




Decolonizing digital accessibility within land/water realities using minimal computing

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ABSTRACT

The purpose of this essay is to conceptualize accessibility in digital education for school children through a minimal computing perspective. This perspective prioritizes the contextual, social, and relational as part of the ethic of minimal computing mantra to consider *What. We. Need.* To achieve our goals, we begin with a story from a classroom in rural New Mexico, then we problematize definitions of accessibility for computing in educational settings considering how an identification as having disabilities is situated within colonial monolingual/monocultural structures that position minds and bodies as deficient. We connect these structures to capitalistic educational technology movements like using *personalized* instructional materials that do little to support the identities of children in spaces like the rural Southwest. Finally, we highlight what accessibility might look like as conceptualized from a land/water perspective where children's connections to their current realities are given precedence.

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A group of nine-year-old children in rural New Mexico were trying to learn about shark habitats. The children in this class had been assigned identities as having disabilities by their school administration, including noted challenges with giving attention to school tasks. Most of the children were from families in a community with a mixed-race population of Indigenous/Hispano/Anglo peoples. Their teacher identified herself as a Latina with Native New Mexican ancestry. She had chosen sharks as a topic from a set of assigned grade-level instructional materials because she believed sharks would draw students' attention. The teacher also wanted to integrate computing technology in searching for information about oceans as shark habitats because she did not feel that she was an expert on the topic. She was excited for the students to practice using the voice recognition technologies that the school had spent large sums of money acquiring.

Mary, the first author of this essay, is a white woman with mostly Irish and Northern European heritage. She is a former classroom reading teacher and a current professor at a university who visits this class with permission to collect information for research, but who does not hold a position in the school and who is not a formal supervisor of the classroom teacher or a member of the rural community. When Mary visits, she asks the teacher and the children how they would like to share the time. They often read or write together, but sometimes the teacher wants Mary to watch a lesson and then talk about it informally. Such was the case on this day. The second author, Joaquín, is an Afro-Indigenous-Genizar@ bilingual community school Social Worker. His critical auto-ethnographic research of intergenerational land and water traditional knowledge practices is balanced with Indigenous Epistemologies of *translanguaging corriente* through disciplines.

Trouble emerged when the voice recognition program could not recognize the children's attempts to say the word *conservation* in reference to shark habitats. The software offered many alternatives, just not the word they needed: *conversation*, *constellation*, *consternation*, and even *constipation*! The inability of the software to detect the word *conservation* may have arisen from any number of programming biases—(a) voice recognition does not do well with children's voices (Shivakumar and Georgiou 2020), (b) cultural pronunciation differences are common among the range of Latina/o/x/Indigenous peoples and these have largely been ignored by voice recognition developers (Koenecke et al. 2020), and (c) there are physiological or cognitively-based speech differences among the children that are not well-accounted for in software development (Feng et al. 2021). There is also the possibility that the internet connection was slow in this rural area, which impeded processing. Whatever the reason, the children soon became interested in the alternative words being presented to them and were no longer focused on the lesson about sharks in the ocean.

At this point, the teacher struggled with the decision about whether and how to discipline the children to regain focus to continue the lesson. Teachers have been led to believe that technologies stimulate students' interests in ways that lead to learning excitement (Koehler and Mishra 2005). When some students are overwhelmed by excitement, teachers may use disciplinary practices (Poehner and Brown 2019). Small classroom discipline decisions have a tremendous influence on the movement through the cradle-to-prison pipeline where, 'Black and Brown children', especially those with learning differences, are more likely to be disciplined harshly for 'subjective infractions' (Delale-O'Connor et al. 2017, 179–180). Perhaps, a more critical perspective on the use of computing technologies is needed. To begin, a teacher might have trusted her own knowing about a local aquatic species that needed conserving, such as the silvery minnow and she could have made a lesson about that (Prokop 2023). New Mexico has the least amount of surface water of any state, and there are frequent battles to keep the water that is here in service of people and not corporations (Grover 2024). The sociopolitics of water and land as contested terrain that is taken for industry and development has direct effects on the bodies of the children as they are in turn, territorialized by the technologies that take precedence in their learning and living spaces (Holland 1991; Lambach 2020).

