dev Mission believed their missions would be furthered by increased technological access and literacy, though for different reasons and to different ends.

EConnextUs's founders both stated the necessity for special-needs and autistic adults to have greater access to, and competency with, technology. For this community especially, their lack of access and understanding has prevented them from being able to interact with mainstream society. Not only having technology like laptops, phones, and tablets, but knowing how to use them, would greatly benefit the special-needs community.

Both the Executive Director and the Instructor of Dev Mission both believed that the main issue of proper technological literacy is the lack of access to technology to the underrepresented communities with which they work. The lack of access to technology led to individuals not knowing about potential technology-related careers and/or how to break into the tech sector. Being able to give individuals a working laptop with high-speed internet access would greatly benefit these students and prepare them for their future according to the Dev Mission's mission.

All three sites viewed technological literacy as a positive, though to differing degrees and with different criteria for what is most important. Having access to the necessary technology was also a key factor for each site, as sometimes underserved populations are either unable, or don't know how, to access technology that could improve their technological literacy, and in some cases their well-being.

Conclusions

We can draw several conclusions based on the responses received from interviews conducted at our sites. All three sites state technological literacy was necessary to some degree in terms of furthering their mission, however, the extent to which access to technology was important, or even useful, to the sites' individual missions varied.

The Reading Tub believes that access to a smart phone was sufficient for most needs related to their mission of increasing youth literacy. The Reading Tub's director also believes that too much technological access is counterproductive to reading and developing the motor skills necessary for writing by hand, for example (T. Doherty, personal communication, October 2nd, 2020).

Contrary to The Reading Tub, EConnextUs favors a more integrated approach to technological access. For special-needs adults, EConnextUs's founders believe it is important that this community has access to a variety of technologies and the knowhow to utilize them, with the aim of improving connectedness between individuals. The founders also believe that ensuring special-needs adults are able to use the same technologies as those outside the community, as it will help them to become more independent (P. Bundy, personal communication, October 6th, 2020).

Similar to EConnexUs, Dev Mission believes having more access to technology such as laptops and high-speed internet are beneficial in giving others more opportunities. By teaching youths technology skills, Dev Mission is attempting to build wealth and prosperity in their local communities. The founder believes that individuals need high reliable access to the Internet and a laptop or desktop with a camera to benefit from all the resources out there (L. Sosa, personal communication, October 6th, 2020).

Our findings are relevant to our topic, as our research question was: "How does a lack of access to technology reinforce inequality in underprivileged communities?" Each of the sites with which we worked dealt with helping different underprivileged communities. Their missions reflect the current state of inequality between the communities they served and privileged communities. The work at each of the sites highlighted the fact that underprivileged groups often

have less access, training, and competency than privileged groups.

Our data are valuable in the sense that they reflect the perspective of the leaders of three non-profits on the importance of technological literacy and how to address literacy gaps. The research and interviews also touch on multiple underprivileged groups, allowing for a more generalized understanding of the effects of technological inequality than if only a single underprivileged group had been researched. Each site revealed aspects of the digital divide the other sites did not, allowing for multiple perspectives and a more detailed understanding of the manifestation of technological inequality.

Recommendations

Based on our findings, it would appear that ensuring underprivileged communities have access to at least basic technological devices, such as smartphones, laptops, internet service, etc., could be beneficial in terms of reducing inequality with respect to things like technological literacy.

There are several potential solutions to reducing the gaps in technological literacy and the digital divide. One such solution could be declaring internet service as a necessary utility, ensuring all individuals have access to basic internet service and devices able to access the Internet. For underprivileged groups to have the same access as privileged groups would likely help to close the gap, although it is likely additional measures will be required.

Additional measures, such as expanding education to incorporate many of the devices common to today's world into the classroom, would also have the benefit of exposing underprivileged children to technology and give them a chance to learn how to utilize the tools privileged groups currently use. Technological literacy will become increasingly necessary in the

years to come. Ensuring that every child has the opportunity to learn the tools of the future improves their chances of integrating with a modern society and workforce.

It will be important to conduct research to determine the most successful approaches to reduce technological literacy gaps and to determine which methods of addressing these gaps prove most effective. By studying which technologies and methods best close these gaps, a more targeted approach to teaching children—especially underprivileged ones—could result in more efficient pedagogy with regards to normal curriculum as well as digital and technological literacy.

Likewise, research into the impact of getting equal access for all groups to digital and technological resources will be key in determining whether equal access alone is enough to close the digital divide. Additional study will also be important to determine which strategies best help underprivileged groups and individuals. Being able to research and track individuals' performance and outcomes would allow for a targeted allocation of resources and learning, rather than a one-size-fits-all strategy that could leave many underprivileged people on the wrong side of the digital divide.

