Technology, Education, and Finances

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CST 462S: Race, Gender and Class in the Digital World

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Introduction

Today, the world is living in the digital age where electronic systems and computers have gotten closer to integrating with our society. This has resulted in many conveniences and higher productivity. The advancement of technology has lifted many people from poverty, and it has almost certainly contributed to the continual growth of the world's economy. It's clear that digital technology has made life easier for humanity overall, and it is still improving fast. However, these benefits are not free from flaws. Digital technology may have brought much good to many people, but the issue resides in the distribution of it. With the income gap playing a huge role, there exist many that cannot afford the bare essentials that are required in today's world. The minimum requirement usually means having a computer and internet access. Since society has grown reliant on technology, having computer literacy will be vital. Not having access to the bare essentials will hurt the growth of an individual. This will likely lead to being disadvantaged for any future job prospects or opportunities. Ultimately, this issue does require special attention, because it can become a vicious cycle later on. The income gap is actually increasing. Those on the low income status will struggle to provide themselves proper computer equipment. When they fail to do so they'll struggle to become effective members of society, which in turn contribute to keeping them remaining in poverty.

Literature Review

In the world of education, technology is generally seen as having a positive impact on students, one that can absolutely help propel them beyond what they would otherwise normally achieve. But how big of an effect can technology really have on their education? Could it be such a huge boost that those without proper access to it would fall short every time? Or is it such a marginal impact, that there's no true difference between having access to adequate technology,

and not having access to it? Or maybe it even hinders a student, and makes it harder for them to compete with others?

One such study, performed by Alan Cheung and Robert Slavin in 2013, sought to answer these questions. In it, they compared over 56,000 students, all from varying economic backgrounds, and from varying places around the United States. They tested three different types of technology aids, which were as follows: computer management learning programs, computer assisted instruction programs, and computer management comprehensive programs. They tested the effects that the access to these technologies had on students, and found an increase of 16% achievement-wise in those who were using technology to aid them. In fact, computer assisted instruction programs had the greatest effect, increasing academic achievement by almost 19%. And in fact, one other big takeaway was that the academic gains made by students were largely unaffected by their socioeconomic background. In simpler terms, regardless of how well off a family was, having regular, unhindered access to this kind of technology only helped the students in the long run, and was always able to improve them academically.

An article from Lee (2020) begins by talking about schools receiving funding and investing it toward technology, a large part of that going toward internet connectivity, which is helpful, but only a start, because internet connectivity at schools does not bring internet to student's homes. Lee then goes on to explain that the article will examine the details of specific schools and specific agreements to increase technology availability and internet connectivity.

According to Lee, this has been a hotly debated and focused-on topic by governments since at least the 90's, and that focus has been toward closing the gap of what has been termed the 'digital divide.'

Lee continues the discussion with commentary specifying American students' abilities, grades and performance fall short of several other nations' students abilities, and that the cause is widely debated, and suspects are the digital divide, what is called the 'homework divide' or students without fast internet access at their homes, or lack of teaching capability or capacity. The stream of logic presented in the article written by Lee is sing-song at best so natural conclusions from the writing presented are not abundant, but the general theme is that there are many efforts, and much focus in government sectors toward increasing technology in impoverished areas. Lee of course name-drops the Obama administration to give the article more appeal to authority, however the effort backfires because this is exactly where it starts to become apparent with careful analysis that some of these efforts may actually be misguided initiatives akin to money laundering - because the details listed don't read as educational effort, they read out more as some contest to see which corporation has their fingers in the money pie the deepest. Lee names the usual suspects in the list for technology software and hardware malarkey as if they are clean players here just to help and not undermine whatever they can to profit.

Lee goes on to say that the article focuses on two schools, and then talks about how they were able to take their iPads granted by Apple home because the connectivity was portable somehow. Lee interviews school faculty and presents data collected from the interviews. Lee discusses some specific statistics all pointing toward technology and high speed internet access at home and at school being either an essential component if present or a crippling factor if not. Lee talks about the specifics of one school having received iPads for all the students that have internet access at their houses through AT&T broadband. Prior to this transition it was common for the principal to see internet connectivity use from within student cars parked in the parking lot, which is obviously non-ideal. Lee mentions one quote as saying that technology is being

mandatorily brought into lesson plans. That, right there, begins to illuminate one of the flip sides to this problem, which will be discussed below.

Lee continues to discuss problems and poverty, how to fix it, and how internet connectivity is now a factor in today's world. Lee says there is good optimism for the future, but work still needs to be done to continue progress. Lee discusses Apple giving out tablets and various plans to improve the future.

