PREFACE

ACCESSIBILITY AND UDL ARE NOT SYNONYMS: (RE)POSITIONING ACCESSIBILITY AND UDL WITHIN LARGER CONVERSATIONS OF EDUCATIONAL EQUITY

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As a teacher educator, I work with individuals who are or who are going to be teachers of children and adolescents in the Southwest United States. This part of what is called the *United States* is home to 19 Indigenous Pueblo Nations, three Indigenous Apache Nations, and the Diné, or Navajo Nation (Indian Pueblo Cultural Center, 2025; New Mexico Indian Affairs Department, 2025). Indigenous Tribal Nations have existed in the area for thousands of years and first encountered Spanish around 500 years ago. Alongside the Spanish was an Arabic speaking Black man named Estevanico—who arrived as a person who had been enslaved in Africa but had escaped captivity and traveled between the Southwest and Mexico as a medicine man until his death (Arrington, 1986). Although the Spanish should not have had a special right to claim land or resources, they did so under a Papal Bull issued in 1493 by Pope Alexander VI (Menchaca, 2011). After many years of colonization that included taxations, murder, land theft, and societal overhaul there are many people in the Southwest U.S. who speak Spanish as a first or primary language and who—with varying understandings of colonial history—do value what they understand as their Spanish heritage.

Much later in history came the influx of English-speaking settlers—since that was necessary for statehood (New Mexico Museum of Art, 2025). Since statehood in 1910, there have been intermittent waves of migration from other places in the U.S. and from other countries. While sometimes there is confusion about whether New Mexico is part of Mexico—currently it is not—there is a long historical connection between peoples of New Mexico and New Mexico as through colonization as New Spain and many years before as peoples traversed the high, dry land unimpeded for thousands of years (National Park Service, 2024).

Working with teachers in this context requires me to be aware of this history and to be respectful of it. Prospective teachers come to teacher preparation having survived schools that teach them very little of their own social and political history and that are largely unwelcoming to the languages they speak. Where there is

teaching about history, it is often to glorify the Spanish colonizers rather than acknowledge and explain the complexities of what it means for people to have multiple waves of colonization and multiple heritages. Teachers are often uncertain about what they can say or not say in the spaces about the historically present tensions between the claims of Indigenous Tribal Nations and those who want to extoll the Spanish colonial past. When White or Anglo teachers—as they are sometimes called—learn to teach, they sometimes are unaware of either history, or they believe that there is some way to be neutral. Adding technologies to teacher education brings new complexities. While technologies are often viewed as positive among various groups, there is intense mistrust since most Indigenous peoples—especially in rural areas—still lack broadband access (Buiquy, 2022). Also, the environmental toll from many technologies is layered on top of the environmental costs that rural and Indigenous peoples have had to pay repeatedly for so-called advancements (Rice & Argüello de Jesús, 2024). This includes mining for minerals on or close to their Lands to run the technologies. It means the indignity of using water for these technologies when many communities have little to know water for drinking, cooking, and daily living. It means that communities endure as Land is disturbed and resources are damaged and destroyed and then when children are born with or develop differences—physical, cognitive, social/emotional—that are related to having to survive these circumstances, they are told that they have (dis)abilities and must use technologies to either be remediated or as compensatory strategy. The World Health Organization and United Nations Children's Fund (2022) have explained that while human cognitive and physical differences cause some of the need for accessibility and assistive technologies, there is also an increased need for these in times of humanitarian crises and global disaster. What has been made less explicit is the way in which some disasters were caused by the arms race to develop technologies to use in education (Rice et al., 2025).

Teacher educators who are earnest but not fully attentive might consider their first step for teaching the teachers and for the teachers to teach children is the Universal Design for Learning (CAST, 2018). To operate within the UDL framework, teachers educators would engage in such practices as: (1) ensure the readings were available in multiple formats (2) offer a choices such as, do an observation *or* an interview; or write a paper about the field work or do a video about it (3) students would be able to interact with each other to learn through discussion as well as receive feedback from teacher educators.

Yes, there are additional, more specific classroom strategies that teachers can use and do. Is it possible for a course to meet many aspects of the UDL framework

and for it to still *be inaccessible*? The answer is yes. A course that was designed in the UDL framework might be inaccessible for many reasons. For example, even though the readings are in multiple formats, those readings might not be compatible with screen readers; or the screen readers that students have access to might not work with the devices the students have. Readings might also not be viewable with a mobile phone and students are mostly using mobile phones for accessing course materials. What if a student wants to make a video instead of writing a paper but the program the teacher links to for video making is inaccessible? What if a student wants to write a formal paper but cannot find additional sources on their own that are accessible? What if teachers offer materials in multiple formats, but neither format is accessible? Teachers could also offer an audio version and a transcript, but if the student is deaf and cannot read the transcript, they will not be able to access the content.