Attending to local knowing and interest in science carries immediacy in everyday lives and requires an inherent sense of connectedness (Cajete 2020). Curriculum could emerge as a blend of student and teacher life experiences that honors the languages and language differences (Cardinal, Murphy, and Huber 2019). In instances where technologies can support local knowing, they serve as *acompañamiento*—collective knowledge sharing during learning experiences that acknowledge and honors whole bodies in spaces (Puerta Gil 2016).

Most legal definitions of accessibility do not account for issues such as local immediacy and community connectedness, nor do they guide teachers to center lesson or learning on community languages or cultural realities. Per United States Office of Civil Rights (USOCR), accessibility is sufficient when all learners can acquire the *same* information, engage in the *same* interactions, and enjoy the *same* services as those without disabilities with substantially *equivalent* ease of use (Rehabilitation Act of 1973; Section 504). Documents such as the Salamanca Statement (UNESCO 1994), the rectification of the UN Convention on the Rights of Persons with Disabilities (United Nations 2006), the Millennium Development Goals (United Nations 2000), and the UN Sustainable Development Goals (United Nations 2016) all reinforce the idea that accessibility means providing access to the *same* educational experiences as peers. Internationally, technical guidelines such as the Web Content Accessibility Guidelines (WCAG) from the Web Accessibility Initiative of the World Wide Web Consortium (2020) have been adopted under the assumption that this guidance will answer the call to provide the *same* experiences to students.

The injunction to provide so-called *same* experiences is situated within a historical present where education, schooling, curriculum, and teachers are bound together with values that theorize sameness and individual merit as equality (Lomawaima and McCarty 2006; Spring 2016). Such values of presumed sameness result in other so-called universalities. For example, colorblind ideology is

present as structural outcomes reveal biases against multilingual children of Color, even as school officials may claim they do not see Color in children (Bonilla-Silva 1997; Doane 2017). Such biases are reinforced as knowledge gaps in communities, rather than acknowledged as material consequences of colonization (Brayboy 2005; Calderon 2014; Mills 1997; Mohanty 2003). Universalism and its outputs, including colorblindness, create exclusionary realities where political elites can collude with technological elites to ensure that educational technologies are not held accountable for the effects of their designs in dis/abling some children while enabling others.

National and international governments and organizations like the UN consistently give preference to tech elites in deference to the Eurocentric belief that technologies are neutral, universal goods (Basu 2019; Broockman, Ferenstein, and Malhotra 2019). Voice recognition technologies like those the children and their teacher were using were not initially developed for education, but rather as a technology for improving experiences with telephones and business communication (Datascientst 2024). However, voice-to-text, which requires voice recognition is an example of a widely accepted computing accessibility feature in schools; text is generated from voices to make the *same* information available to all (Bierre et al. 2005; González et al. 2016). Yet, for the children who were trying to learn about sharks, accessibility was compromised because the children could not be understood, information could not be provided, and the children were suddenly held in a precarious disciplinary position. Yet, to have teachers control the voice recognition to ensure its orderly use thwarts the cause of access and requires additional labor for a teacher summon the voice recognition for every child—assuming the technology can understand the teachers’ variety of English given its extant language biases. Such circumstances reenforce extant linguistic biases that are encoded into technologies that in turn, map certain bodies as less able (Broussard 2023; O’Neil 2017). In cases where teachers and students can train the programs with their voice, more labor is necessary from the children and their teacher than from individuals like Mary, who can use the tools more easily, and sooner, because her English was used to build the technologies in the first place.

Central to the minimal computing movement is the question: ‘What do we *need*?’ (Gil and Ortega 2016). The question can be answered with a list of devices, system requirements and capabilities, and design features. However, the question also includes important relational and existential assumptions about relationships with computing technologies and others. Importantly, there are values embedded alongside the social and economic privileges and the power to ignore culture or de/culturate the *What*, the *We* and the *Needs* (Wythoff 2022). In *New Digital Worlds*, Risam (2018) described minimal computing as ‘a range of cultural practices that privilege making do with available materials to engage in creative problem-solving and innovation. There are names, including *jugaad* in India, *gambiarra* in Brazil, *rebusque* in Colombia, *jus kali* in Kenya, and *zizhu chuangxin* in China. For Risam (2018), the *We* are cultural and social groups and the *needs* are what will help address defined challenges in community contexts. *What we need* arises from considerations of *what we already have*, *what we must prioritize*, and through that prioritization, *what we are willing to go without* as part of computing (Risam and Gil 2022). Inherent in centering the ethic of *What. We. Need.* in communities like the one Mary visits is the expectation of proportionate benefits from computing technologies and not to be burdened by technological infusion into learning spaces. These burdens come as technologies that *must* be used and embraced, but also cannot be used because the technologies do not function or they are not fully available in certain areas. In the process of being required to use that which is not available or functional, the community is positioned in deficit and time is taken away from learning about issues and topics of local and ancestral importance. There is also the grave matter of the depletion of local resources to build and run the technologies that may benefit local communities little or not at all. Thus, *What. We. Need.* as part of minimal computing is not about being averse to, or afraid of computing technology—it is about demanding a role in deciding what constitutes a benefit and then a meaningful opportunity to experience the benefit (Merchant 2023). Crucially, Gil and Ortega’s (2016) framing of minimal computing presents one way of making communities visible within the ecosystem of educational technologies.

