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YOU CAN'T LEARN ONLINE IF YOU AREN'T ONLINE: STRESS, REMOTE LEARNING, AND COVID-19 LOCKDOWNS

VOCÊ NÃO PODE APRENDER ONLINE SE NÃO ESTIVER ONLINE: ESTRESSE, APRENDIZADO REMOTO E BLOQUEIOS DE COVID-19

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Resumo: Neste artigo, examinamos as desigualdades digitais e o aprendizado remoto entre os alunos nos EUA. Com o fechamento repentino e imprevisto das escolas, os alunos mudaram repentinamente para o aprendizado remoto. Quase imediatamente, os alunos que contavam com os recursos disponíveis nas escolas ficaram confinados em casa com recursos digitais insuficientes para se envolver no aprendizado remoto. Os dados são extraídos de comentários online de alunos com curadoria do The New York Times durante a primeira onda de COVID-19 na primavera de 2020, quando grandes partes dos EUA estavam sob ordens de permanência em casa, forçando as escolas a fechar suas portas abruptamente. Com base na análise de conteúdo, as descobertas revelam os efeitos do isolamento digital juntamente com as pressões do aprendizado remoto que resultam em estresse, ansiedade e redução do bem-estar. Simplificando: os alunos não podem aprender online se não puderem ficar online, desencadeando uma série de impactos negativos em sua saúde mental e bem-estar. O isolamento digital em um momento em que o aprendizado remoto é a única opção para o trabalho escolar e o sucesso acadêmico causa estresse extremo para os desfavorecidos digitalmente, pois eles ficam cada vez mais atrasados em seu aprendizado e trabalho escolar em comparação com seus colegas com mais recursos. Como mostram nossas descobertas, quando isso ocorre, eles adotam o que chamamos de falsa consciência digital, na qual internalizam a responsabilidade por suas desigualdades digitais quando essas desigualdades são realmente o resultado de desigualdades estruturais de longa data que impulsionam a desigualdade digital. Quando isso ocorre, as desigualdades digitais decorrentes da desvantagem econômica são promulgadas como uma forma de individualismo tóxico que amplia ainda mais os aspectos psicológicos da exclusão digital. Finalmente, no que diz respeito às contribuições teóricas, colocamos nossas descobertas em diálogo com a imaginação sociológica para mostrar como os alunos internalizam os impactos negativos das desigualdades digitais estruturais durante a pandemia e assumem erroneamente a responsabilidade por forças sociais e econômicas amplamente fora de seu controle no que pode ser chamado de digital Falsa consciência. Como mostramos, quando os excluídos digitais são liberados da falsa consciência digital, eles são capazes de rejeitar a naturalização da desigualdade.

Palavras-chave: desigualdade digital; Pandemia do covid-19; aprendizagem à distância; Jovens; saúde mental.

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Abstract: In this article we examine digital inequalities and remote learning among students in the U.S. With the sudden and unforeseen closure of schools, students shifted suddenly to remote learning. Almost immediately, students who had counted on resources available in school settings were in lockdown at home with insufficient digital resources with which to engage in remote learning. The data is drawn from online commentary by students curated by *The New York Times* during the first wave of COVID-19 in the spring of 2020 when large portions of the U.S. were under stay-at-home orders forcing schools to close their doors abruptly. Based on content analysis, findings reveal the effects of digital isolation alongside the pressures of remote learning that result in stress, anxiety, and reduced well-being. Simply put: students can't learn online if they can't get online, unleashing a number of negative impacts on their mental health and well-being. Digital isolation at a time in which remote learning is the only option for schoolwork and academic success causes extreme stress for the digitally disadvantaged as they fall further and further behind on their learning and schoolwork compared to their better-resourced peers. As our findings show, when this occurs, they enact what we call *digital false consciousness* in which they internalize responsibility for their digital inequalities when these inequalities are truly the result of long-standing structural inequalities that drive digital inequality. When this occurs, digital inequalities stemming from economic disadvantage are enacted as a form of toxic individualism that further widens the psychological aspects of the digital divide. Finally concerning theoretical contributions, we put our findings into conversation with the sociological imagination to show how students internalize the negative impacts of structural digital inequalities during the pandemic and erroneously take responsibility for social and economic forces largely outside of their control in what might be called digital false consciousness. As we show, when the digitally excluded are liberated from digital false consciousness, they are able to reject the naturalization of inequality.