One flip side to this is that adding technology unnecessarily to core concepts can't do anything but hinder the concept. Take trigonometry for example. You absolutely do not need any technology to do it, and same with a lot of other kinds of mathematics, perhaps most. When this starts getting mixed in in a way that seems like you can't split it up again, you're talking about the opposite of separation of concerns, and what is going to become a huge hindrance to actual learning of fundamental concepts.

Another one of the flip sides to this happening is that the Apple tablet interface is actually considered by many to be an inferior interface compared to a real personal computer interface, (Can Tablet Do the Same Work as Laptops?, n.d.) so passing Apple tablets out to impoverished areas may actually be passing out something akin to wolves in sheeps' clothing, something actually detrimental that appears benevolent. If you make it so kids start thinking they need an Apple tablet to do mathematics or write something down, we've got much, much bigger problems than lack of connectivity to impoverished areas. Considering Apple's apparent mal-intent on several fronts evident to the general consumer such as their forced automatic updates, removing battery capacity, and many other affronts, all aspects of this should be very carefully considered, at the very least.

There is a direct quote in Lee's article, from a faculty member of a school that is: "Sometimes, it's not uncommon for the students to even lead the teachers on ideas of what to cover." There's another huge problem rearing its ugly head. Don't do that. Don't ever let students tell you what to teach, it's a huge red flag for big problems starting with - you didn't give them enough math homework. It's great that they're programming at early ages, but I guarantee it's not with an efficient to use programming paradigm, because the best one I've ever seen Apple intentionally took away like a spoiled bully over two decades ago (Why Was Hypercard Killed?, 2011).

Lee goes on to discuss the prospect of schools making the transition to fully digital curriculums as if this is an absolute positive turn without considering the source of what these schools are embracing. Imagery is projected describing students and parents embracing specific Apple products like it's an absolute good thing. The article reads in a positive manner with enthusiasm toward technology but I can't help but see what is actually being promoted - and this is not in the direction of actual learning, it's in the direction of becoming unnecessarily dependent on the products produced by the Apple corporation.

The article continues to discuss various aspects of race in connection to poverty and technology, all of which point in the direction of technology improving society, but also to the Apple corporation as somehow holding the only key to unlock these Apple-tied benefits. What's super interesting is that at some point Lee says that the school is finally without Apple in 2019-2020. Are you sure, Lee? I think Apple has their hooks in the school, and now stopped funding. First times free, just like they say, how drug dealers do it, but now it's a whole giant corporation doing it, and everyone's applauding. Lee goes on to say that increased technology access is an encouraging force for student interest in STEM careers. Lee mentions that libraries

are one major place people go to get internet that don't have it at home and ties the article together by saying technology access is crucial for budding, learning students who are future members of future households and the future economy. Lee lists several specific examples of Apple iPads essentially saving the day to continue the theme of promoting propagation of technology connectivity to students. Lee mentions an actually segregated area of schools in one particular area, which is truly tragic, nonetheless apparently somehow perpetuated by the participants.

The article has some anecdotes and specific stories mostly about people benefiting from receiving iPads, and how connectivity is essential. About half way through a second school study is brought forth with stated similar findings. Anecdotes are given, statistics are layed out, all pointing toward technology connectivity being essential for students, but also that Apple is somehow the place that technology comes from. At some point the article says that there is a county, Maricopa, that people were being held for ransom. Again, a tragic circumstance, but one that Apple is miraculously there to save the day for everyone by giving them iPads so they don't have to leave their houses anymore. Other points are made to promote the distribution of iPads, including that there has been no resulting theft which miraculously shifted from lots of theft before the iPads, not a particularly believably stated fact, considering the lack of overall insight the article shows. The article attempts to tie iPad presence with test scores, but considering all the other slants the article takes, these data conclusions could be compromised.

There is an anecdote in the article specifically describing someone trying to simply renew a library card but being forced to use a phone to do it because it was 'online', the implication being that the person should have had easier access to connectivity. The flip side to that anecdote is - there needs to be another way without using any *'onlinedness'* - if someone's standing right

there in the library and the system is really all online, then there should forever and always be a real person there to do what always used to be done - put that stuff into the system. To take that away and blame the problem on the end user's lack of connectivity simply illuminates that this shift is not necessarily one by the people - for the people - but one being pushed by huge corporations trying to run the show and take over the world. The article ties in Google Chromebooks with that person and being saved from cancer because of it, getting less and less believable as the details build.

The article tries to summarize by tieing all the stories together under one umbrella of connectivity being beneficial for all in all aspects for all education universally absolutely and we can look to Apple and Google to save us all. Specific suggestions are made to improve the connectivity paradigm including bring connectivity to all, create more projects for all, and to recognize technology as being beneficial for students, but those would be the same suggestions someone doing money laundering would make, so there is obviously big incentive being forced by the corporations who are stirring up a big giant pot of money for themselves, probably not the impoverished communities they seem to appear to be.