In our essay for this special issue, we conceptualize accessibility in digital education for school children through a minimal computing perspective that prioritizes the contextual, social, and relational as primary considerations for deciding *What. We. Need.* To begin, we problematize definitions of accessibility for computing in educational settings that fail to understand the identity of having a disability as complex personal and social terrain; such terrain must be navigated even more carefully by children and their families who are also resisting colonial monolingual structures that have already positioned their minds and bodies as deficient. We then question the viability of universalized strategies such as *personalized curriculum* in computing technology and its role in territorializing children's bodies as land to be exploited for capitalist gain (Goodley 2013; Spivak 1993).

As an alternative, we propose more complex ways of thinking about how to use minimal computing as part of everyday efforts to survive through 'everyday acts of decolonisation' (Corntassel and Hardbarger 2019, 92). These acts could reterritorialize the community and educational landscape with reference to land/water issues. We also consider the potential for alignment with minimal computing practices focused on collective needs and priorities. Finally, we offer practical suggestions for taking on minimal computing in teaching practices, research studies, and policy work.

Entangling identities and accessibility

Definitions of accessibility often assume a specific identity relationship where some individuals have disabilities and others do not. Critical disability discourse problematizes who is allowed to need and what are deemed as worthy needs (Goodley 2013). Rather than an issue of sorting, we embrace the notion that identities of having a disability/not having one are intra-actively entangled (Barad, 2007). An entangled relationship asserts that what it means *to have a disability* cannot be understood without also understanding what it means *to not have a disability*. For the children and their teacher learning about sharks in the ocean, dis/ability also intra-acts with cultural and linguistic identities and the children's status as being children. This is important because linguistic identities can be blamed in schools when children are identified as having a disability, rather than linguistic prejudices or ignorance (Kangas 2021).

Due to their entangled nature, ability and dis/ability carry performative obligations where individuals are judged as *abled* or *dis/abled* (Baird 2020; Butler 2004; Hughes 2007). Whether people accept a status as a having/not having a disability, Foucault (2002) argued, 'society's control over individuals is accomplished not only through consciousness or ideology but also in the body and with the body' (137). Scholars such as Spivak (1993) and Fanon (1954) have written about how bodies are territorialized based on performances that can include appearance and then labeled with various deficiencies as part of colonialism. For example, it was and is common practice to dismember, mutilate, or allow damage to Indigenous bodies to enforce colonial rule and create an image of inferiority (Barker 2011). In New Mexico, these memories are historically present; they are preserved in stories of foot amputations of Native men by the Spanish in 1598 (Trujillo 2008); and they are kept alive through more modern stories of corporal damage brought to rural communities by exposure to toxic chemicals and nuclear fallout (Yan 2020).

Children who need specific services and accommodations cannot access many services in a school without accepting an identity as having a disability—and even then, actual help is not automatic (Kurth, Morningstar, and Kozleski 2014). In accepting services that will, in theory, help a child be more successful at acquiring skills and habits valued by the school, children often lose access to their home languages and/or cultural practices—both in school and in out-of-school settings (Al-Khamisy 2015). In place of these, students are increasingly assigned to use technologies as services.

[T]he moment that individuals are marked as disabled ... the expectation is that they will maintain the maximum standard of physical performance at every moment, and the technologies designed to make their life easier are viewed as expensive additions, unnecessary accommodations, and a burden on society (Siebers 2008, 30).