Keywords: digital inequality; COVID-19 pandemic; remote learning; young people; mental health.

1 INTRODUCTION AND PREVIOUS RESEARCH

In this article we examine digital inequalities and remote learning among students in the U.S. The data is drawn during the first wave of COVID-19 in the spring of 2020 when large portions of the U.S. were under stay-at-home orders forcing schools to close their doors abruptly. With the sudden and unforeseen closure of schools, students shifted suddenly to remote learning. Almost immediately, students who had counted on resources available in school settings were in lockdown at home with insufficient digital resources with which to engage in remote learning.

To hear their voices in real time, we draw from a rich trove of qualitative data to examine students' descriptions of their experiences in the early period of school lockdowns thanks to a digital discussion forum hosted by *The New York Times* that brought together hundreds of student voices, largely from students in the United States. In their accounts we see how these students became digitally isolated from their peers with the unforeseen move to remote learning for all instruction.

ISSN 2179-9938

Our findings reveal the effects of digital isolation alongside the pressures of remote learning that result in stress, anxiety, and reduced well-being. As our data reveals, students internalize the negative impacts of structural digital inequalities during the pandemic and erroneously take responsibility for social and economic forces largely outside of their control in what might be called digital false consciousness. As we show, when the digitally excluded are liberated from digital false consciousness, they are able to reject the naturalization of inequality. We therefore conclude the article by theorizing our findings vis-à-vis the sociological imagination and digital policy sociology.

At the time of data collection, according to Pew Research Center, more than 20 million Americans lacked broadband internet access of any speed or quality (2020). Even in 2020, in advanced economies with significant wealth disparities such as the U.S., as much as 50% of the population still suffers from digital inequalities in some way including smartphone dependency, lack of consistent quality digital resources, and digital skills gaps (Microsoft, 2019). Low-SES populations are disproportionately impacted by these digital disparities with 43% of children from U.S. low income families reporting smartphone dependency for schoolwork and remote learning, as well as 40% of lower income families being dependent on public Wi-Fi for school work due to lack of reliable home internet connections (Vogels et al., 2020).

To shed light on this largely invisible, but insidious, form of disadvantage, researchers have begun to document how the COVID-19 pandemic has exacerbated digital inequalities along a number of axes that impact well-being (Chiaraluce et al., 2022). Concerning well-being, linkages have been established between anxiety and COVID-19 comprehension that varies with digital confidence; indeed even when merely *thinking about their experiences with the COVID-19 outbreak*, individuals who lack digital confidence have a higher probability of experiencing physical manifestations of anxiety somatized as physical symptoms of anxiety, sweating, trouble breathing, nausea, or a pounding heart (Robinson et al. 2021). Other studies have also documented the

ISSN 2179-9938

linkages between digital inequalities and anxiety as a negative health outcome (Khilnani et al., 2020; Beaunoyer et al., 2020). All of these have direct implications for the plight of digitally disadvantaged students engaged in remote learning in the first wave of pandemic lockdowns in the U.S.

Simply put: students can't learn online if they can't get online, unleashing a number of negative impacts on their mental health and well-being. Digital isolation at a time in which remote learning is the only option for schoolwork and academic success causes extreme stress for the digitally disadvantaged as they fall further and further behind on their learning and schoolwork compared to their better-resourced peers. As our findings show, when this occurs, they are more prone to what we call *digital false consciousness* by digitizing Marx's concept that "denotes people's inability to recognize inequality, oppression, and exploitation in a capitalist society because of the prevalence within it of views that naturalize and legitimize the existence of social classes" (Britannica, 2020). This concept illuminates how students may internalize responsibility for their digital inequalities when these inequalities are truly the result of long-standing structural inequalities that drive digital inequality. When this occurs, digital inequalities stemming from economic disadvantage are enacted as a form of toxic individualism that further widens the psychological aspects of the digital divide.

