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The Limits of Inclusion in Open Access: Accessible Access, Universal Design, and Open Educational Resources

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PRACTICE ARTICLE

The Limits of Inclusion in Open Access: Accessible Access, Universal Design, and Open Educational Resources

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ABSTRACT

Introduction: The impacts of open educational resources (OER) are both well-documented and far-reaching. Without mitigating the positive outcomes of OER—including reduced textbook costs, readily available knowledge platforms, and open research—we problematize the commonly held assumption that open resources are necessarily more accessible and inherently good.

Description of Program: Drawing on writing from antiracist, feminist disability researchers and advocates, we critically examine the UCLA Library online open educational initiative known as Writing Instruction + Research Education (WI+RE). In doing so, we (1) demonstrate how open access (OA) is often framed as an end, when in fact it is just the beginning; (2) encourage readers to resist evangelizing the OA movement such that it is beyond critique; and (3) advocate for the centering of disability justice within and beyond our OA efforts.

Next Steps: We discuss both general and specific approaches for centering accessibility in creative processes, advocate for expanded definitions of OERs (beyond simply being “free”), and caution against evangelizing OERs without acknowledging the structural factors that contribute to inaccessibility. We outline four strategies and recommendations for other practitioners, educators, and designers seeking to build accessibility and disability justice into OER design and OA initiatives more broadly. We approach OER both practically and theoretically to present an argument and path forward for designing more accessible resources and expanding OA through accessible access and universal design.

Keywords: open access, open educational resources, open pedagogy, accessibility, accessible pedagogy, universal design for learning, digital inclusion, digital accessibility, instruction in libraries

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INTRODUCTION

The impacts of open educational resources (OER) are both well-documented and far-reaching (e.g., [Feldstein et al., 2010](#) and [Hilton et al., 2014](#)); however, open educational practices should not be evangelized or held beyond critique. Approaching OER as an inherent good limits our ability to improve our approaches and practices. Specifically, we are concerned about evangelizing open access (OA) and open education such that we lose sight of critiques of equity and access. Similarly, being unwilling to engage in self-critique hinders progress and may result in oversight that is harmful to or neglectful of marginalized learners.

In this article, we consider what access and accessibility mean for the OA movement, discuss issues of accessibility in the OA movement generally and OER specifically, and present two frameworks for improving accessibility: disability justice and universal design for learning (UDL). Drawing on writing from disability scholars and disability justice advocates, we explore the relationship between access and accessibility, specifically as it applies to OER. We engage with both the broad concept of universal design and the more specific approach of UDL to consider how to design learning experiences more inclusively. In the process, we consider how to center disabled learners by imbuing UDL with a disability justice approach.

By critically examining the University of California, Los Angeles (UCLA) Library OER initiative, Writing Instruction + Research Education (WI+RE), and recognizing the limitations of framing accessible pedagogy as beginning and ending with representation and checkboxes, we consider how OA and OER might be reimagined with accessibility at their core.

To demonstrate a practical application of these frameworks, we consider our own design process and offer a case study via self-critique. Based on this reflection on our practices and approaches, we consider how to incorporate UDL and disability justice more holistically and effectively in our OER creation process. We specifically discuss an activity called the 4 Paths Prototype as this lends itself well to considering UDL.

As members of the WI+RE team, we propose tangible areas wherein we will actualize this framework for accessibility, particularly in our design approach and workflows. From these observations, we propose a series of recommendations for other practitioners seeking to embed accessibility holistically and longitudinally. We also encourage our readers to be critical of OA and OER and resist the urge to evangelize these important initiatives; in doing so, we advocate for a reassessment of our approaches such that access and accessibility are inextricable and that accessibility is framed beyond the politics of representation.

LITERATURE REVIEW: PROBLEMATIZING ACCESS/IBILITY IN OA

Defining OA, UDL, and design justice

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) defines OA as “a movement that makes online publications immediately available free of charge and free of most copyright and licensing restrictions” (UNESCO, n.d.). We see OER as one facet of this larger movement. UNESCO also defines OER as “learning, teaching, and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation, and redistribution by others” (UNESCO, 2019). Throughout this article, we consider applications of universal design and disability justice to improve accessibility in OER specifically; however, we also recognize OER as a part of the larger umbrella of the OA movement, which will similarly benefit from a universal design and disability justice approach to ensure that disabled users also experience “free, immediate, online availability of research articles combined with the rights to use these articles fully in the digital environment” (SPARC, “Open access,” n.d.). Without accessible access for research articles and OER, disabled learners and researchers are excluded from the benefits of the OA movement, and OA publishing and the movement falls short of its goals by leaving oppressed populations behind.