Again, contradiction and tension emerge. Technologies that might be useful to the children are too expensive and luxurious for them, yet technologies that maintain the myth that universalism will serve the students best will be deemed worth the cost. For the latter, ‘maintaining the maximum standard of physical performance at every moment’ is exhausting (Siebers 2008, 30). It also makes it difficult for children to be qualified for or interested in, other meaningful opportunities (Spring 2016; Wolfe 2006). The outcome is a type of territorialization of the children’s bodies where they are drawn up as deficit and then mapped as being worthy only under certain conditions, yet these conditions carry contradictions that are the results of entanglements with their bodies, their histories, institutions, and the technologies that are being used to attempt to control them.

Territorialization through learning designs entangled in *sameness*

Evidence of this contradiction can be found in the fact that vendors of educational technology programs and applications have been slow to include basic accessibility features to materials, such as captions and alternative text for individuals who are blind or deaf (DeLancey 2015; Willis et al., 2020). The regulations in the U.S. to update the requirements from the 1970s to include digital documents, were released in 2024 (Arundel 2024). Apparently, making these changes to educational instructional materials without government mandate was deemed unnecessary and/or too expensive. Yet, educational technologies are continually updated with features such as machine learning to collect personal information when there was no advocacy for these features; these additions were spared no expense in development.

More contradictions can be seen in the discourse of *sameness* that has emerged as Universal Design for Learning (UDL). Advocates of UDL argue that based neuroscience research, students need choices of how to access instructional material and/or be assessed to be engaged and learn (Rose and Meyer 2002). The foundational argument of UDL suggests that neurocognitive differences are the most worthy differences between learners and that *sameness* can be achieved with a menu of slightly different ways to engage with and demonstrate learning. UDL does not provide insight for understanding how systemic injustices, such as economic insecurities, exploitation, or pandemics, exist apart from neurocognition or could lead to shifts in neurocognitive architecture that have long-term effects (Lagana-Riordan and Aguilar 2009; Schlaudt, Suarez-Morales, and Black 2021). For example, detribalized *Genizara/o/x* peoples in New Mexico face a colonial legacy of mixed identities and land dispossession that have positioned them with many risk factors for mental health challenges (Brave Heart and Chase 2016; Sisneros 2017). Reclaiming their land and building strong ethnic identities within their communities must be part of ensuring better education and life outcomes (Brayboy 2005). This requires more than UDL practices of using reading guides or having a choice of assessment between writing an essay or making a video.

The apparent goal in the discourse of *sameness* seems to be for teachers to feel little to no responsibility for ensuring digital instruction is a community matter or that it meets children’s needs. Vendors of digital instructional materials market their products suggesting that teacher work consists of reporting data to parents (Bailey 2022; Crouse, Rice, and Mellard 2018). Instead of operating from a *What. We. Need.* ethic, students are positioned to work ‘at a maximum standard of physical performance at every moment’ (Siebers 2008, 30). Such initiatives make it easier to use computing technologies to reify the expectations that students will come to look and act the *same* and the burdens that their presence places on schools will be eased.

Territorialization through personalization

Personalized learning landscapes are now being designed to keep children constantly computing with promises of achievement (Brass and Lynch 2020). Information from algorithms is used to recommend additional lessons for students, which give more assessments and more feedback

(Boninger, Molnar, and Saldana 2019; Drexler 2018; Lunde 2020). In the shark lesson at the beginning of this essay, the teacher expected voice recognition technology to provide access to internet-based information about sharks; instead, it impeded the search process. For a *personalized* lesson, teachers cannot see what information is provided to students about sharks. On tests, many *personalized* programs can prevent teachers from seeing test items or children's responses, even for practice items (Bailey 2022).

The current market ethos is to create and dominate education where constant computing is the norm for all learners. The expectation of constant computing has grown to the point where an increase in testing occurs alongside the rise in technology-driven learning programs (Bennett 2006). Learners who might not achieve what is deemed mastery as quickly as their peers may spend additional time with digital lessons, which represents a tighter control over their bodies than other students (Foucault 2002). Another outcome is behavioral modification toward a programmer's goals (Skinner 1958). In cases where children are supposed to be receiving specific services from a school, a programmer becomes an unaccountable party to a service plan (Tigard, 2021).