2 DATA AND METHODS

As the COVID-19 pandemic prompted lockdowns and stay-at-home orders, schools across the U.S. adopted remote learning. *The New York Times* created a digital space for students to discuss their experiences in March of 2020 as part of its ongoing Student Opinion segment in collaboration with The Learning Network. On March 30th, the NYT ran the story "Has Your School Switched to Remote Learning? How Is It Going So Far?" by Michael Gonchar and Shannon Doyne and invited students to respond to the following queries: "What does a "school day" now look like for you? Are you able to stay on task? Do you have enough work to do — or too much? What do you miss

ISSN 2179-9938

the most about going to school in person every day? What do you miss the least?" Over 400 (n=415) student comments were published in answer to these questions.

This collection of student contributions describing their experience of the pandemic in real time during the lockdowns provides an illuminating data set that captures their voices, emotions, thoughts, feelings, and understanding. The data set provides vibrant evidence that crystalizes these experiences as they occurred, and common to case study and qualitative approaches, we make no claims to generalizability to larger populations especially as the vast majority of respondents self-identified as attending school in the United States. In sum, our approach is generative and treats the data as a revelatory case (Yin, 1994) rather than a representative sample (Luker, 2009).

To analyze the universe of data, we engaged in multiple rounds of code-and-recode to inductively create an inventory of foci and themes present in the data. These procedures allowed us to build an exhaustive list of themes with which to begin open coding of the data. As we continued, we continued to write memos and further proceed with rounds of code-and-recode as more nuanced themes emerged from the process. Each stage of subsequent coding allowed us to confirm the reliability of the codes across the data as we developed hypotheses that shaped our focused coding. In these ways, we grounded our inductively derived hypotheses in the data. Finally, we add a few notes on presentation of the data in the analysis. We have corrected spelling and grammatical errors when necessary for clarity but have left untouched any historical or factual errors or potentially objectionable language.

3 FINDINGS

Our findings reveal the ways in which remote learning was experienced by these students in the data set with an eye to digital inequality as it impacted remote learning during the COVID-19 pandemic. We probe the ways that digital inequalities impacted well-being along a number of axes. As these students elucidate, even in developed economies such as the U.S., digital inequalities continue to impact the quality of

ISSN 2179-9938

educational engagements. According to the students' own observations, digital inequalities affecting remote learning take a number of forms from lack of internet connectivity, to cellphone dependency, to resource sharing within households, all of which influence remote learning and well-being. As the data indicate, when students are suddenly thrust into remote learning without adequate resources, skill building, or support, a host of domino effects negatively impact their well-being in profound ways.

3.1 Resource Shortages

Consistent with previous research (Auxier; Anderson, 2020; Schulz; Robinson, 2022; Hayes; Gao, 2021; Sampaio; Costa, 2022), a number of students describe lacking reliable home internet at the outset of the pandemic lockdowns. This student describes the consequences of the sudden shift to remote learning that was "not easy" for students who do not have the internet at home:

> Having to learn online unmotivated me to do my work. Not only that but to begin with, I didn't even have the internet at home. It wasn't until today that spectrum came and installed the wifi. However, luckily for me, I had a phone with data to help me do my assignments when I didn't have wifi during this quarantine time. In my opinion, I do not like online learning, mostly because I'm a visual learner. Having to learn online has become hard for me, material I already found tough dealing with in person at school is now ten times worse. And not to mention all the other kids having trouble. And all the other kids with no wifi nor laptops, unable to do their work. I do understand that with the circumstances, online school is the best thing possible right now, but I believe that many students are already under too much stress, some parents have lost their jobs, some have had family members sick, some don't even have enough money for food as it is, all due to the virus…

This student is not alone in reporting smartphone dependency as a common workaround to not being fully digitally resourced, which previous literature has shown to negatively impact the quality of digital engagements. Another student reveals how valuable time is lost everyday due to "slow internet" that makes every remote learning task exponentially more difficult and time consuming:

ISSN 2179-9938

> I have many obstacles when it comes to my internet connection as we have very slow internet with a small bandwidth. I can complete my assignments online. It is just very time consuming from I am usually awake about 18-19 hours a day and before maybe 5-6 hours was spent doing assignments or studying. That has now increased to between 10 and 12 hours because of how difficult it is to keep a good connection or complete the massive workload…

Another student confirms: "…we have some obstacles. Some of them are that sometimes the internet is very slow and I have problems with the connection, and also not everyone has access to the internet at home." Other students describe their own resource shortages in which they must rely on extended family to fill resource gaps: "...one problems my family face with before remote learning. One of our computer stopped working before remote learning started and we were unable to fix it. Fortunately, one of our relative has a extra computer and we borrowed it."