UDL is part of the universal design movement, which began at the North Carolina State University College of Design with a focus on creating an accessible built environment (The Center for Universal Design, “Home,” n.d.). It includes seven principles developed by the Center for Universal Design: (1) equitable use, (2) flexible use, (3) simple and intuitive use, (4) perceptible information, (5) tolerance for error, (6) low physical effort, and (7) size and space for approach and use (The Center for Universal Design, “Universal design principles,” n.d.). Definitions of universal design often point specifically to accessibility regardless of age, size, and disability; however, access extends beyond the built environment and physical or tangible modalities and can be hampered by other aspects of identity, circumstance, or choice (Centre for Excellence in Universal Design, n.d.; Disabilities, Opportunities, Internetworking, and Technology (DO-IT), n.d.). Recognizing inaccessibility beyond the built environment, universal design is a useful framework for considering inclusion and access for all people in design and creation processes for teaching and learning. According to CAST, “[UDL] is a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn” (CAST, n.d.). The UDL guidelines are a practical and usable implementation of the framework that helps teachers and designers consider multiple means of engagement, representation, and action and expression in support of learners and learning (CAST, 2018). In many ways, the goal of UDL is quite lofty—inclusion and access for all people or to “improve and optimize teaching and learning for all people”—but it is

a worthwhile goal toward which to work. In this pursuit of universal access, Dolmage (2017) cautions against claims “to erase embodied difference” and advocates, instead, for creating conditions to “enable embodied differences to thrive” (p. 123). Through ongoing listening, learning, and work, we can continually improve our approaches and make teaching and learning more accessible and inclusive.

Design justice, on the other hand (as both a growing community of practice and framework), interrogates the relationship between structures of power and domination, social justice, and design and considers how design can be employed to be not only inclusive “but also organized to explicitly challenge, rather than tacitly reproduce, oppressive systems” (Costanza-Chock, 2020, p. 172). Extending and challenging mainstream accessibility and user-centered design approaches that start and end with inclusion and representation, design justice contextualizes design within broader struggles for collective liberation within interconnected structures of power. Design justice also considers how design can reproduce oppressions, and how an explicitly liberatory approach can help create better, more equitable worlds (Costanza-Chock, 2020). When employed pedagogically, design justice can create spaces and opportunities vis-à-vis educational settings to develop a critical lens in interrogating current design paradigms, and collectively model how they might be reimaged. We believe that the OER and OA movement would be strengthened by a design justice approach, which in turn will center communities who are marginalized by structures of power and situate design within broader efforts for collective justice and liberation. We feel this is especially urgent, given the widespread lack of accessibility—let alone accessibility justice—within the current OA movement and the increase in neoliberal technoculture (Costanza-Chock, 2020, p. 204).

Contextualizing (in)accessibility within the OA movement

At its onset, the OA movement did not claim to be synonymous with accessibility as outlined by Peter Suber (2004), philosopher of law and OA and a leading voice in the OA movement:

“Open access is not synonymous with universal access. Even after OA has been achieved, at least four kinds of access barrier might remain in place:

- Filtering and censorship barriers: Many schools, employers, and governments want to limit what you can see.
- Language barriers: Most online literature is in English, or just one language, and machine translation is very weak.
- Handicap access barriers: Most websites are not yet as accessible to handicapped users as they should be.

- Connectivity barriers: The digital divide keeps billions of people, including millions of serious scholars, offline.

Even if we want to remove these four additional barriers (and most of us do), there's no reason to hold off using the term 'open access' until we've succeeded. Removing price and permission barriers is a significant plateau worth recognizing with a special name."

Suber's (2004) observations illustrate how the OA movement and subsequent OA infrastructures were conceived around—and as an alternative to—current structures and paradigms of inaccessibility. In not being built as an explicit reimagining and refusal of structures of oppression that inhibit access, the OA movement has inevitably reproduced and enshrined paradigms of inaccessibility. In spite of this, leading entities within the OA movement often use the terms “access” and “accessibility” interchangeably or acknowledge the relationship between the two principles outright. For instance, in 2016, the updated Association of College and Research Libraries (ACRL) Scholarly Communication Toolkit incorporated a small entry on accessibility, outlining that “accessibility of digital resources including instructional materials and library materials ... touches upon the scholarly communication topics of repositories and copyright” (ACRL, n.d.). The Toolkit goes on to link to the Association of Research Libraries (ARL) Web Accessibility Toolkit, ARL Model License Language for Accessibility, and Captioning and Copyright Law. Other players, like the Directory of Open Access Journals (DOAJ), acknowledged the linkage between access and accessibility in a 2020 blog post titled “Designing for better accessibility in open access scholarly publishing,” which summarized how the DOAJ interface was redesigned to comply with world-recognized accessibility standards (DOAJ, 2020). Initiatives like the Scholarly Publishing and Academic Resources Coalition (SPARC), comparatively, do not explicitly outline a connection between OA and accessibility, but state to work toward creating “a world in which anyone can access, build upon, translate, and improve knowledge” (SPARC, “Who we are,” n.d.). Such a statement raises questions around who “anyone” includes (or does not) in this imagining of universal knowledge access.