Lee brings up extremely relevant points, but doesn't necessarily understand all the implications of what it means to hand out hardware featuring an inferior interface to a large group of people under the guise of distribution of benevolent technology. What Lee does not say is that Apple's actions and overall policies should be very carefully considered before deeming them something acceptable for mass distribution as the standard. Upon examination of many Apple hardware interfaces of items even such as just simple USB cords, it is easily seen that Apple intentionally adds hardware details to their products to make their hardware completely incompatible with the actual standards growing around us. Little bumps on the metal jackets so

they just won't go - won't fit - into any non-Apple cord hole, or vice-versa. There are many examples of this in Apple hardware and in Apple software, historically and in present times. This behavior is in contrast to benevolence and should not be embraced. In addition, this aspect of technology is one that should be illuminated for the danger it presents, especially since it is apparently at the forefront of this issue, already forging the way into dangerous territory, under the guise of benevolence, making it all the more dangerous. Entire areas being tied to one non-benevolent corporation's inferior products is dangerous for an array of reasons and because of that also for compound reasons. That Lee completely ignores this facet of the issue shows Lee either works for Apple directly or indirectly or is not completely aware of all the implications of technology and who is behind what technology or what the various implications of setting specific technologies or products from specific individual corporations as the standard may be.

Now take one more step back, and realize Apple, while originating in our own Cupertino, California, now operates out of China, China owning all intellectual property rights of everything coming out of China, meaning Apple is now China, any actions made by Apple are influenced by a foreign country. If we see and overlook dependencies being pushed toward foreign powers we are allowing another country to undermine us right before our own eyes without even saying anything about it.

The book Inequality in Asia and the Pacific in the era of the 2030 Agenda for Sustainable Development (2018) has an entire chapter devoted to technology and inequalities which, with extensively detailed data presentation indicates the same also, that technology in general is an essential building block for growing communities. Several aspects of the relationship between poor communities and technology are addressed and various ideas are introduced such as investing in infrastructure, promoting cooperation between areas to share profits, plan for

anticipated impact of technology, development of more inclusive technology with the idea of promoting positive growth through increase of helpful technology. This namelessly authored book by 'The UN' (The organization known as the United Nations apparently wrote this book) has a slough of statistical figures scattered throughout, all seeming to point toward pretty much the same thing: building internet connectivity for all as a benevolent force for good, empowering the impoverished with technology and connectivity, again without any apparent consideration for the true intent behind the corporations filtering the money, the hardware, and the software. In addition, this chapter touches on job displacement, an apparent threat, albeit an unnecessary one, considering the entire purpose of technology is to purely aid humanity, never to harm it, revealing this book's true intent, which is propaganda by the UN, probably for paving the way for more money laundering by huge financial entities using the UN as a front. Throughout the chapter, enormous intricacies relating to connecting the gap of the digital divide are articulated, all with the seeming direction of benefiting humanity with the addition of further connecting technology.

Aspects of the problem are articulated, and prospective solutions are suggested, but who is to provide this supposedly missing essential component to a full and complete life as a human is conveniently - nearly - completely overlooked, opening the door, if its direction were followed, for malicious corporations to have a money laundering spree under the guise of connecting the third world and helping humanity. The - nearly - is there because the footnotes do briefly allude to this condition, stating specifically that "Big Tech has quietly become the dominant political lobbying power in Washington, spending huge amounts of cash and exerting serious soft power in an effort to avoid regulatory disruption of its business model, which is now the most profitable one in the private sector" The real solution needed is to introduce an entirely

transparent entity, entirely transparent in all aspects, built by the people, for the people, from the ground up, with the sole purpose to purely benefit those in need.

Research Question

- How should certain policies or legislation be enacted to enable computers and the internet to be more equitable for communities and for individuals?

Research Design

Questions

- Across the country, many students have had to migrate towards remote learning due to covid-19. How do you think this change has affected students' ability to learn in the past two years?

- Before 2020, to what degree do you think having regular access to the internet, as well as technology based learning materials, helped or hindered student learning?

- In the business of repairing, refurbishing and reselling home electronics and computer equipment at affordable prices, when you come across something Apple made, is there additional or more complex work that needs to be done to restore and resell it, and if so, what additional measures do you need to take to deal with refurbishing Apple products?

- What kinds of hardware and software anomalies have you seen Apple add to their products to intentionally make them incompatible with the real emerging industry standard, and if none, do you think Apple is a strong team world player the world consumer electronics market, and why or why not?