3.2 Resource Triage and Sharing

Nonetheless, sharing resources among family, and resource scarcity in general exacerbated by the COVID-19 pandemic, generates emotional burdens (Zheng et al. 2021; Robinson, & Schulz, 2013; Katz, 2014; Biroli et al., 2021). Illustrating the range of digital inequalities even for those who are not wholly digitally excluded, this student describes having to engage in resource sharing among potentially larger family units who are in lock-down together:

> For me, remote learning has actually been quite challenging to get used to. Even though I am in the comfort of my own house with my own technology there are still some obstacles to deal with. For example, I am not always able to access a computer. With only 2 computers to use in a house with 5 people, computer access is more of a demand than ever. Also, managing the workload can be quite difficult as well. With lots of homework and having to study new material in about 6 or 7 different classes, managing my time for work and getting it done can take almost a whole day.

Another describes competing for scarce resources with a sibling:

ISSN 2179-9938

> With switching to online learning, I'm not going to lie, its been tough. I have to share a computer with my 14 year-old younger brother, which has been tough. He hogs the computer even though I've explained to him that High School grades are worth more than 8th grade ones as my grades this year will decide what colleges I can apply to and most likely will get in. Also, some of my teachers aren't tech savvy so its hard to know what's do when and what exactly I need to do in those classes.

Yet another shares how a family has only one laptop to share amongst them:

> My biggest concern…is the lack of technology my family has…The School District just sent out a survey to see who is lacking the school supplies necessary to be involved in online school, so hopefully they will be able to rent out computers to families who need them, like mine. We only have one laptop, and sharing one with a timed schedule would be impossible! I'm keeping my fingers crossed! :)

This student shares the family strategies to triage three computers across six people:

> Personally, I am a direct example of a kid who lacks access to technology sometimes, which creates ripples in my e-learning education. In my family there are six people and due to the coronavirus, we are all working and learning from home, but we only have three computers. We create schedules with certain times where we reserve the computers; Ultimately, this shows how some kids are at a disadvantage doing learning from home and how it is necessary for schools to implement regulations on the work given out to students.

As this indicates, young people who are sharing digital resources must surmount additional challenges in their remote learning, indicating how the negative effects of lockdowns are magnified for those with unequal access to digital resources.

3.3 Interrelated Resource Scarcities: Caretaking Responsibilities

Further, digital resource shortages are often compounded by temporal shortages due to an uptick in caretaking responsibilities during lockdowns (Pabilonia, & Vernon, 2023; Carlson & Petts 2022; Lyttelton, Zang, & Musick 2022; Robinson et al. 2020a). This student describes the mounting stress of compounded digital resource shortages impacting the entire family causing the student considerable stress even with one of the students having a school-provided laptop:

ISSN 2179-9938

> The switch to distance learning has been hard for my family. I'm lucky enough to go to a school that provides each student with a computer, but for the first two weeks my younger brother (age 9) didn't. He was sent home with a folder packed with work, but once that ran out, his teacher expected him to go digital. We have a computer, but it's barely functioning, let alone good enough to run the programs they expected us to use….My mom has been struggling to teach it to him so she's been enlisting my help. I'm happy to do it, but now I'm tackling two work loads a day on top of everything else going on….For the first three weeks, my school opted to focus on review instead of new material, so I woke up each morning with the stress of knowing I was falling farther behind. I'm a very education driven person so this shift has been... a lot.

In addition, for some students whose parents are English Language Learners, the burdens of caretaking are even heavier as they assume responsibilities for their siblings:

> For me personally remote learning has been very difficult. It's very hard for me to stay on task and focus on my schoolwork at home. Everyday my motivation to do my work decreases and recently all my assignments have been turned in late causing my grades to drop. It has also been very difficult because I've had to become my seven-year-old brother's teacher. My parents aren't very fluent in English, so they aren't able to help him with his schoolwork. Its very challenging to keep up with both his work and my work at the same time. School was my only social outlet, I still text people to stay in touch but it's just not the same thing. Staying at home all day and not going to school makes me feel so lonely and detached from the world. I miss cracking jokes with my friends in class and going to tennis practice. Remote learning has really taught me not to take school for granted anymore.