We can also take this thought experiment in another direction. Let us assume that teachers managed all these things and the course meets UDL guidelines and meets technical accessibility standards. Will multiple types of documents, interactions, and activities be enough to ensure that students can learn when the reason they might struggle is because of what they have survived and are still needing to survive? What other barriers might students encounter that are *more than* technical accessibility but are still barriers to access? What I want to do in this paper is demonstrate conceptual overlaps between UDL and accessibility. I want to disentangle accessibility from UDL while contrasting expectations for UDL with more technical accessibility standards like the Web content accessibility guidelines (WCAG) standards, which have recently been adopted in many countries for digital instructional materials (WC3 Web Accessibility Initiative, 2024). Then, I will discuss why issues of understanding and (dis)abling might persist even after meeting UDL and accessibility guidelines. Specifically, I will argue that there is an ongoing need to think about historically present barriers for students when they encounter subject matter that is presented as neutral or in its final form (Dewey, 1938).

Productive conversations about definitions and meanings and contextual awareness are crucial because terms like *accessibility* and *access* and *assistive technologies* and even terms like *personalization* and *universal design* appear in policy documents that govern funding decisions and are used to prepare teachers. Practical and research procedures in educational contexts have consequences for learners' access to support and instructors' access to professional learning experiences. The goal is not to repudiate or eliminate any term or idea, but to (re)position these within a larger commitment to accessibility and fair learning opportunities for all.

(Dis)Ability: Definition and Problematizing

What is (dis)ability? Symbolic interactionism theories posit that individuals have multiple identities (Burke, 2004). Some identities are imposed within a community or by institutions and some are claimed by the individual. When social identities cause a loss of access to institutional benefits, they have been recognized as intersectional dilemmas within legal and administrative systems (Crenshaw, 1991). Sometimes individuals claim an identity based on their perception of whether that identity carries privilege or social benefits (Butler, 2002). Identifying oneself as having a condition recognized under a government or administrative statute as a (dis)ability might bring opportunities or privileges in some contexts for obtaining important services and accessing guaranteed civil rights (Kenny et al., 2016). In another context, the same individual might be afraid, ashamed, or uncompelled to accept an identity as having a (dis)ability. Some individuals might embrace having a certain condition, such as blindness, yet not want to identify as having a (dis)ability. Important social and political discussion complicate (dis)ability as a lack of resources, compassion, and access in society, rather than something inherent in the person (Goodley et al., 2019; Marks, 1999; Sinclair, 2013). In these cases, individuals might refer to themselves as *disabled*—because the context has disabled them—rather than referring to a person *with a disability* (Dunn & Andrews, 2015).

Discussions about identity and (dis)ability are important because individuals deserve to be able to make decisions about their identities and individuals with needs deserve access to institutions, programs, and services, particularly through education. However, within educational structures, intuitions assert desires to delineate and bureaucratize people as problems and then try to make people and their problems seem simple to fix with the *right* intervention when often more nuance is needed. Oversimplification disrupts efforts at equity and causes animosity that leads to discrimination (Kendi, 2016). For example, in U.S. schools, several entangled structural factors led to over-identification of children of Color for special educational services (Artiles et al., 2002). This led to problematic outcomes for those children and their families. Over time, it has also led to parents of White children being jealous that children of Color seemed like they were receiving access to support and services and by extension, money and services that White children were being denied (Arundel, 2025).

Vendors and advocates of the rapid emergence of internet technologies including new modalities for learning, such as online learning, virtual and augmented realities, artificial intelligence in various forms, have touted these technologies as new opportunities to accept, display, and interact with multiple identities, as well