OER raise additional questions around accessible OA. With overlapping interests in OA in general, OER present opportunities to provide viable alternatives to rising costs of education and enable anyone to use and, in some cases, re-mix, improve, and redistribute educational materials. However, despite their growing popularity, OER—and the websites that house and aggregate them—widely lack accessibility for disabled learners (Rodríguez et al., 2017; Moreno et al., 2018; Navarrete & Luján-Mora, 2018). As noted by Navarrete & Luján-Mora (2018), “OER websites are still not accessible because they have not been considered

as a whole, i.e., their interface could be accessible to users though not educational resources and the other way around” (p. 756). A systematic review of accessibility within OER and open educational practices, similarly, found that “accessibility is still in its infancy within OER” and that key areas including perceivability, operability, understandability, and robustness of OER are areas in need of greater attention (Zhang et al, 2020, p. 4). These observations confirm that OER and their accompanying websites indeed lack accessibility functionalities. Accessible access, however, extends beyond ensuring accessibility features on websites (which is indeed essential); it also signals the need for a fundamental shift in how we might frame OA and OER initiatives as fundamentally shaped by principles of accessibility.

It is also worth noting that there is a lack of uniformity within OER literature and the OER landscape in measuring and defining accessibility. Whereas some consider “accessibility” as adhering to given technical specifications, such as the Web Content Accessibility Guidelines (WCAG)—to which the majority of OER websites and repositories do not adhere (Zhang et al., 2020)—others like Navarrete and Luján-Mora (2015) point out that further attention on findability and information architecture within OER websites is required to ensure accessibility (p. 115). The lack of consensus around what is and how to measure accessibility within OER further signals the need to consider these resources more holistically, centering users and their contexts and needs and being intentional and explicit about how accessibility will be maintained longitudinally.

Applying a UDL and a disability justice approach

A disability justice approach may begin to address accessibility failures within OA and OER. *Sins Invalid* (n.d.) outlines 10 principles of disability justice: (1) intersectionality, (2) leadership of the most impacted, (3) anti-capitalist politic, (4) cross-movement solidarity, (5) recognizing wholeness, (6) sustainability, (7) commitment to cross-disability solidarity, (8) interdependence, (9) collective access, and (10) collective liberation. Relatedly, Schalk & Kim (2020) argue that “[f]or proponents of disability justice, ableism is inextricable from white supremacy, patriarchy, heterosexism, transphobia, colonialism, and poverty. As a result, disability justice is an activist framework that centers the experiences of queer, trans, and/or racialized disabled people” (p. 48). Both of these reiterate the importance of identifying overlapping and interlocking systems of oppression. For *Sins Invalid* (n.d.), the intersectionality “principle says that we are many things, and they all impact us. We are not only disabled, we are also each coming from a specific experience of race, class, sexuality, age, religious background, geographic location, immigration status, and more. Depending on context, we all have areas where we experience privilege, as well as areas of oppression” (p. 1). Considering this context is key and requires an awareness of the sociopolitical positioning of the facets of one’s own identities.

Intersectionality was coined by Kimberlé Crenshaw in 1989 specifically describing the experiences of Black women within a legal framework (Crenshaw, 1989). Sirma Bilge (2013) argues that “[s]imilar to other ‘traveling theories’ (see Saïd, 1983) that move across disciplines and geographies, intersectionality falls prey to the widespread misrepresentation, tokenization, displacement, and disarticulation. Because the concept of intersectionality emerged as a tool to counter multiple oppressions, there are multiple narratives about its origins, as well as tensions over the legibility of its stakes” (p. 410). She closes by noting that “[i]n this disarticulated and rearticulated intersectionality, race also becomes optional, paving the way to similar oppressions and marginalizations, taking place this time not within feminism, but within feminist intersectionality studies” (Bilge, 2013, p. 420). Brittney Cooper (2015, p. 390) clarifies both that “Crenshaw’s argument was that failure to begin with an intersectional frame would always result in insufficient attention to black women’s experiences of subordination” and that “never did [Kimberle Crenshaw’s] work indicate that intersectionality was an effective tool of accounting for identities at any level beyond the structural.” Further, both Cooper and Bilge note the importance of recognizing the genealogy of intersectionality with origins in Black feminism (Bilge, 2013; Cooper, 2015). For a disability justice framework, this may be a reminder of the primacy of race and disability while recognizing interlocking oppressions based on identity at the structural level. These structures of oppression are key to thinking about the neoliberal university and the medical industrial complex (Mingus, 2015), especially considering legal, bureaucratic, and administrative barriers.

Returning to the principles outlined by *Sins Invalid* (n.d.), they define the “leadership of those most impacted” as “lifting up, listening to, reading, following, and highlighting the perspectives of those who are most impacted by the systems we fight against” (p. 1). This matters both for how we recruit and hire our learner-designers and how we consider assessment and listening to feedback. Remembering the point about context regarding intersectionality, the most impacted learners may be different depending on the resources that we are creating, and this is built into our design process both through empathy mapping and engaging stakeholders.