Another confirms the taking responsibility for younger siblings:

> I learn better when I'm in class, I like having one on ones with a teacher when I don't understand something, instead of in front of the whole class on a zoom call. In my family, my parents aren't fluent in English, and since I'm oldest among my four siblings, I am the one who has to help them with their work especially my five-year-old brother whom I have to sit with during his classes. This is all really stressful because while I have my own work as a junior in high school, I have to as well help my younger siblings which puts a lot of responsibility and work on my shoulders. All I can say is that remote learning isn't too hard or too easy but overall is just stressful.

When such students lack digital resources, we see that digital scarcities are often co-present with other forms of disadvantage. Further, it can result in stigmatizing interactions in which students must choose between asking for their needs to be met in "view" of other students or remain silenced by their digital inequalities.

ISSN 2179-9938

3.4 Lack of Educator and Parental Support

In addition to having to provide support to others, digitally disadvantaged students' own needs are not met as they no longer have the opportunity to garner support from educators through in-person interaction (Betthäuser, Bach-Mortensen, & Engzell, 2023; Goudeau et al. 2021; Robinson, 2014; Livingstone, & Sefton-Green, J. 2016). Students who had access to digital resources at their schools where educators provide guidance describe feeling lost when moving to remote learning at home on their own:

> Personally, I do not like online classes although you can do it from anywhere. When I was in high school, the last two years I took classes on a computer. However, the difference was that I was taking the classes inside of the school, but also from home. That was a challenge for me because I had never taken classes on a computer. We used to use the google classroom platform. I feel that taking online classes I do not learn in the same way as in person because it is not the same when teachers explain any topic face to face than to explain it through a computer. Furthermore, when I write it is easier for me to learn my assignments. Now, this is not only new for students but also for some teachers and parents, thus they have faced some problems in understanding how to use this method. What I miss about going to school every day is sharing with my classmates because when we are in online classes, some of them are not able to join class due to the fact that they don't have the necessary resources.

Even more deleterious, lacking support from educators is also associated with larger inequalities associated with digital inequalities in terms of digital skill acquisition, transfer of digital resources to schoolwork, and other capital enhancing roles often performed by middle class parents. Students whose parents cannot perform these roles must increase their individual workload for both themselves and their siblings:

> […] but it is difficult to know exactly what to do. It's hard to explain assignments in general but when you have a question and it takes a few hours for a response from your teacher it can slow you down. Also, I don't have much time because both of my parents still work and my sister and I have to watch my little brother for most of the day and it doesn't leave me with much time to do my school work.

ISSN 2179-9938

Pre-lockdown, students could turn to educators to fill these gaps. Post-pandemic lockdown, however, these underresourced students are left to navigate both their own digital resource shortages, but also to assume the role of parenting themselves and siblings. When this occurs, temporal shortages must be managed by young people suddenly thrust into the role of caretaker for siblings if their parents are not upper-middle class professionals in "lockdown" at home with them. As this indicates, another facet of digital inequality is the need for self-instruction for students who do not have adult support during the day such as at least one middle class parent who has a more flexible work-from-home schedule and can take on an educational role when needed. When this occurs, students working home alone may have their learning diminished: "I feel that I am really missing out in certain classes like English, in the sense that I am not learning as much working by myself at home."

Without digital resources, familial support, and educator guidance, home and alone, they are aware that they are at greater risk of falling behind, potentially generating a host of secondary inequality via diminished emotional well-being.

3.5 Negative Effects on Well-Being

These myriad resource shortages are reflected in a variety of negative effects on well-being (Andrade, 2022; Bryant et al., 2022; Robinson, Trammel, & Moles, 2023; Sanrey et al. 2021;). Grappling with additional burdens such as those above alongside remote learning, a number of students report a number of adverse outcomes related to well-being, such as stress:

> Online school has been a stressful process for many of my friends and me. I live in an area where internet access and WiFi are hard to get and, as a result, I'm not only stressed about school but I'm often anxious that I will not be able to join and maintain access to online classes and assignments.