- When most of the country shifted towards virtual learning due to the pandemic, why do you think those from under-resourced communities might be disproportionately impacted by the transition?

- If there is a divide in terms of unequal access to technology, what do you think communities or the government should do to mitigate this issue and do you think creating equitable solutions is necessary? Can you think of examples of such solutions already in place?

Potential participants

❖ Adults who are currently active in providing equitable solutions to those affected by the digital divide.

➢ Could recruit at our sites

➢ Aged 18+

➢ Live/phone interviews

Service Organizations

Grey Bears Recycling Thrift Store, Santa Cruz

Grey Bears' mission statement is to 'improve the health and well being of seniors and the community through food and meal deliveries, volunteerism, resource conservation and recycling'. They recycle many kinds of goods including but not limited to home electronics and computer equipment, also including food, household items, clothing, furniture, medical and miscellaneous items. They accept donations of all types of items and have a system for recycling, distributing and reselling many kinds of food, electronics, equipment, household items, and even a composting system for creating fertilizer from food that is inevitably going to waste. They distribute lots of food every day to seniors around town who need food. They have a home electronics refurbishing system and a computers and laptops refurbishing and reselling system so as little possible goes to waste. There are several small stores at the site with the various types of

items for sale, there is a home electronics and computer store, there is a thrift store with household and furniture items, there is a plant nursery store, and a medical and miscellaneous store. They not only down hold rock bottom affordable prices but provide quality computer and home electronics equipment for the community. You can't get anything brand new there, but what you can get there was new once, at around 20x or more the price.

Step Up Tutoring

Step Up Tutoring is a non profit organization whose goal is to improve students' success from under-resourced communities. They do so by providing free online tutoring and mentorship to elementary school students. This organization was actually created because of the mandated lockdown triggered by Covid. When this happened most schools if not all transitioned to being taught virtually. This inconvenienced many people trying to get a meaningful education, however it hit those from under-resourced communities much harder. The main reason is because these communities tend to lack the bare essentials for virtual learning, or any extra resources that can help stay in pace with their education. Step Up Tutoring helps to fill that void by providing quality tutoring. They do so by using the method of one on one tutoring so lessons can be personalized for the students needs. They also provide resources for tutors that'll improve their teaching abilities. This organization is also about trying to resolve the inequality of technology access. Many school districts actually provide the bare essentials for virtual learning if students cannot provide it themselves, but some households may not take advantage of it; and it can be attributed to multiple reasons. One example is a household's primary language may not be English so the information that free equipment is an option may be difficult to reach them. That is why it is also the tutor's goal of the organization to observe if students are using proper

equipment for virtual learning. If not, then Step Up Tutoring will assist them to get proper equipment for virtual learning.

Creekside Elementary School

Creekside Elementary School is a public elementary school for grades K-6. It regularly enrolls over 600 students, and has the goal of educating all of their students as best as they can. They have previously had both bilingual, and dual immersion programs, and as of recent years have been fostering the use of technology in the classroom. As they were already in the process of obtaining computers at a 1-1 ratio for students, they were very well prepared to ensure every student had access to their classrooms virtually when covid hit; however, they were not as prepared as they could have been for technological problems outside of the classroom, and at home. The technology department, where I am volunteering, aims to rectify this problem, and helps to ensure that all students have access to working computers, as we regularly fix them for the students, as well as help ensure that the network for the school runs smoothly. Through this site, I feel as though I should be able to best learn the impact access to technology has on students, both before, and during, the pandemic.

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Findings

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Research was conducted with three different individuals interviewed. Jeff is an adult who works for a facility called Grey Bears, which is involved in refurbishing and reselling home electronics and computer equipment at affordable price for the benefit of the community. Daniel is the head of technology at Creekside Elementary School. He provides tech support and fixes devices such as Chromebooks, printers, projectors etc. Laura is an Experience Manager at Step Up Tutoring. She helps tutors and parents get situated into the program that Step Up Tutoring offers which is free online tutoring. These three individuals share the common experience of

working with a community whose role is to provide technology solutions. A technology solution could either be providing devices or technology assistance. These three can help provide more insights to the digital divide as they are in the front lines to witness those affected by this phenomenon. They answered questions, where the questions fit one of three different themes: how education was affected with the integration of the internet, are companies namely Apple doing their part in technology equity, and how are communities impacted with the digital divide.