as explore overlaps and constellations of those identities (Elwell, 2014). While these might be considered positive development, there have also been concerns that technologies for individuals with (dis)abilities might be more focused on creating a normative social order designed to 'cure' or 'hide' (dis)ability (Moser, 2006). For example, if an algorithm will *fix* your text for you and make it perfect, how does that change the premise of writing as exercise in thought development? Would it not be better to teach writing as something that did not have to be centered on technical perfection? Did we forget the historical devastation that came about because authoritarians and dictators did not like bodies that looked a certain way or were considered flawed? Also, if bodies and minds that are imperfect are not allowed to be in institutional spaces then how do we know, over time, what a perfect body even is—except for maybe that we are told so by a central authority? To achieve equity, teachers must understand better what constitutes a strong conversation about what is deviant and what is supposed to be normal as then disrupt binaries about pure/impure and worthy/unworthy (Cormier & Scott, 2021). This brings a need to disrupt how decisions are made about how technologies are obtained, used, evaluated in pedagogical spaces. There is often a notion that any technology is an advancement (Krutka et al., 2020). When we understand technologies and identities as being positioned together within a constellation of needs and values and positions on an educational landscape, things get tricky. Therefore, there is a real need to discuss terms and have real policy conversations about how what we do affects the people we are purportedly doing things with and for. This conversation can start with accessibility.

Accessibility: Definition and Problematizing

In many countries individuals with disabilities have rights to educational experiences through the United Nations (UNESCO, 2009). Per the United States Office of Civil Rights (OCR), accessibility is sufficiently achieved 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 United Nations Convention on the Rights of Persons with Disabilities (2006), the Millennium Development Goals (2000), and the United Nations Sustainable Development Goals (2016) all reinforce the idea that accessibility means providing access to the *same* educational experiences as peers.

Accessibility is related to terms like *assistive technology.* Cowan and Turner-Smith (1999) defined assistive technologies as "any device or system that allows an

individual to perform a task that they would otherwise be unable to do or increases the ease and safety with which the task can be performed" (p. 2). Researchers divide assistive technologies into low technology types and high technology types (Edyburn, 2020). However, the dividing line between *low* and *high* can be somewhat arbitrary. Assistive technologies make instruction accessible because they enable learners to do things they could not otherwise do, faster, and with greater ease; they enable accessibility rather than being the totality of it.

In March 2024 the U.S. Department of Justice defined standards around accessibility for digital materials as covered under Title II of the Americans with Disability Act. Title II applies to all state and local governments and all their related agencies. Digital materials include web applications and mobile ones. Shortly after the Department of Justice published their rule, the Department of Housing and Human Services published a standard for web content and mobile applications used in all Department of Health and Human Services programs. While it is important to note that there has been a presidential election in the U.S. since then and many webpages of material has been removed from government websites about health and educational services. It is unclear what the future holds for the implementation of the rules in institutions of higher education.

Both agencies chose the same standard for technical accessibility. It is the WCAG 2.1 A/AA (WC3 Web Accessibility Initiative (2024). The WCAG technical accessibility standards comprise a very long list of items, some of which can be done by an instructor with some advanced professional preparation and learning. This might include adding captions to video or alternative text to images. Other aspects of WCAG require instructional design expertise. An example might be remediating documents, such as portable document files or finding errors in tables. Still other WCAG requirements might require a coding background, such as resetting the color contrast when no automated support is available. Because of the extensive nature of the WCAG standards, extensive collaboration is needed between professionals within an educational setting to ensure compliance.

The Department of Health and Human Services expected that its programs would already follow WCAG per previous requirements from what is called Section 508 of an existing law. The Department of Justice is giving other agencies and programs—which include schools and districts for children and institutions of higher education—until 2026 or 2027—depending on the size of the population area—to meet the standard. Meeting the new requirements in a timely manner is expected to require time and financial investment from institutions. These financial requirements, in turn, will likely have to mean that state legislatures and other sources, such as non-profit organizations, might provide additional help. According

to a recent white paper from the Software and Information Industry Association which represents the software and digital content industry, the estimated financial costs from the Department of Justice to conform to the new requirements are $1.134 billion for the K-12 sector and $5.5 billion the higher education sector (Arundel, 2024).

For K-12 schools, uses of educational technologies and digital instructional materials skyrocketed during pandemic-related school building closures. Schools also accelerated their use of digital programs and applications from educational technology vendors for things like tickets to lunch and dances and sports. In 2024, an educational technology platform created a profile of U.S. educational technology use that suggested there were about 45 different educational technology tools that students use during a school year, while educators were accessing about 49 programs and applications directly for educational technology use during a school year (Instructure, 2024). Sixty percent of the most used tools focused on individual learner activities including studying, creation, research, and games (e.g., Adobe, YouTube). Across research and practice, it seems that schools are largely un/under prepared to meet the new standards for digital accessibility, particularly at the K-12 level (Rose & Rice, 2025). While a vast number of organizations claim to be capable of making all web content and mobile applications accessible within the desired time frame, some schools will likely not meet the full standard. Also, some of these organizations promising miracles are scams.