ISSN 2179-9938

By and large, these students describe feeling overwhelmed and stressed: “What I do find concerning is that…teachers are starting to teach faster and assign more work, and speaking for others, it creates an overwhelming environment…a lot of my work that I receive from teachers is a lot of busy work…” Particularly students who may lack digital skills attribute this increase in workload to not only additional assignments, but also the time it takes to figure out confusing directions and/or scheduling: “The actual remote learning was confusing and hard because there were many classrooms and work…the workload was too much for me.” Feeling that they have more work but are responsible for their own learning and potentially that of their siblings, mastering multiple new digital interfaces or programs for remote learning generates additional stress: “...the work was more than what I normally get in school. The number of hours I spent on screen per day is usually around 5-6 hours or more. Which is more than the recommended amount from experts and bad for our health.” Yet another self-reflectively sees the connections between digital resources, emotional burdens in handling increased workload, and well-being: “I feel like many kids are feeling really stressed about online school. We just get loads and loads of work from all of our teachers…”

For digitally disadvantaged students who lack consistent access to high quality digital resources, this is every day as is the accompanying sense of unpredictability that generates the feeling of being left behind. This student outlines anxiety generated by even one day of unexpected digital resource shortage:

> Another issue I have faced with remote learning is the unreliability of technology. Early last week I experienced an internet outage that lasted all day. With this outage I was unable to complete the work I was assigned and I soon became very behind. As time went on my work load began to grow and it seemed as though I would never get back on track.

ISSN 2179-9938

When this occurs and remote learning proves even more daunting as it becomes a vehicle for anxiety, the data indicates that students internalize being under-resourced as personal failure to meet the situation caused by COVID-19 lockdowns. Significantly, students who may already be struggling with unequal burdens are suddenly bereft of support systems from teachers and peers:

> […] online working is hard for me because i am not that smart because when you are in class teachers help you when you are struggling with work on online reading no teacher helps you online work i miss being at school because you would be sitting in class listening to the teachers and follow directions so you can try and get a grate grade i dont get any help from my mom i do things independent and do horrible i am not that smart at all…

As this revealing excerpt commentary unit shows, these students may personalize structural issues, which has the power to exacerbate negative self-stereotyping. Here we see that remote learning highlights the need for the sociological imagination for these students to see obstacles to remote learning as structural inequalities. When the individual is unable to see themselves within the complex network of social forces at work, they internalize and assume responsibility for "failure" to surmount overwhelming obstacles not of their making as a personal and individual failing.

3.6 Impact on the Classroom Collective

Sadly it is not surprising that resource shortages can negatively impact self-confidence and well-being when we consider how better resourced peers discuss the negative impact of digital inequalities on the classroom collective (Di Pietro, 2023; Chiaraluce et al., 2022; Huang et al., 2015; Robinson et al., 2023). As one student notes: "While I haven't had any troubles with staying connected and in touch with my teachers, there's no doubt that many of my classmates have." While these accounts are largely empathetic, they reveal the stigmatizing effect of digital inequalities that marks students as low SES visibly to their peers. As this student explains:

ISSN 2179-9938

> In my first day of my online class I had a bad experience because I had never used Zoom. Consequently, it was difficult for me to enter the class and I couldn't. In this new activity I feel that I am learning more slowly. In addition, my class used to be twenty-five students, but actually it is not more than fifteen because some students have no access to a good internet connection which sounds impossible in this age of technology. Surprisingly, it happens in some cases. Also some students cannot concentrate properly because some have kids or young siblings who do not understand the need for focus sometimes.

In addition to stress for individuals who are under-resourced, when some students lack high-speed broadband, it impacts the learning flow for the entire class, which adds another layer of anxiety to those who are digitally disadvantaged:

> "…it's clear as the article says that "not everyone has computers or high-speed internet". That's one of the reasons that makes learning difficult because time is wasted waiting for a student to answer a question… Beyond, it is very stressful for me to take an online class since I don't know too much about computers. I agree, "school is more than just academics".

Another student draws these foci together to look ahead at the long-term negative impacts of the pandemic on students who are inadequately digitally resourced:

> Also, it is very struggling right now for low-income students because most of them don't have the supplies they need for online school right now. For example, soon our school became online. I already saw students complaining about not having a computer, and can't afford any of the stuff. So, then they either have to fail a class or something or maybe to the point they have to dropout…some just can't afford certain things, or was using a friend's computer during that time at school, and now does not have access to one.