The first theme was to see how education was affected with the integration of the internet. Lockdown was mandated in many areas throughout the country due to Covid. So the nation got into a situation where they were forced to convert to virtual learning. The interviewees were asked about the effects before and post Covid lockdown, and there was a consensus that it brought both good and bad values to communities. The good was that it forced many people to learn in a different way. Being adaptable is important to the ever changing world. It was also great to have the ability to do work remotely, as you can connect in an instance. The bad that came about the transition was that it was difficult for some communities to make the change. As stated by one of the interviewees "I think that it was a difficult change for a lot of students, especially when it comes to having the support for the technology at home" (D. Castenada, personal communication, February 7, 2022). So it isn't just important to have the bare essentials, like a smart device or internet. Having technical assistance is just as significant. Sometimes students weren't sure how to log-in to zoom. They may also run into video and audio issues. Some parents may not have the computer literacy to provide the necessary support as well.

The second theme explores the topic of whether technology companies, namely Apple, are doing their part to provide technology equity. Many of the interviewees see the quality of

Apple products. Examples that were pointed out was that Apple products can utilize full features of Zoom, whereas Chromebooks cannot. However, some of the design choices that were implemented with some of their models give their customers a bitter taste. "In terms of refurbishing I think they are highly less refurbishable than other companies and I think they planned it that way to sort of have a monopoly on their stuff and you got to pay them to fix it as well" (J. Wilson, personal communication, February 8, 2022). Another interviewee stated that they upgraded to another faster Apple product within two years, but the price they paid for the upgrade did not seem worth it especially within a couple years time span. People want devices to last a long time and remain useful. This finding shows that the perpetual improvement of technology has a negative side effect. It is constantly raising the minimum requirements that people need to function in this digital age, which results in many having a difficult time keeping up. It also pointed out that competition can sometimes be counterproductive. Many praise competition as the reason technology can improve quickly. However, different products may lack compatibility with products from other brands, like what was mentioned earlier with the Apple products and Chromebooks, thus limiting the accessibility of their users.

The final theme talks about those affected by the digital divide and equitable solutions to combat this, based on interviewee responses. Many of them pointed out funding. Technology can be expensive, and there is only so much funding that a school district can distribute for other accommodation such as paying teachers. It seems unanimous between the interviewees that equitable solutions should be made by communities or government. Since some school districts may struggle to provide proper equipment for their students.

It is almost universally agreed that the transition toward universal technology and connectivity for all is a positive building force in our educational systems and communities

today, but there are factors being seemingly overlooked, such as the true intent of giant corporations putting themselves right smack in the middle of this inevitable transition.

Conclusions

While it is nearly un-debatably true that technology and connectivity is an essential and also new component in our growing society, it is also and perhaps even more important to recognize that this technology is partly under the control of large corporations with dubious and non-public intent, and that embracing anything with as large implications as we are discussing should be taken with extreme care and consideration of all things including history, present, stakeholders, alternatives, testing of new systems, consideration of reliability of existing systems, and all the full implications the decisions our leaders make, especially with regard to the education of the youth of today's world.

Although connectivity between people through the use of technology is one of the most important aspects of our modern society, one thing that is just as important is that we as a society must recognize that this technology is not controlled by the people, or by the government, but rather, by corporations, those looking out only for themselves. When it comes to something as important as education, these things must be regulated to some extent, to ensure that equitable opportunities are available to all people from around the country.

As brought up by Jeff in Arlon's interview, those who don't have access to as much money will be disproportionately affected by the push for technology in education. One of the solutions he provided was for people to not attempt to sell their old tech for the most money possible, and instead, for people to try and have it recycled back into the community itself. With Laura's interview, while she didn't explicitly mention a solution, she did bring up how getting the word to parents about volunteer services for tutoring and such is an important piece of the

puzzle in regards to helping the community. Lastly, Daniel brought up in his interview how one of his solutions was the one his school had implemented, which was to create a baseline of technology provided for the students.

Through each of these interviews, the conclusion becomes clear beyond a shadow of a doubt. A baseline of support should be created for people within the community, one where there is an expected level of technology made available to them, that schools, and the people, can rely on. While it doesn't have to be the fastest, or the top of the line, it does need to be long lasting, capable of being supported for years to come, and be without strings attached.

Recommendations

If the transition is implemented correctly, instead of directly donating new but proprietarily bound hardware, Apple or an interested party should purly donate money to begin a brand new type of entity which is entirely transparent in all aspects and built for the people by the people from the ground up with one purpose and one purpose only - purely to benefit those in need. This technology could be created with the goal of either being its own operating system, similar to how Chrome, Mac, and Windows are currently the largest contenders, or it could be built off of one of these systems, with the ultimate end goal of creating something that is simple to use and understand, and that is capable of integrating applications currently running on those operating systems. Linux Mint, Ubuntu, Knoppix and many other Linux distributions are also available for use by the community (Arriola, 2021). Either solution would take a lot of starting capital to create, and thus, all of this would have to be done at the macro level, either through the state government, or if possible, through the federal government.