Institutions of higher education may be better positioned to meet new Title II rules, because they may have more teams of instructional designers and more teaching and learning support coordinators. Within institutions of higher education, responsibilities for decision-making about educational technology tools is centralized within centers of teaching, learning and/or instructional design. Design and special services coordinators may collaborate within and across similar institutions (enrollment size, and/or geographically) more effectively than in the K-12 sector.

The Consortium for School Networking (CoSN) has several different toolkits for members about technology issues. None of these kits addresses compliance with the WCAG 2.1 A/AA standards. There has been no formalization of processes to review what vendors sell to schools to ensure that they are compliant with standards before they are purchased. There has been an attempt to formalize a process for reviewing educational technology programs and applications for which educational institutions have current contracts. In the U.S., there has been a long-standing preference to avoid interfering with private enterprise and the goals of

capitalism. Therefore, most federal administrations and congresses have been hesitant to directly regulate vendors. Instead, educational institutions have been left to ensure that what they purchase complies with the new Title II rules. Schools must know the rules and they must apply pressure to vendors, individually and as a group. There are very few other consumer situations that are like this where buyer testing after purchasing is necessitated.

No database exists where academic institutions can share information about the digital accessibility of various products; it would likely be quickly infiltrated by for-profit groups. Non-profit organizations provide information about digital accessibility, but so far none has offered a service of this kind. Existing research about artificial intelligence or other machine learning tools' ability to manage accessibility is limited and what is there suggests that AI can be inaccessible, and it can advance some of the most problematic features of ableist ideologies onto students without vigilance (Rice, 2025). Direct, proactive, collaborative, work—properly funded—seems urgent.

The European Accessibility Act takes effect June 28, 2025 (European Union, 2025). This act mandates that a range of products and services such as consumer electronics (televisions, smartphones, computers, gaming consoles, etc.), ticketing and vending machines, websites and mobile applications, comply with accessibility requirements. The European Union has chosen the WCAG standards. Failing to comply with the law could result in penalties including fines for European public-sector organizations.

Technical accessibility standards may give some consistency to what accessibility means. However, they also allow for the successful evasion of why people have accessibility needs in the first place, what happens when technical accessibility is not enough, and what responsibilities educational technologies vendors have not only to make programs and applications accessible, but to imagine accessibility in such a way that people do not have to design around it.

UDL: Defining and Problematizing

The Universal Design for Learning (UDL) framework was developed as a set of recommendations for practices to support the success of all students (CAST, 2011). The framework extended a set of principles called Universal Design (UD) (Center for Universal Design, 1997). UDL was intended to broaden the original concept of UD by applying the idea of built-in flexibility to the educational curriculum. The stated original goal of the flexibility was to support access to instruction (Rose & Meyer, 2002). The UDL framework claims to embrace a model of clear objectives for

learning based on neuroscientific findings (National Center on Universal Design for Learning, 2013).

The UDL framework highlights three areas of flexibility: (1) multiple means of *engagement* (2) multiple means of *representation*, (3) multiple means of *action and expression*. Each of these three pieces is broken down further into subcategories. For *engagement*, the subcategories are recruiting interest, sustaining effort and persistence, and se-regulation. For *representation*, the subcategories are perception, language and symbols, and comprehension. For *action and expression*, the subcategories are physical action, expression and communication, and executive functions. The current stated goal of UDL is to develop learners that are purposeful and motivated (engagement), resourceful and knowledgeable, and strategic (representation) and goal-directed (action and expression) (CAST, 2018). Although UDL does have to be used exclusively for digital learning, much UDL research and advocacy is centered in digital spaces (Rogers & Gronseth, 2021; Rose & Meyer, 2002).

Many countries, including European Union countries and the U.S. have been shifting to using UDL with the assumption that courses would be accessible for learners who have (dis)abilities—physical, cognitive, emotional, social, and perhaps multiple types. The first mention of UDL in public policy in the U.S. was in the Higher Education Opportunity Act of 2008. In that act, UDL was listed as an example of a scientifically validated framework that could be used to design instruction and meet the needs of students who were experiencing barriers to learning.

UDL has taken on a variety of identities over time and in different spaces. Early on, it was used mainly as a pathway for students who had struggled to be successful in typical classroom spaces that rely on a single modality (Jackson, 2005). Later, UDL was identified as a strategy for creating so-called expert learners who were able to use multiple means to learn (Ralabate, 2011). After that, some researchers tried to use UDL to create expert learners (Waitoller & King Thorius, 2016). When the U.S. Congress reauthorized major educational legislation for K-12 students, known as Every Student Succeeds Act in 2015, UDL was included using much of the same language from the Higher Education Opportunity Act of 2008. An endorsement at the federal level, particularly for both higher education and K-12 education was extremely important for educational technology vendors to claim that their products were aligned or compliant and may have even produced a market-based need within academia for additional research and additional endorsements of UDL. These would have served to support on-going qualification for federal funding opportunities.