References

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Rodriguez, L. (2018, October 31). Tech-Based Education Holds Back Low-Income Students: Report. *Global Citizen*. Retrieved from: https://www.globalcitizen.org/en/content/low-income-students-technology-education/

Appendix A

Interview with Terry Doherty, Founder and Executive Director of The Reading Tub:

1) "Do you believe the population you work with as an organization is negatively impacted by a lack of access to technology, and if so, how?"

   Yes and no. Access to technology is very helpful for adults in understanding literacy in all its forms, finding tools, and helping their child succeed as readers. However, we also serve the readers themselves, and lack of access to technology is a good thing. This extends beyond reading to critical brain development for motor skills, such as holding a pen and learning to write.

2) "Access to what technology device or service would most help the population you serve?"

   Frankly, access to a smart device is sufficient. Not as much for Kindle/Nook and e-reading, but for using apps to listen to audiobooks and podcasts.

3) "What benefits would you expect to see for the population you work with if they had equal access to technology?"

   First, they would feel a lot less stressed knowing they are on a level playing field. Second, they would have more confidence in their ability to help their children.

4) "Why is it important to you to help the population you work with bridge the digital divide, and why did you decide to help this group?"

   NA.

5) “How can you compare participants' success and awareness in the beginning of your program vs after exposing them to technology?”

   NA.

6) “Do you believe that if the digital divide never existed, meaning everyone had access to technology equally, would that be enough for underrepresented communities to have their own wealth and prosperity?”

   Not in my case, no. Learning to read and being effective communicators (which is a literacy by-product) are skills that neither rely on nor are contingent upon access to technology.

Appendix B

Interview with Pamela Bundy, Founder of EConnextUs:

1) Do you believe the population you work with as an organization is negatively impacted by a lack of access to technology, and if so, how?

   There is a lot of technology available for special needs adults but many don't know what's available to them, either through lack of information or finances. Much of this type of technology is expensive and beyond the reach. Other technology isn't safe, as this population is easily taken advantage of.

2) Access to what technology, devices, or services would most help the population you serve?

   Desktop, laptops, and telephones so they can connect with others online initially before meeting in person.

3) What benefits would you expect to see for the population you work with if they had equal access to technology?

   There could be greater connection and communication between special needs adults.

4) Why is it important to you to help the population you work with bridge the digital divide, and why did you decide to help this group?

   Most special needs adults lack friends and have a difficult time connecting with each other due to lack of social skills, transportation, or technology. My goal is to give them a place where they can connect with each other in a safe environment. Also, unlike other

websites, this site will focus on people who live in close proximity to deepen their connection. Our son is autistic and has a hard time finding friends and people to date that live close to him. He has met others, but they live further away and it is difficult to get together.

5) How can you compare participants' success and awareness in the beginning of your program vs after exposing them to technology?

   My program is just beginning so I can't compare them yet.

6) Do you believe that if the digital divide never existed, meaning everyone had access to technology equally, would that be enough for underrepresented communities to have their own wealth and prosperity?

   If special needs adults were trained in technology, they could provide for themselves instead of relying on state to support them. It would take time and effort to find the technology they could work with, but once it was found it could increase their self-worth and take a financial burden off the states.

Appendix C

Interview with Bill Bundy, Co-Founder of EConnextUs:

1) Do you believe the population you work with as an organization is negatively impacted by a lack of access to technology, and if so, how?

   Yes. Without access and more importantly the ability to interact with it in appropriate ways can be very limiting for those on the autism spectrum. With a greater emphasis on communication with and through social media, the need for proficiency as well as access is paramount for mainstreaming interactions for autistic individuals.

2) Access to what technology, devices, or services would most help the population you serve?

   A device that provides Access to the internet as well as have An ease of usage for content creation. Additionally reasonability for portability or mobility. Light weight laptops. Chromebook iPad are reasonable solutions at this time

3) What benefits would you expect to see for the population you work with if they had equal access to technology?

   An ability to be more mainstreamed.

4) Why is it important to you to help the population you work with bridge the digital divide, and why did you decide to help this group?

   I believe we all have a responsibility to help all achieve their potential. Time, technology, expertise, finance, and most of all friendship and support are key to a healthy society.

5) How can you compare participants' success and awareness in the beginning of your program vs after exposing them to technology?

   NA.

6) Do you believe that if the digital divide never existed, meaning everyone had access to technology equally, would that be enough for under-represented communities to have their own wealth and prosperity?

   It is not just access alone. Competency is equity important. Optimizing the tools provided through appropriate training and development along with embedded curriculum that is relevant and supports continuing educational advancement and career readiness are also key.

Appendix D

Interview with Leo Sosa, Executive Director of Dev Mission:

1) **"**Do you believe the population you work with as an organization is negatively impacted by a lack of access to technology, and if so, how?**"**

   I believe that is not negatively impacted as most of our young adults that we serve carry cell phone technology but they do lack Internet Access in their homes. We also provide laptops and monitors for them as they graduate from our program so they have the necessary hardware and software to become financially stable.