It is doubtful that these so-called personalized products are doing meaningful work in supporting language, culture, and identity. More likely, these forced technology learning efforts provide officially sanctioned or what is deemed politically acceptable knowledge to replace generationally existing, yet ignored ancestral knowledge of students (Delgado Bernal 2001). Recognizing the contradictions of this scenario highlights historic, and continuing language loss trauma that is compounded when feedback is given from the technologies to the children that their words and languages are not recognized and the topics are unrelated to their everyday experiences, which was the case for the children learning about sharks.

Also, it is worth discussing that topics such as sharks are highly prevalent in mass-produced materials when sharks are not currently native to New Mexico. Other children in other states do not have to learn about topics esoteric to New Mexico, yet there seems to be no questioning of the practice of forcing topics outside of life experiences into materials New Mexican children must learn from, and onto tests New Mexican children must take with technologies that New Mexican children cannot fully access that require energy from land/water that is exploited from New Mexico or other land/water under similar circumstances. The result of these acts is to then derive stories about how New Mexican children are not good at learning or are otherwise unworthy (Tuck and Yang 2018).

When we raise these issues in technological conferences and forums, tech elites and their devotees address our criticisms with comments such as, 'I can take ancestral knowledge and make it into a program,' where the tech elites remain the quantifiers of information, the masters of the spaces, the designers and deedholders of the terrain, and the decision-makers about which bodies are enabled for what purposes. Moreover, there is no long-term plan to question the larger schemes and narratives that are at the heart of our critiques. More problematic, they often say 'this is the price of progress.' Do they realize what they are saying about peoples who have been *paying the price of progress* with their lives, their land/water, their mental health, and their liberties, for at least 500 years? The expectation that non-White peoples are expendable is part of the racial contract (Mills 1997). Both overt and subtle forms of racism will continue to result in some groups and communities consistently having to absorb the harms of *progress* while other communities and groups—that are privileged in the racial contact—consistently position themselves to benefit (Arvin, Tuck, and Morrill 2013; Broussard 2023).

Territorialization as data theft

While computing is not always minimal and not always accessible to students, data from students and confidential personal information about them *is* accessible to marketers and cyber thieves. Many digital educational products collect information about race, ethnicity, and socioeconomic status, as well as parent names and addresses. Even when user data *is not available to their teachers*, it can be sold (Boninger, Molnar, and Saldana 2019).

Increasingly, data can be scraped and stolen from children as data for other machine learning. Because children are required to use these technologies for school, it is difficult, even impossible to opt-out (Almeida, Shmarko, and Lomas 2022). Schools lack plans for these refusals. When students accept digital devices and then programs yield up students' personal information and data to a *kleptocene*, they advance the aims and values of colonization (Keeler 2020; Tynan 2023). While families do not get meaningful opportunities to engage in minimal computing as meaningful considerations of *What. We. Need.*, students are punished harshly, even for small infractions regarding the devices. Further, acts of surveillance transcend structural architectural theories from Bentham (2010) and Foucault (2002) as well as the digital, distributed infrastructural forms of watching over people with increased distance (Deleuze 1992; Haggerty and Ericson 2000; Zuboff 2015). Dataveillance emerges:

... dataveillance, access control, social sorting, peer-to-peer surveillance, and resistance. With the datafication of society, surveillance combines the physical with the digital, government with corporate surveillance and top-down with self-surveillance (Galič, Timan, and Koops 2017, 9).

Ultimately, data scraping and discipline policies align with images of buying, selling, and assignment of labor for bodies based on income, race, and gender that have been evident in colonialism across time (Murphy and Klaus 2021). Such control of the flow of personal data and information for profit through reliance on the fantasy of universality and collective colorblindness is a part of a new racial *data* contract (Iverson et al. 2024).

Using schools as an institutional framework, educational technologies continue the separation of people from their land/water, and knowledge sources that were once open systems through mutual reciprocity (Cajete 2000; Kimmerer 2013). The limitations of access to the needs within communities to explore their own realities are systematically limited by demands for the English language to be extolled and used in certain ways—ways in which some communities will always be positioned as lesser, as failures, and/or as savages (Arvin, Tuck, and Morrill 2013; Mills 1997). Hence, through conceptualizing the racial data contract, we indict algorithms and software that serve to silently evolve an exclusionary praxis. This is *Not What. We. Need.*