Regarding anti-capitalist politics, *Sins Invalid* (n.d.) primarily describes this principle in relation to wealth accumulation and productivity; however, we might also think about the ways that OA publishing subverts some aspects of the capitalist politics of publishing, especially in terms of access (i.e., not having to pay for access). In this regard, there is a resistance to the wealth accumulation of large publishers that generate significant profits from many people’s unpaid labor within the academy (although this does not hold true with all forms of OA publishing).

Although there are still several principles that we do not elaborate on within this literature review, *Sins Invalid* (n.d.) provides additional detail if certain principles are not

self-explanatory. These principles and this framework are helpful to consider our own design manifestos and values in order to center disabled learners and achieve collective access and collective liberation within the OA movement. Within a citation practice, we may consider how we can use this work to improve our own, and we can consider ways to incorporate disability justice as an activist framework centering disabled and racialized people within the OA movement and disabled and racialized learners in OER creation.

Returning to CAST's definition of UDL, they specifically mention "improv[ing] and optimiz[ing] teaching and learning for all people." Definitions of universal design more broadly often refer to "all people" as well. Although this makes universal design more universal, it may lose an attachment to community. Disability justice instead centers disabled people. According to the Center for Universal Design at North Carolina State University ("Home," n.d.), "It also became apparent that many of the environmental changes needed to accommodate people with disabilities actually benefited everyone." Essentially, prioritizing access, comfort, and vibrance for disabled people results in better outcomes for everyone; however, universal design frames this impact around the outcome for all people, whereas disability justice centers the most impacted people. This does not mean that the guidelines and principles from universal design and UDL are not still useful but rather that a disability justice framework will help us better center our work to support disabled people and communities.

Employing this framework of disability justice in the creation of OER and accessible OA requires an interrogation of "imperialist white-supremacist capitalist [cishetero]patriarchy" and the associated ableism of this oppression, centering disability justice in the OA movement (hooks, 2000). Frederick & Shifrer (2019) argue that "[sociology] has not offered much in the way of expansive intersectional analyses of race and disability beyond social determinants of health. This omission is quite stunning, given that racism and ableism are powerful interacting forces in contemporary issues of concern to sociologists, including mass incarceration and the school-to-prison pipeline" (p. 201). We argue similarly that racism, ableism, capitalism, and sexism are interacting forces that impact education and OA broadly and OER development specifically.

Efforts to highlight accessibility within OA and OER encouraged us to reflect on how accessible OA might be imagined beyond and including accessible website design and, crucially, how disability justice might be applied as a conceptual framework for building OA resources and platforms. Upon reflection, we considered how our own experiences as designers on WI+RE were indicative of accessibility barriers present in the burgeoning literature on accessible access, namely, in how we create and disseminate OER. Acknowledging Rosen's (2018, p. 40) assertion that "[p]latforms and publishers committing to accessibility may find that their own organizations require a fair amount of education and support," we intend to problematize our own approaches to OER. Using WI+RE as a case study, we propose a set of recommendations

for building accessibility into design practices such that it is inextricable from OA and OER (Rosen, 2018, p. 40).

DESCRIPTION OF PROGRAM: UCLA LIBRARY'S WI+RE PROGRAM

Background and design manifesto

The WI+RE team at UCLA Library is composed of learner-designers, including undergraduate and graduate students and full-time library staff members, who collaborate on developing OER to support reading, writing, research, and student success. Our OER take on a wide variety of modes, including webcomics, interactive worksheets, handouts, short video tutorials, and longer video workshops. WI+RE workshops have been completed over 8,000 times at UCLA, our YouTube videos have over 270,000 views, and our web pages have almost 350,000 views (The WI+RE Team, “About WI+RE,” n.d.). Many of our resources have been highlighted on Merlot.org, with five-star editor reviews, and included in the PRIMO database of peer-reviewed instructional resources from the ACRL Instruction Section (The WI+RE Team, “About WI+RE,” n.d.).

WI+RE’s design manifesto, the WI+RE Way, is our values guide to our collaborative approach to learning and design, which augments our practices and OER. The WI+RE Way includes direct reference to the work of accessibility and UDL: “Pursue universal design at every stage of the process. Accessibility and usability are not checkboxes at the end of a project, but areas of continual importance that can always be improved” (The WI+RE Team, “WI+RE’s manifesto,” n.d.). In explicating this aspect of the design manifesto, digital accessibility and inclusion practices were centered with no explicit centering of disability and disabled learners:

“WI+RE’s design approach and values are also fundamentally focused on universal design, accessibility, and usability. This focus on the importance of accessible learning materials for diverse learners and approaches to learning begins in our training program and is incorporated throughout our design process, from the initial empathy mapping stage and our prototyping and community review process, to multiple checks along the way to make sure our videos are captioned, our images have alt-text, our interactive slideshows are keyboard navigable, and all of our work is updated based on new approaches to providing accessible pathways to learning for all” (Harper et al., 2020, p. 12).