On the local level, regularly supporting the donation of older technology to be refurbished for use by those in need would be a great start. This can be done at schools, within

your town, or even within your county, and would be a fantastic way to help ensure that

everyone is able to take advantage of the benefits of technology.

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Appendix

Interviews

Arlon interviewed Jeff Wilson who is an adult actively involved in the recycling, restoring, refurbishing and reselling of home electronics and computer equipment at affordable prices for the community's benefit. Jeff works at Grey Bears, the site Arlon was able to volunteer for. Jeff was one of Arlon's main supervisors and allowed Arlon to assist in the recycling, restoring, refurbishing and reselling of home electronics and computer equipment at affordable prices for the community's benefit

Arlon: Across the country, many students have had to migrate towards remote learning due to covid-19. How do you think this change has affected students' ability to learn in the past two years?

Jeff: I think it's hopefully forced them to learn in a different way, but I think it's got to be hard, it's got to be different.

Arlon: Before 2020, to what degree do you think having regular access to the internet, as well as technology based learning materials, helped or hindered student learning?

Jeff: I think it goes both ways,I think there's obviously an immense amount you can learn from the internet, but there's a lot that you can not, and certainly distractions.

Arlon: In the business of repairing, refurbishing and reselling home electronics and computer equipment at affordable prices, when you come across something Apple made, is there additional or more complex work that needs to be done to restore and resell it, and if so, what additional measures do you need to take to deal with refurbishing Apple products?

Jeff: I think in terms of refurbishing I think they are highly less refurbishable than other companies [merchandise] and I think they planned it that way to sort of have a monopoly on their stuff and you got to pay them to fix it as well as buy it.

Arlon: What kinds of hardware and software anomalies have you seen Apple add to their products to intentionally make them incompatible with the real emerging industry standard, and if none, do you think Apple is a strong team world player the world consumer electronics market, and why or why not?

Jeff: As somebody who doesn't have an iPhone let alone a smartphone, it's hard to say, but I know that they, you know, have changed plugs and things, taken away the headphone jack, the auxiliary cord and what-not, and all that kind of stuff, I think, honestly, they seem like a decent company, they seem like they, you know, treat their employees well and what-not, there's a, you know, sort of a blind allegiance to it, which is always kind of weird.

Arlon: When most of the country shifted towards virtual learning due to the pandemic, why do you think those from under-resourced communities might be disproportionately impacted by the transition?

Jeff: People who don't have as many privileges and you know, not as much cash flow to have things like computers and even internet access so of course they're going to be disproportionately impacted in their ability to follow along in a world that is growing more and more online and what-not.

Arlon: If there is a divide in terms of unequal access to technology, what do you think communities or the government should do to mitigate this issue and do you think creating equitable solutions is necessary? Can you think of examples of such solutions already in place?

Jeff: More stuff like what happens here [Grey Bears repairs, recycles and resells home electronics and computer equipment at bottom dollar prices back to the community, for the community.] and not selling stuff on the internet for the highest dollar all the time, but trying to, you know, if that's what you want, keeping computers, and phones and things like that going back into the community, and people, you know, I guess also not treating them [used electronic equipment] like they're garbage and maybe like taking care of their stuff more and donating it when they want to get a new one or something like that, or giving it to somebody else, but technology is a crazy thing too, and I don't think everybody needs technology. I'm technologically skeptical. It's not like I'm anti, I mean I love vintage stereo gear and computers are amazing, but it scares me how much people become so incredibly attached to stuff that doesn't exist, and to the point where we're fighting wars that way now, and stuff like that, it's weird. (Jeff, personal communication, February 3, 2022).

Cristian interviewed Daniel, who is currently the head of technology at Creekside Elementary school. Daniel was Cristian's main supervisor, and is in charge of repairing Chromebooks, printers, projectors, and other general tech support for both the students, and the teachers.

Cristian: Across the country, many students have had to migrate towards remote learning due to covid-19. How do you think this change has affected students' ability to learn in the past two years?

Daniel: I think that it was a difficult change for a lot of students, especially when it comes to having the support for the technology at home.

Cristian: Before 2020, to what degree do you think having regular access to the internet, as well as technology based learning materials, helped or hindered student learning?

Daniel: For us, it was a change that we were slowly building towards, as we had already been in the process of providing every student with their own chromebook for education. I think overall it helped, although there were some hiccups along the way.

Cristian: In the business of repairing, refurbishing and reselling home electronics and computer equipment at affordable prices, when you come across something Apple made, is there additional or more complex work that needs to be done to restore and resell it, and if so, what additional measures do you need to take to deal with refurbishing Apple products?