The evolution of UDL, what it is supposed to do, what it is for, and where research should focus has undergone many iterations over the years. Hollingshead et al (2020) argued that such transformations have caused ambiguity in UDL has been defined, identified, implemented, and measured. For example, some researchers have focused on *access* (Jimenéz, et al., 2007). Others have moved into a *process-based* focus (principles, guidelines, and checkpoints) (Rao & Tanners, 2011). Some researchers have been interested in *outcomes-based* inquiry (Coyne et al., 2017), while others have *operationalized and measured* UDL (Ok et al., 2017). Finally, there are researchers who maintain case studies of UDL (Leichliter, 2010).

While it is not my interest to say which ideas are superior, it is important to understand that teachers are likely taught very different things about UDL (Hollingshead et al. 2021). It should also be extremely apparent that UDL has led an existence as a catch-all term for whatever educational movement is popular at the moment. UDL and people who advocate for its on-going existence seem to invest a certain amount of energy into ensuring that there is just enough of what they call flexibility, but what is also a convenient ambiguity to be able to wrap around whatever movement they need to remain relevant. Currently, it seems that *personalization* is the movement. UDL advocates can make *universal* design and *personal*ized learning jive ideologically.

As a teacher educator, I am supposed to teach teachers to make instruction both universal at the beginning and personal to every student. One reason why this is not a problem is because the technology is amazing magic and it will do it for me … and it will *fix* whatever is *wrong* with the child … as long as the child uses the technological programs constantly (Boninger et al., 2019; Rice & Argüello de Jesús, 2024). Another reason is because personalization and adaptive learning *are* universalist models—meaning that they are not actually trying to do something individualized. They are trying to move all the children to mastering the same list of items as the children use the technology as much as possible for as long as possible (Boninger et al., 2019). What constitutes a personalized or adapted learning experience are differences in the amount and order that tasks are given. Sometimes there are differences in the types of examples or superficial differences, such as the color car children use in a math game where they race by solving problems.

To address the ambiguity, Edyburn (2010) and Hollingshead et al. (2021) have suggested more discussions about terms. This seems to be an important start. I am raising that issue here by saying that accessibility and UDL are not the same, even though they might have come from conceptual overlap. On the other hand, keeping up with the dance of terms and measurement is also part of the activity that

continues to allow UDL to redefine itself in the face of every other emerging educational development without having to be accountable. We must hold the terms, ourselves, and the vendors accountable.

Conclusion

Sociocultural considerations that frame the larger context for accessibility are necessary for challenging the idea that digital instructional materials are accessible merely for the fact of being standardized and/or universalized. In fact, the goal of providing the *same* experiences has been a common theme in education, where the narrative of sameness has been used to advance the myth of meritocracy (Lomawaima, & McCarty, 2006; Spring, 2016). Within this framing, accessibility is not just about having a need met, but an opportunity for labeling within a structure that claims to be colorblind yet somehow consistently leads to different and worse outcomes for people of Color (Bonilla-Silva, 1997; Doane, 2017). Instead of acknowledging the material consequences of colonizing acts, individuals and communities whose knowledges have been excluded are circularly found to have gaps, prescribed to have those gaps filled by more labeling and more isolation, and then blamed for still having gaps (Blanchett et al., 2009; Brayboy, 2005; Calderon, 2014; Mills, 1997; Mohanty, 2003). What is considered accessible in one community or group may not be in another.

Consider this final example. A graduation speaker wanted to address the crowd in multiple languages. To make this accessible, advanced preparation is needed for code tagging the captioning and for the sign interpreters. A transcription with translation might also be prepared. Are schools prepared to do that? Or are they more likely to tell a speaker, “Sorry, you must speak in English because that is the only/easiest way to make it accessible.” Never mind that speaking in English with English captions and signed English or American Sign Language *does not* make it accessible to all.

To close, people might know *what* they do, and they also might know *why* they do what they do. We must also become aware of *what our doing does* (Petrovskya, 2023). Amid important questions about structural inequities and how inequity affects people, we need more conversations about terms and ideas, especially those we are planning to ensconce in policy and fund in research.

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