Although we have broadened the modes of delivery for our OER, expanding the means of engagement and representation for our learners and users, our accessibility practices have not been revisited to include these new modalities, and we continue to prioritize “digital inclusion” as

an end-goal. When framed in this way, our accessibility is distilled into a series of individual actions that seek to correct discrete errors, rather than a fundamental structure on which to build our initiative. As a responsive team, we have begun to think about and enact change to ensure accessible approaches that match different formats and modes, and we have worked together to consider how to support each other’s creativity while keeping accessibility at the forefront.

For example, in the summer of 2020, the WI+RE team completed an accessibility review that involved running WAVE on our pages to test for web accessibility and checking YouTube, H5P, and PDF content for basic accessibility standards (<https://wave.webaim.org/>; <https://h5p.org/>). Based on this review, we added metadata to resources on our website, so that they now have descriptive accessibility information, such as “closed captioning available” and the date of WAVE testing. An example of the metadata added to one of our resources is included in Figure 1. Although this was indeed a significant undertaking that allowed us to identify gaps

About this workshop

Awards and Recognition



Multimedia Educational Resource
for Learning and Online Teaching

[This workshop has received a 5-star editor review on MERLOT, a curated collection of online learning and support materials.](#)

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Learning Outcomes

- Develop specific research questions from a topic
- Turn questions into keywords
- Construct a preliminary search for your specific research question

Accessibility Information

- Closed Captioning Available
- [WAVE tested - 0 errors - Oct 02, 2020](#)

Figure 1. A Screenshot of a WI+RE Resource Showing the Accessibility Metadata

and make improvements to both new and existing materials, this work was focused on digital accessibility and inclusion that meets standards and checks boxes, rather than interrogating our approaches (or lack thereof) to accessibility and equity pedagogy. This was an important first step for us, but now we are focused on moving our work beyond these standards of web accessibility and digital inclusion, which should be a baseline. We are focused on building resources with a disability justice and UDL lens, which is not as easily quantifiable.

In what follows, we examine our commitment to accessibility and universal design in the development of our OER and explore ways we are structurally and specifically incorporating accessibility and UDL in the design process. We recognize that achieving accessibility and disability justice is ongoing and iterative, requiring continuing awareness and critique of our own practices in order to improve our work and respond to and support our community of learners and teachers. There is always more work, and we can always do better. We hope that this self-critique helps others consider ways to improve their own practices in OER or OA more broadly.

WI+RE's design process

Each of WI+RE's learner-designers completes our "Foundations" training in learner-centered design, which introduces them to the concepts of learner-centered and values-driven design; meaningful, memorable, and transformative learning; and the pedagogical approaches underpinning the WI+RE design process: active learning, constructivism, critical pedagogy, and universal design (Worsham & Roux, 2019). The training also introduces learner-designers to the WI+RE Way, WI+RE's design manifesto, and the design and prototyping process through the Build Something Toolkit (Brecher Cook & Worsham, 2018). These materials are all made available with a Creative Commons Attribution 4.0 (CC BY 4.0) license, meaning that they can be reused and adapted as long as attribution is provided (<https://creativecommons.org/licenses/by/4.0/>). In this sense, anyone can create their own WI+RE team, use our materials and approach to inform their OER development, or improve upon our process to further center accessibility and UDL, which is what we consider here.

It is through this process that learner-designers collaboratively consider the needs and goals of learners, discuss learning outcomes, and identify a path forward:

“Once the topic [for a project] is selected, the WI+RE team engages in several pedagogical and design activities as part of the pre-prototyping phase. These activities include working through an empathy map, which centers the design around learners and their goals; a learning journey map, which identifies the primary learning outcome; and a four-paths prototype worksheet, which is designed to explore multiple

learner pathways and media formats for learning (Brecher Cook & Worsham, 2018)” (Pierre et al., 2020, p. 137).

It is also within this process that we believe that accessibility and UDL can be more intentionally, thoughtfully, and specifically deployed to expand access for our OER. This training can also provide a space to encourage designers to question what assumptions we make about our audiences and communities when imagining their needs:

“This process allows WI+RE students to collectively identify the audience and their anticipated needs, situate the design process in real-world contexts, and select the most appropriate medium for creating a prototype (i.e., video, worksheet, in person, or online workshop) for each particular tutorial” (Pierre et al., 2020, p. 137).

Further, WI+RE designers are not necessarily given access to accessibility software and design tools, nor is training in these areas reflected in the onboarding process for WI+RE team members. This gap in training was especially evident during the COVID-19 pandemic in which all UCLA students, staff, and faculty were given temporary full access to Adobe Creative Cloud software, which included Acrobat and its accompanying accessibility features for PDF design. Not only is this fact not reflected in the foundation’s training, but many of our WI+RE team members were unaware that these tools were available to them altogether.