Daniel: Generally, the teachers take better care of their Macbooks than the students do with their chromebooks, so there normally isn't much to fix for them.

Cristian: What kinds of hardware and software anomalies have you seen Apple add to their products to intentionally make them incompatible with the real emerging industry standard, and if none, do you think Apple is a strong team world player the world consumer electronics market, and why or why not?

Daniel: One thing I've noticed Apple does is change their compatibility with charging cables, specifically with usb-c, lightning cables, and their magnetic strip chargers. They've been very slow to move towards usb-c, which is something I think they can work on.

Cristian: When most of the country shifted towards virtual learning due to the pandemic, why do you think those from under-resourced communities might be disproportionately impacted by the transition?

Daniel: A big issue those students faced, and still face, is their ability to connect with their class, and their teachers, effectively. Many students from our district still rely on the school to provide basics such as internet hotspots, so that they can connect for class.

Cristian: If there is a divide in terms of unequal access to technology, what do you think communities or the government should do to mitigate this issue and do you think creating equitable solutions is necessary? Can you think of examples of such solutions already in place?

Daniel: I think one thing that can be done is ensure a baseline of technology is provided to the students, which from what our district has done, is something that's been worked on for a few years now. While it can't be done everywhere, I think our solution is a good start.

Sarom interviewed Laura who works as the Experience Manager at Step Up Tutoring. She spent two years teaching English, Business Administration and Leadership classes to people from all over the world in Madrid, Spain. She supports tutors and families in the program, and is an advocate for kids and equitable education.

Sarom: Across the country, many students had to migrate towards remote learning due to covid-19. How do you think this change has affected students' ability to learn in the past two years?

Laura: It has greatly affected children. It's nice that we can do things remotely, but kids need to have that human to human interaction. This is important to properly build social skills. Also it was a process to transition students to virtual learning, and there were many households that struggled to adapt to the new style of learning.

Sarom: Before 2020, to what degree do you think having regular access to the internet, as well as technology based learning materials, helped or hindered student learning?

Laura: So, kind of like in reference to my last answer, it's just hard when the technology isn't available for the students and so that's just the biggest part of it. At least for us and I'm sure it's common in other communities but when students are kind of bouncing around home so whether their parents are separated, or they're starting the week off with grandma, but then they end the week with dad or whatever situation it is. It's hard because sometimes there's a limit on how many device you can rent, so either dad's house has to have Wi-Fi or grandma's but somebody and so forth; when it comes to technology it's awesome that it can be remote and so we can still provide them support wherever they're at, but the hard part is making sure each location has a grown up there, has somebody that's there to help with any tech support. So sometimes the students aren't aware of how to, or they don't know how to log into zoom yet, or they need help with the audio and video stuff and so even the families like they don't have the background and education with some of the techie stuff that we use, and so sometimes we have to kind of just sit down and coach the families on how to use these devices which we've seen at L.A.U.S.D. (Los Angeles Unified School District) has been really good about kind of coaching them through that and so, even then teachers have to teach the students not only the material that they're learning in the classroom but how to use the computer for the first time or how to type properly so they can type in the chat, and even then they have to work on spelling, grammar, so there's so many things that go into online learning that we need the basics for that sometimes they don't have in the first place like typing skills, and making sure they're spelling things right, or they're typing fast enough. And so, as far as technology, how it's helped, it's nice that we can be remote, so we can always provide the timing for it. And so, even if they have… say if we were to be in-person tutoring, and the tutor would go to the students house but now they have to bounce around homes. Now we could just do that online, which is really awesome, so now we have tutors from

all over the state, or all over the nation that are able to tutor kids in LA, it's not just California, and so because of that we've been able to kind of branch out with marketing and stuff, but technology's been helpful in the fact that we can be remote, but it's hindered because not every home that they're in has the resources.

Sarom: In the business of repairing, refurbishing and reselling home electronics and computer equipment at affordable prices, when you come across something Apple made, is there additional or more complex work that needs to be done to restore and resell it, and if so, what additional measures do you need to take to deal with refurbishing Apple products?

Laura: I personally don't. I mean I have all Apple products. That's just… I'm used to it because I was a tech in college and so it's easier for me but they're expensive, and they're always updating their software. And so when they update the software, and somebody that has an older computer it's not going to work so much and that's where I really get upset with Apple, because people can't always afford the latest computer. They're kind of stuck with this old laptop that's barely working, especially if they're starting to do more kind of ram power? Um, I don't know the term for it, but when you just need more power behind the computer to accomplish certain tasks which, on average, everybody kind of just needs something to type in YouTube, but Apple-wise I think with L.A.U.S.D. specifically I know they use Chromebooks, but Chromebooks haven't been the best they're cheaper for sure, but they haven't been the best for like zoom calls and just kind of navigating through. There are some compatibility issues. Things that come up where they lack compatibility like on our zoom calls for tutoring, the Google Chromebooks are always compatible with the zoom whiteboard, but Apple computers are all compatible with the Zoom whiteboard, as long as your computer is up to date, or this app is up to date.