Reterritorializing as a collective through minimal computing

Minimal computing can support resistance to exploitation by technology companies (Macgilchrist 2021). Conceptually, minimal computing as conceptualized by Gil and Ortega (2016) can share borders with conceptualizations of accessibility that value community participation as *Who are the We?* And *Who gets to decide what We need?* (Lison 2022). For example, communities that are unable to decide whether and how they want the internet cannot determine much regarding educational computing structures for their children. In New Mexico, many communities without internet access were working to get it prior to the COVID-19 pandemic (Todd 2018). Funds were allocated but no service arrived. During the early months of the COVID-19 pandemic, a judge ordered that all children with limited internet access be given access immediately (New Mexico Center on Law and Poverty 2021). Funds were allocated again, but again, no service. In 2022, over 100 million dollars were allocated for internet access in New Mexico, but still no service for many (Griswold 2022). Such on-going denial of such basic services is often intentional as part of imperialism (Wolfe 2016). Keeping communities without technologies they want or making them beholden to institutions like schools to assure their submission is bad faith in determining benefits of technologies and sharing in them (Merchant 2023).

While minimal computing has some foundation in micro-level issues of design, we have argued that there is a place in minimal computing to consider context more broadly. These controversies over broadband internet echo the generational struggle of various historically present ethnic cultural populations to maintain and reclaim rights to land/water as well as to their languages, cultures, and place-based identities (Battiste 2007; Corntassel and Hardbarger 2019; Puerta Gil 2016). It can

no longer be acceptable to attempt to position technologies in these spaces that do not include *What. We. Need.*

Amid the denial of access to digital spaces and the denial of access to local community and common lands, these populations have endured environmental degradation of watersheds to support capitalist development to expropriate resources (Martínez 2002; Rodríguez 2006). These struggles exist in controversies about who is able to derive benefits from technologies because using advanced computing requires land/water. For example, one prompt using a program like ChatGPT uses almost 500 milliliters (16 ounces) of water (O'Brien and Fingerhut 2023). In 2022, Microsoft reported a 34% increase in water intake that exceeded 1.7 billion gallons due to AI training (Adarlo 2023). Coming from the state with the least surface water of all 50 states, the challenges of obtaining land/water and technology are frustrating. We also acknowledge the historical sanctity of water to local Indigenous groups, such as the Diné (Cladis 2019).

Providing internet access to rural spaces and ensuring sustainable land/water to live and learn on is more than a matter of designing devices and programs with lower computing power; it is about designing for lower land/water demand. For digital instructional materials to be accessible to children, they must acknowledge the children's land/water realities. Such realities are centered through Indigenous Epistemologies and related perspectives that recognize that knowledge lives in all things, objects and people, thus highlighting relationality and materiality (Grande 2009).

Children in rural New Mexico live in a high desert that is culturally and linguistically rich. Historically the people have been community-minded and clever about finding and saving water because there is no single large water source. Selling digital instructional materials to New Mexico schools with lessons about ocean life, like sharks, is not as helpful as lessons that support children in understanding conservation of the water and plant species in the high desert because that is where they live. If technologies are used at all, they would support observation and listening alongside repeated experiences that interweave knowing by doing and by accessing local wisdom (Kimmerer 2013). Moreover, such learning would play an active role in the 'everydayness of decolonization'—where people must actively acknowledge harm and practice healing within their communities (Corntassel and Hardbarger 2019, pg. 92).

Practical applications for leveraging minimal computing for accessibility

Embracing minimal computing as a broad conceptual framework for unpacking entangled identities within the community contexts and histories thickens the idea that accessibility should include more than basic practices like 'are there captions?' Instead, accessibility comes to encompass an ethics that allows people to make decisions about *What. We. Need.* Instead of computing technologies as part of what dis/ables, they can meet community interests. Instead of being the only or primary means of instruction, digital instructional materials can have an appropriate place in school. Here, we offer some suggestions for minimal computing for teaching practices, research studies, and policy work.

Teaching practices

Teachers and other school leaders are not always included in decision-making processes about computing technologies in schools (Boninger, Molnar, and Saldana 2019; Crouse, Rice, and Mellard 2018). Teacher education programs might be able to help teachers to imagine spaces for deciding when and how to use computing technologies in ways that prevent the buying and selling of the digital body (Galič, Timan, and Koops 2017; Murphy and Klaus 2021; Tynan 2023). For example, teacher agencies can be supported in learning to investigate data that will be collected about students; they inform families about the data being collected; and they can be involved in active decision-making about computing technologies that are really needed. Teachers need specific information that allows them to critique the structures that make children's bodies surveilled and

universalized (Bentham, 2010; Foucault 2002) through attempts to keep them constantly busy and *dividualized* (Deleuze 1992) as mere producers of data.