As we have continued to think about how we build our resources and train our learner-designers, this has been a simple improvement. Our training process for specific technology is generally conducted on a point-of-need basis. When a learner-designer is working on a project that requires a specific program, they ask for assistance on Slack, and another team member with experience can walk them through the steps. In this way, the learning process of our learner-designers continues to follow a community of practice model in which we are all learners learning together. As we become aware of new tools available to us, we consider the accessibility features and can train each other to use these tools effectively. For PDF design, we now make sure students are aware that they have free access to the Adobe Creative Suite through Adobe Creative Cloud, and when students make handouts, we can train them on the process of creating an accessible PDF. Many of our learner-designers have also attended training from our campus’s Disabilities & Computing Program, which often offers workshops on creating accessible PDFs and slideshows and other aspects of digital inclusion. This way, we are all able to perform these necessary tasks and help each other when there are hiccups, and we can start to notice aspects of our designs that are less accessible to help us design better from the start.

In the following section, we articulate a reconsideration and expansion of our “4 Paths” design activity to move away from “select[ing] the most appropriate medium for creating

a prototype,” and to move toward creating resources in a variety of mediums that meet the same learning outcomes, goals, and needs for learners in order to increase access by providing multiple means of engagement, representation, and action and expression. In this way, we think pluralistically rather than singularly and approach the activity as a way of creating choice for our learners.

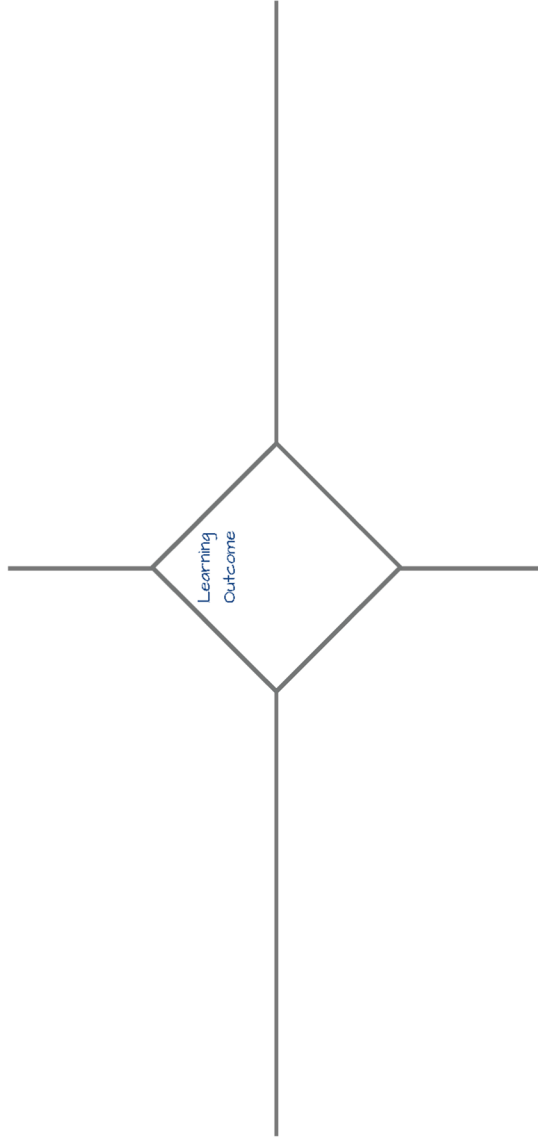
Four paths to accessibility and universal design

In evaluating the WI+RE Way, we looked for opportunities to iteratively improve aspects of the design process and to continue to systematically build in accessibility. In this deliberation, we identified the “4 Paths Prototype worksheet” as an avenue that is ripe for revitalization to holistically build in universal design. Figure 2 shows the blank worksheet with some directions. This activity encourages designers to rapidly sketch out 4 possible OER in different formats to achieve given learning outcomes. The designer is asked to “[c]onsider print, digital, video, audio, performance art, animation, in-person activities, anything” (Brecher Cook & Worsham, 2018). While this activity encourages designers to envision OER in different formats, “4 Paths” ultimately encourages designers to pick a single modality (though in practice, we occasionally create multiple resources with different modalities to achieve the same learning outcome). In doing so, the learning outcome is actualized as a single OER, with accessibility tacked on after it is created, rather than creating stand-alone or accompanying born-accessible materials. Further, principles of universal design are not a central aspect of identifying the paths, as designers are at no point asked to think about the accessibility of any of their envisioned mediums.

Moving forward, we are systematically improving the process of resource design and development by building UDL principles into the design process and by encouraging learner-designers to explore multiple paths—this means not only making this explicit in the process but also ensuring that time and resources are available to do this work. Inspired by “Access is Love” (Ho, Mingus, & Wong, 2023), we want to use the revised 4 Paths activity to reject treating accessibility as an after-thought, thereby incorporating access into our “everyday practice.” So far, we have revised the 4 Paths activity to incorporate universal design and disability justice, although we plan to continue improving the various activities that make up our design process. The framing of the 4 Paths activity is very flexible and freeing. It encourages designers to “leverage divergent thinking to explore multiple pathways” and “explore all options freely and without worry.” It also specifically asks designers to “select an initial approach for further prototyping” implying the opportunity for other approaches or other iterations—And it centers the learning outcome (both on the page and in the activity). However, the activity leaves up to each individual designer to “label your paths based on criteria you generate (e.g., most

4 Paths Prototype

leverage divergent thinking to explore multiple pathways.
 explore your learning outcome across different forms of media.
 select an initial approach for further prototyping.