As this student makes clear:

> I live in a very diverse school district with noted income, race, and education level disparities. Thus, many students in my school have very limited access to the internet if any at all. This means that regardless of success in providing online learning experiences, some students in my district and at my school cannot even access these resources. If preparations were made in advance, city funding could have provided these students with devices and internet access necessary to complete assignments. Where would this funding come from? I suggest that the reallocations of funds once designated for spring sports, graduations, and schools' water and electricity bills be used to provide low-income school districts with the technology needed to successfully administer online classes.

ISSN 2179-9938

As these students' own observations make clear, their digitally disadvantaged peers' lack of resources impacts the classroom collective prompting some of their thoughtful peers to advocate for solutions for them.

3.7 COVID and Consciousness Raising

In addition to recognizing how their peers' lack of resources has a negative impact both on individuals and on the collective experience of the classroom, students' perspectives indicate the ways that the pandemic has raised awareness of the challenges of digital inequalities for remote learning (Morgan, 2022; Bryant et al., 2022; Robinson et al., 2020b). This student summarizes the ways that digital disadvantage was magnified by other forms of disadvantage during the pandemic:

> As the global pandemic has spread, all schools have closed and moved their lessons to online, this means a new way of studying, but not everyone is familiar with this field of learning. I do not mind studying online, although I don't like it, but I think there are people who have difficulties learning, not only children with special needs, but also experienced educators. I agree with Dana Goodstein who says "the vast majority of households have broadband Internet, but there are still big disparities by income, race and educational level of parents", this means that there is a possibility that parents cannot help their children, or there may be siblings who have only a device for their homework.

Another confirms how digital inequalities were exacerbated by the pandemic's effect on different resources, all of which worked in tandem to generate stress: "And not to mention all the other kids having trouble. And all the other kids with no wifi nor laptops, unable to do their work. …I believe that many students are already under too much stress, some parents have lost their jobs, some have had family members sick, some don't even have enough money for food as it is, all due to the virus…" Yet another student describes how digital inequalities impact both students and their families as a particularly stressful time:

ISSN 2179-9938

> Also, this is a stressful time for parents, they must help teach their kid "while working from home at the same time." A problem with digital learning is how are low-income families who do not have a computer of tablet suppose to keep up with their schoolwork? And how are disabled children suppose to learn digitally, they are used to being hands on too. The overall thought of digital learning sounds good but when you break it down you see all the flaws such as teachers giving busy work that is pointless and some children not being able to access it.

As these students recognize, online learning is not a simple matter of internet connectivity but reflects larger SES inequalities that were exacerbated by the pandemic: "…online class has a big impact on students. some people might not have technology near them, or have financial problems which can have an effect on their education."

4 GROUND-UP SOLUTIONS: KEY INFORMANTS AND ALLIES

We close this article with the words of students who call attention to policy measures for low-SES students from providing digital inclusion to continuing to meet material needs (Starr, Hayes, & Gao, 2022; Sozio et al., 2015; Robinson et al., 2020c). Their words show the importance of key informants who can offer insights into policy solutions that are ground-up rather than top down. A number of these students call attention to both problems to be solved and solutions that they see in their local communities. A student who self-identifies as digitally disadvantaged makes a thought-provoking argument about not only the need for better digital resources but about this school district's attempt to keep the academic disparities.

> Goldstein's argument about e-learning negatively affecting millions of "low-income students and those with special needs" is especially relevant in this modern period consisting of a pandemic. The coronavirus has caused for "30,000 schools in the United States" to have to shut down, leaving e-learning as the only possible way for kids to continue their education from home. For example, Pearland Independent School District in Pearland, Texas, had to institute regulations on the schools in the district in order to accommodate all students. The school district only allows for one hour of homework a week per class due to the student aspect that not all kids always have access to technology and even the ones who do may not have access to wireless internet. Overall, this allows for all students to feel as if they are being looked out for and gives them the fair opportunity to continue their education.

ISSN 2179-9938

This student remarks on the pause on new materials implemented by a number of school districts to halt unequal learning losses as policy solutions were attempted to provide digital resources and meals to students.

> In my state we are currently not allowed to learn new material, so we have just been completing review work and other worksheets without actual instruction…There are many problems encountered when learning remotely such as not all students having access to wifi or a computer, but I think the state is doing a great job solving this problem. They are handing out laptops, providing worksheets at the school for people to pick up, and serving meals to students who can't afford them.