Teachers might also be supported in learning basic principles of accessibility within a minimal computing framework in ways that counter the historical spatial erasure of peoples (Hall 2008). Instead of acquiescing to the framing of children within deficit discourses, teachers might be supported in understanding the lack of accessibility and the need for contextual shifts that make environments supportive for children (Baird 2020; Butler 2004; Hughes 2007). If this includes digital instruction at all, digital instruction should be supportive of what the children need instead of abetting systems in making the children appear deficient (Macgilchrist 2021; Siebers 2008).

While some teacher education programs might address issues of UDL, this instruction has tended to focus more on superficial choice elements and promoting the market-based personalization agenda rather than accessibility that considers historically present issues of language, culture, and situatedness in land/water realities (Battiste 2007; Cladis 2019; Corntassel and Hardbarger 2019; Grande 2009; Puerta Gil 2016). These are the issues of accessibility that need to be reclaimed within communities. While we have highlighted a rural New Mexican community here, all communities are going to have unique characteristics and needs.

Research studies

Several contradictions about issues of digital access and equity deserve further investigation. These issues include the sense that learning online with digital technologies that address learning differences in children can be abated with more and accelerated use of digital technologies. Research might focus on the use of digital technologies that is as minimal, accessible, and conducted with some sense of the local and contextualized (Cajete 2020; Risam 2018; Wythoff 2022). This would require a variety of research methodologies, perspectives, and points of view. It would mean reclaiming responsibility from the programmer as the primary decision-maker about learning (Tigard 2021). Research about *acompañamiento* (Puerta Gil 2016) and what it looks like in a minimal computing space with children that honored their land/water realities and other aspects of their identities should also occur.

Policy efforts

Accessibility through minimal computing offers various opportunities for policy planning. For example, national, state, and local entities with purchasing power can require digital instructional materials to meet community-based standards rather than universal ones. One procedure embedded in policy might involve asking more individuals to review and test materials and devices that are under consideration for purchase and then listening to and acting on feedback (Prado, Gobbo, and Bezerra 2023; Rothberg 2019).

Over the long-term, communities can be encouraged to be proactive about questions like, ‘What do we *need*?’ (Gil and Ortega 2016). Within those questions, Risam’s (2018) description of cultural practices with available materials to engage in creative and thoughtful problem-solving and innovation can occur. For instance, there needs to be affirmation and agreement about the responsibilities of the institution to families instead of the current direction where families are constantly appraised of what they owe the institution regarding computing technology (Reidenberg and Schaub 2018; Rice, 2024). This might meaningfully include opportunities to opt-out of using technologies (e.g., devices, applications, or programs) without being subject to discipline or retribution (Delale-O’Connor et al. 2017). Further, institutions could be explicit about what computing technologies were deemed necessary and with framing in the context of other community needs, such as land/water, community health, and/or honoring local languages. It might also be important to directly confront aspects of the racial contract, such as meritocracy in schools with regard to when and how technologies are used (Lomawaima and McCarty 2006; Mills, 1997; Spring 2016).

Conclusion

As communities of scholars and educators, we must watch out for sharks. These sharks might come in several forms. They might be in the form of highly complex digital materials that are designed to keep children on the computer constantly doing tasks, but not necessarily doing tasks worth doing. Sharks might also be those who insist that using technologies is worth any price we would have to pay for it, regardless of whether the technologies are meeting our needs or the benefits are distributed equitably.

Can it really be that problematic that the children were distracted by voice recognition software and were in danger of discipline for one lesson? We think so. We think that the research, practice, and policy communities should consider the cumulative effects and the on-going ethical issues surrounding the fact that children must trust us to make decisions for them because regardless of the rhetoric about choices of pace and pathways for digital learning, children have little say in where they go to school and what they do there. Adults make those decisions for them. We should maximize children's opportunities to learn and live in ecologically safe communities by minimizing the access we give those who seek to use their bodies to *pay the price of progress* and re-make their bodies and minds as bits of data. We should work toward accessibility that does not merely provide the *same* education for children, but provides a strong foundation to honor what children can bring to schooling. We should plan and hope for What. We. *All*. Need.

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