How to make a 4 paths prototype:

1. Write the learning outcome you are working on in the center diamond.
2. Rapidly sketch four different approaches to helping students with this learning outcome. Give yourself about a minute to explore, sketch, and jot down notes for each option.
3. After 4 minutes, label your paths based on criteria you generate (e.g., most feasible, most impactful for learners, most fun to make, etc).

Tips:

- Explore all options freely and without worry.
- Consider print, digital, video, audio, performance art, animation, in-person activities, anything!

CC BY 4.0, Brecher-Cook, D., & Worsham, D. (2018, April). *Let's Build Something!*. A Rapid-Prototyping Instructional Design Workshop. Pre-conference workshop at the 2018 CARL Conference, Redwood City, CA adapted from: Gray, D., Brown, S., & Macanuffs, J. (2010). *Gamestorming: a playbook for innovators, rulebreakers, and changemakers*.

Figure 2. A Blank 4 Paths Worksheet

feasible, most impactful for learners, most fun to make, etc.)” (Brecher Cook & Worsham, 2018, p. 10).

To improve this activity through a framework of disability justice and center accessibility and UDL in the development process, we are framing the activity so that learner-designers consider accessibility and UDL from the outset. Specifically, as we think about the different paths, learner-designers are encouraged to think about different means of engagement, representation, and action and expression to identify approaches for prototyping that take these principles into account. Additionally, when labeling the paths based on criteria, learner-designers are encouraged to think about these UDL principles as well as other aspects of accessibility related to the prototype approaches, and we consider ways that we might combine paths or mix and match mediums to achieve the desired outcomes. By building accessibility into the process from the outset in this way, we create more accessible OER, and by creating resources that achieve the same learning outcomes in different formats, we provide learners with a greater range of choice in terms of how they engage the content. The change in the activity itself is minimal: we simply adjusted how we frame the activity and think about our approach.

By designing multimodal OER or a variety of OER in different modes but achieving the same learning outcomes, we allow learners to approach their learning in the way that is most accessible and beneficial for them. Deaf learners can skip a video and read a transcript, handout, or webcomic; blind learners can skip the transcript and listen to a video or audio recording. Learners will, ideally, be able to engage with the same material and learn the same content but access that material in a format that is both accessible to them and most constructive for their individual learning. This is an actualization of WI+RE’s values both in centering learners and in designing with UDL in mind. It is also aligned with Sins Invalid’s principle of collective access: “Access needs aren’t shameful—we all function differently depending on context and environment. Access needs can be articulated and met privately, through a collective, or in community, depending upon an individual’s needs, desires, and the capacity of the group” (Sins Invalid, n.d., p. 2). This approach attempts to anticipate these access needs, addressing them through the collective of WI+RE’s learner-designers or in community with our learners while leaving the opportunity for individuals to make personal requests for access needs with regard to specific resources. It is challenging, if not impossible, to create the perfect resource for every learner, but WI+RE’s approach includes “build[ing] imperfect solutions quickly and on purpose,” which allows us to create new publishable prototypes that are useful for specific learners, and, even if they might not be perfect, we can continue to improve them with feedback from our learner community and stakeholders (The WI+RE Team, “WI+RE’s manifesto,” n.d.).

As we implement these changes, we have opportunities to incorporate accessibility as a factor in our ongoing assessment of WI+RE resources in order to better understand the accessibility

needs of our user community. In the past, we used WAVE to test the web accessibility of our materials and pages as well as built-in features, such as accessibility checkers in Microsoft Word or Adobe Acrobat; however, these standards-based approaches are only a starting point as we consider aspects of our materials that are not quantifiable. In addition to formal feedback, we have also received informal feedback about different accessibility features for our tutorials, such as providing text transcripts. As we consider changes to our onboarding and training, we are a small enough group that we can gather continual feedback and make improvements to support designers as they build more accessibly. Since we are a learner-led learning community, we often learn from each other's experiences, challenges, and breakthroughs. Through this process, we iteratively improve our own approaches and our resources and continue to move accessibility forward. Additionally, because this work is ongoing, we find it both useful and necessary to report on the process while we are in the process—to share a vision for the future and for this work. Our approach itself has value, and value does not always need to be quantified. Furthermore, the work is iterative and extensive and continues not only with our existing material but with each new resource we create. We have no target completion date because we hope that this work will continue as part of our established design process and that it will be a new actualization of our values and design manifesto.

Living our values: Moving accessibility forward

While the 4 Paths activity seems uniquely situated to consider approaches to developing an OER that addresses the UDL principles of providing multiple means of engagement, representation, and action and expression, there are other practical ways to move accessibility forward in our work and to better enact the values from our manifesto as they relate to accessibility, usability, and universal design.