In addition, recognizing the impact of digital inequalities on the collective, allies are needed. These allies call for compassion and resolve for their peers to have the digital resources they need. Allies reference the potential for the pandemic to widen the "homework gap" and testing for advanced placement college credits, recognizing that teachers also face digital disadvantage:

> Students with unsatisfactory home education environments will disproportionately endure hindrances in their adjustment to the virtual education medium. Many schools across the country have long been accustomed to the physical classroom setting, and newly implemented digital teaching resources have left educators and students alike disconcerted. The College Board has transitioned to fully virtual testing, an unprecedented adjustment which leaves students without reliable broadband internet access struggling to earn Advanced Placement credits. Such changes to established curriculum are especially detrimental to the learning abilities of 17% students, who often face a "homework gap," an academic burden for students who lack access to the advanced digital technologies required to complete online coursework. The education system is doubly impaired by the fact that some teachers simply cannot afford certain education technology resources, forcing them to provide students with potentially sub-par learning resources. To minimize educational disparity between underprivileged teachers and learners and those who are well-off, free ample learning resources should be allocated to those in need to ensure that all students and educators are enabled to effectively implement distance learning. What is more, ample communication – distinguished by compassion and resolve – between families and school administrators is crucial to ensuring academic success during such alienating times.

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Others reference partnerships between schools and providers: “For the people who don’t have the technology to complete school work, my school has been distributing laptops to students who may need them. Spectrum has also offered free WiFi for students to support our needs.” Finally, while the U.S. still lacks significant federal policy that levels the digital playing field, these students are seeking solutions in the midst of lockdowns that recognize the needs of their underresourced peers and the impact of digital inequalities on mental health and well-being during the pandemic: “All in all, while the transition to remote learning may challenge the academic progression and mental state of students, it overlooks the steps that are being initiated by districts. Furthermore, there is always something that can be done to ease the complications of an unpredictable circumstance.” In this way, some students are exercising their sociological imaginations as they search for policy solutions to these structural issues exacerbated by the COVID-19 crisis.

As these student voices reveal, the sociological imagination is key to addressing digital false consciousness that stems from digital inequalities. C. Wright Mills describes how the sociological imagination reveals to individuals that what they often attribute to personal choices or circumstances is actually tied to larger socio-historical forces:

> The well-being they enjoy, they do not usually impute to the big ups and downs of the societies in which they live. Seldom aware of the intricate connections between the patterns of their own lives and the course of world history, ordinary [they] do not usually know what this connection means for the kinds of [people] they are becoming and for the kinds of history-making in which they might take part (Mills, 1959, p. 3).

Putting our findings in conversation with the sociological imagination, students internalize the negative impacts of structural digital inequalities during the pandemic and erroneously take responsibility for social and economic forces largely outside of their control in what might be called digital false consciousness. When the digitally excluded are liberated from digital false consciousness, they are able to reject the naturalization of inequality.

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5 FUTURE RESEARCH

Looking to future research, Participatory Action Research (PAR) is one method to address digital false consciousness and enliven the sociological imaginations of young people to contribute to social change. PAR is a collaboration between researchers, participants, and/or affected community members in every stage of the research process with one of the goals being to influence policy and/or implement socio-economic solutions to structural inequalities. PAR is a ground-up approach that empowers community members to address problems faced within that community, and is one method that makes sociology more accessible by fostering young people's sociological imagination, helping them to situate themselves within a larger socio-historical context. It is also a vehicle for them to realize what Burawoy calls "Policy Sociology–the application of professional sociology to the interests and problems of clients (organizations, agencies, corporations)" (2004). In the context of digital inequality, this inclusive approach to research trains young people to be digital social scientists in the service of digital policy sociology as we have previously called for (Schulz, Robinson, and Moles, 2023). This approach goes beyond one-way knowledge transfer, as is typical with sociology professionals to the general public when such dissemination occurs, as well as trains young people to engage in the production, application, and dissemination of that knowledge since PAR includes accountability to the larger communities of which they are a part and for which that are working. One remedy to digital false consciousness, then, is enlivening the sociological imagination as digital social citizens who take a more active, agentic role in assessing and addressing the digital inequalities through PAR and digital policy sociology.

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