Sarom: What kinds of hardware and software anomalies have you seen Apple add to their products to intentionally make them incompatible with industry standard, and if none, do you think Apple is a strong team world player the world consumer electronics market, and why or why not?

Laura: I personally think they're great. I just like how user friendly they can be I know it's different when you switch from like an HP to an Apple but for me, um… it's really nice that you can switch between devices, but also that's where Google comes in handy where they have like the Google Docs, Google Sheets all that can be spread across devices, as long as you log into your account, so that's been super helpful. But as far as like Apple products - they're so expensive and they're always updating everything, and so that's the part that's annoying because it's going to slow down if you want to save your money and stay with an older computer like even then, I have just bought that 2020 MacBook Air like two years ago when I first started the job, and I can see the difference between this computer that I just got now. And so that's just because I'm remote, so I want to be able to go places, but fortunately I was able to buy myself a new computer for home, because this is a lot faster, I can get my work done a lot faster. Where my last laptop is the basic one, but it's not as fast as what I had to pay to get the faster one. And even then nowadays everybody should have access to Wi-Fi. That should be a basic thing now in our first world country but everybody doesn't have it. Everything is social media, everything is online nowadays and so it's hard even if you see a family go to Disneyland or something, to get on the Fast Pass, all of it is through the app. But not all the families or the kids are going to have that knowledge, and the prior experience to know how to navigate through it, and so that's where it's nice Apple provides courses you could take. I don't think a lot of people know about them, but there are courses out there that you can take through Apple, just to understand everything and

how it works. Yeah, there's certain courses you could take just like basic navigation, or like how to edit on a movie, so there's so many things out there that you can find that are free, and that's why it's like, it comes down to do you really need a college education. Do you need a college degree? It's like no, you don't need it, because it makes you look better on paper, but you can learn so much stuff on YouTube or on your own reading a book. Back to Apple. Is it cool? Yes. Is it nice and helpful? Yes, it's just so dang expensive.

Sarom: When most of the country shifted towards virtual learning due to the pandemic, why do you think those from under-resourced communities might be disproportionately impacted by the transition?

Laura: So that's just the funding, and so the funding has to go to staff, and not sometimes not all the staff wants to… I don't know how the budget works for each district, but the priority is the staff. And if the staff is not there, then they can't have the class. And so even now with like L.A.U.S.D.(Los Angeles Unified School District) they are running out of subs - like substitutes. And so, the money is going into substitutes to actually have a teacher to teach online. As far as why they've been affected the most is just funding, they don't have it, they don't have people that are kind of on top of it. And so, that's where it comes down to us as volunteers and as advocates for students. We have to be on top of it for our students because sometimes the parents aren't aware of it, they're not educated on or that they were never told what resources are out there, if it's free, or if you need to pay money, and so when it comes down to providing resources to these families, it's just a matter of educating them on what's out there, and not everybody knows that and so that's been the hardest part.

Sarom: If there is a divide in terms of unequal access to technology, what do you think communities, or the government should do to mitigate this issue, and do you think creating equitable solutions is necessary? Can you think of examples of such solutions already in place?

Laura: Absolutely. So, with equitable solutions that is the part that's always the kind of debate, is that we're trying to spread all this funding out so even putting more money into education, and not necessarily LAPD, and so that's like a whole other topic but spreading out the budget to the communities that need it the most. And so, examples are.. let's tie in to my last one - is just the families that are just trying to survive versus families that are well off and have the money - they don't have to think about the things that certain families that don't have the money, think about every single day. And so, we have to spread out the resources for that and then spread out the funding for programs where it's like the time and effort, like tutoring in LA - its minimum like $100 a week, that's $400 a month, and say if you have three kids, which most families minimum have like two or three on average. That's what 200 like $600 a month for just a tutor just to get their student up to date and up to speed. And so, that's why programs like ours - we're really focusing on free tutoring and not just the tutoring side, but the mentorship part of it. It's also the cost of living going up, and that's the other part of funding is that the jobs a lot of the families that are in our community, they're doing the jobs that nobody wants. And so, those are the jobs that don't really pay well, so if you can't afford the fastest internet, they can't afford the best resources and so that's where we want to really help them out with grants and stuff from the school for support. Yeah, definitely [communities and government should make equitable solutions].