In addition to further embedding universal design in the WI+RE design process, we must consider how disability justice, universal design, accessibility, usability, and digital inclusion are enacted in the way that we frame our work. We acknowledge the limitations of “diversity, equity, and inclusion” language in mainstream teaching and learning discourses within higher education, which recommend “individualized solutions to oppressive realities” (Peters, 2021, p. 13). In light of this, we continue to work toward building a community of practice, within the WI+RE team around critical feminist and disability pedagogies, that highlights the intersections of power, authority, identity, and how these processes shape teaching and learning. In promoting a collective approach and responsibility, we can seek to hold one another accountable to accessible design and thinking. This will require training our learner-designers to ensure that every new member of our team can contribute to moving accessibility forward and to ensure that all of our OER meet the baseline expectations of our team while collectively imagining and envisioning more accessible and universal materials, design processes, and

teaching and learning in general. There is no one-and-done approach to this kind of training, although we have incorporated accessibility and UDL training for instruction and reference work.

One aspect of rethinking our training and structure as a team involves time and resources: we need time to learn and experiment with new approaches; to explore new modes and mediums for delivering instructional content; and to develop resources intentionally, purposefully, and accessibly; and we need the resources to support this work, such as ongoing Creative Cloud access to make PDFs accessible and tools to check our digital accessibility. Another aspect is continuing to develop a community of lifelong learners committed to equity and justice who push us to explore new ways to design and build to support all learners.

NEXT STEPS: STRATEGIES AND RECOMMENDATIONS FOR CENTERING ACCESSIBILITY IN OER DEVELOPMENT

In the previous section, we identified areas that WI+RE has and can seek to rethink its approach to OER such that accessibility is conceived and applied foundationally to our work through a framework of disability justice centered in feminist and antiracist work. Reflecting on these observations and employing feminist pedagogies that underscore the relationship between identity, power, and authority within teaching and learning contexts ([Peters, 2021](#)), we outline four strategies as reminders to ourselves and recommendations to other practitioners, educators, and designers:

- (1) employ accessibility as a framework for design and not an afterthought applied to already created materials;
- (2) incorporate accessibility into training for staff, educators, and designers so that everyone contributes to accessibility and can incorporate accessibility throughout the entire process;
- (3) approach accessibility as an iterative process that requires ongoing learning and improvement; and
- (4) resist evangelizing OA and OER, acknowledging, instead, the structural critiques of OA and limitations of reforms.

Accessibility as a framework for design

Through our case study, we explored broadly how accessibility and universal design inform WI+RE's values, manifesto, and processes, and we examined specifically one avenue for continued improvement to further embed accessibility as a framework for our design process.

We recommend that other OER developers outline their values and build in universal design and disability justice as two of those. In doing so, designers can embed accessibility as a foundational framework upon which OER are built rather than treating accessibility as a series of remedies, or accessibility checkboxes, to existing resources. We also recommend allocating resources, staff, and time toward creating multiple resources to address single learning outcomes. Finally, regarding design, we endorse problematizing imagining “audiences” and “learning communities” as monolithic in their learning needs, challenges, and requirements.

Incorporating accessibility into training

Onboarding and ongoing training for all team members on accessible design, tools, and principles, as well as critical and feminist pedagogies that interrogate power in teaching, will further enshrine accessibility into OER initiatives. Building off of the previous recommendation, this will necessitate that sufficient resources be allocated to provide ample time for the necessary training and continued learning and to purchase appropriate software and tools that can support accessible design, which should also be incorporated into training and downloaded upon onboarding. As new resources, discourses, and practices emerge, continued funding and training are required.

Accessibility as an iterative process for continued improvement

Building on the previous recommendations, we recommend conceiving of accessibility as an iterative process. In thinking about accessibility holistically and longitudinally, OER initiatives should keep teammates accountable to and informed about accessibility standards and should assert accessibility as foundational to a team’s process, rather than existing only as a series of discrete steps or a single accessibility training session. This does not mean shirking the responsibility to create accessibly from the outset, but rather adds the responsibility to continually improve our practices, approaches, and resources in order to ensure access for all. In line with this iterative approach, we regard accessibility as an ongoing dialogue, both within our design team and with broader movements and communities dedicated to structural transformation.

Resist evangelizing OA

While we are strong proponents and advocates of OA, we caution against evangelizing the OA movement as “inherently good” and sacred and therefore beyond critique, as a localized application of Ettarh’s work on vocational awe in libraries (Ettarh, 2018). Without critique, OA cannot be iterated or reimagined and, crucially, may be applied as a quick fix in lieu of structural transformation. As noted by Kumbier & Starkey (2016, p. 470), access cannot be treated merely as “economic, political, and technical problems to be solved,” but rather, requires an assessment and reassessment of what structural factors inhibit access. We are inspired to think

beyond the level of practice and “the level of access to materials or information” and instead encourage other practitioners to consider how we might transform structures that lead to inaccessibility (Kumbier & Starkey, 2016, p. 470). Making resources open is just the beginning, not the end, and there are miles to go.

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