2) **"**Access to what technology device or service would most help the population you serve?**"**

   Our participants need to have reliable access (High Speed DSL) or Fiber in order to rely on the access to connectivity for more opportunities. Regarding devices, I still believe that young people need to have a laptop or desktop with headphones, camera, keyboard and mouse to really enjoy the benefits of all of the software that is out there but most importantly to protect their bodies for ergonomic issues down the road.

3) "What benefits would you expect to see for the population you work with if they had equal access to technology?"

   Many benefits from housing, jobs, money, education, health but above all sharing their knowledge with friends, family, and the communities they live in.

4) "Why is it important to you to help the population you work with bridge the digital divide, and why did you decide to help this group?"

   It is very important for me as I did not get access to technology or computers when I was a young adult as well.

Here is a videos of how my organization is closing the Digital Divide:

https://abc7news.com/education/san-francisco-non-profit-devmission-prepares-low-income-students-for-tech-jobs/5422869/?fbclid=IwAR04pYNZLYYVqZbr24GxhNYI32A2QRUfT8grXIMVannyT3o4qnZ08erErJw

https://abc7news.com/distance-learning-california-san-francisco-unified-school-district-gavin-newsom-coronavirus/6323018/

https://www.ktvu.com/news/with-empty-offices-big-tech-called-to-help-bridge-digital-divide-in-san-francisco

5) "How can you compare participants' success and awareness in the beginning of your program vs after exposing them to technology?"

Comparing and contrasting the success of our program has been the main reason why we are able to sustain our program even during this difficult time. We use many evaluation tools such as pre and post assessments to learn more about what our program participants have learned and how they can apply the skills learned for jobs in the tech industry. We also have developed relationships with tech companies that have allowed us to to work with them creating fellowships, internships, apprenticeships but most importantly jobs.

https://www.youtube.com/watch?v=GqzhEwv_r0Y&t=11s

6) "Do you believe that if the digital divide never existed, meaning everyone had access to technology equally, would that be enough for underrepresented communities to have their own wealth and prosperity?"

We still need to provide the necessary tools and training for everyone that has access to the internet and computers. We also need support from government, ISP providers, tech

companies, foundation and most importantly the community itself to get everyone connected.

https://www.sfchronicle.com/opinion/openforum/article/SF-must-focus-on-a-digital-divide-amplified-by-15279253.php?t=4c766b7ac6

Appendix E

Interview with Yaritza Perez, Instructor at Dev Mission:

1) "Do you believe the population you work with as an organization is negatively impacted by a lack of access to technology, and if so, how?"

   Yes I think the biggest issue is people don't know how to use technology. Most job applications and even forms are all done online now. The fact that most of these underrepresented groups do not have access makes it an issue. 1 because they don't know how to use it and 2. Even if they did they can't always afford to have tech at home.

2) "Access to what technology device or service would most help the population you serve?"

   Laptops are the most valuable piece of tech. Even tablets. Again mentioning how a lot of people can't fill out certain forms because it's all online. Especially now with online school laptops is the most useful.

3) "What benefits would you expect to see for the population you work with if they had equal access to technology?"

   More technological literacy within communities. The amount of students that I've worked with who don't even have a Gmail account or even know how to google something on a computer vs their phone is pretty wild to me. The issue again being they just don't have access. What happens when these students apply for jobs? When they're at their job and have to write a professional email?

4) "Why is it important to you to help the population you work with bridge the digital divide, and why did you decide to help this group?"

   Sharing knowledge is very important to me. I never really had much access to computers and the amount of possibilities it had. I wouldn't be where I am today if it weren't for a tech program I joined on accident. I want my students to have more exposure to tech. So that they can see how much they can learn and even use those skills at a job. Tech exposure and tech literacy are very important this day in age because most modern day jobs rely on their online careers page.

5) “How can you compare participants' success and awareness in the beginning of your program vs after exposing them to technology?”

   The amount of curiosity that sparks once you show someone how to make an email or even write a piece of code is amazing. They come out of the program wanting to build things for not only themselves but their communities. The excitement over tech and how much they can learn by just googling is something I've noticed. They want to share it with friends and even watch youtube tutorials on how to build things. They come out of the program with more ideas and thoughts they never had before because they were never exposed to tech.

6) “Do you believe that if the digital divide never existed, meaning everyone had access to technology equally, would that be enough for underrepresented communities to have their own wealth and prosperity?”

   Yes I think underrepresented communities have a lot of ideas and skills. Those things

could help build lots of companies that most underrepresented groups can relate to. There are things most non underrepresented groups can't see. If there were more opportunities for underrepresented groups the possibilities would be endless.