Shaping the Futures of Learning in the Digital Age

Inclusive Campus Environments:
An Untapped Resource for Fostering Learner Success

Susan Whitmer
Susan Whitmer Studios

Abstract: The purpose of this paper is to consider new possibilities for higher education, where the principles of Universal Design for Learning (UDL) provide a framework for creating digital and physical environments that honor every learner's unique lived experiences and support the expectations of learners for their individual life goals. Each learner brings their own unique lived experience; multi-level intersectionality; and cognitive and social learning variabilities to their educational journey. Many of these present obstacles to their realizing successful learning outcomes. Understanding the lived experiences in the learner's journey and creating environments that remove barriers to learning requires a deep understanding of inclusion, which is central to the framework of UDL. How can we create a campus that promotes a sense of belonging, community, and well-being — a campus that has the potential to increase the number of learners who persist to completion? It begins with honoring the uniqueness of every learner.

Introduction

The force factors of the COVID-19 pandemic, the rise of social injustice, and political polarization have deepened the erosion of trust and confidence in the value of higher education and in our society. In May of 2020, the American Association of Colleges & Universities (AAC&U) convened a panel of higher education leaders to discuss the opportunities that exist by shifting our mindset from a traditional model, ruled by categories and silos, to the possibilities that exist in a culture that values equity, diversity, inclusion, and human dignity. In the words of panelist Daniel Pascoe Aguilar, "Part of our work in preparing a new generation of leaders is to work with our students to help them understand the value of diversity, equity, and inclusion. It is not only an important part of their realities and experiences, but as an asset to our decision-making and as an asset to our effective performance as individuals, as organizations, as nations, and as a world" (AAC&U, 2020).

The Learner's Journey

The principles of Universal Design for Learning (UDL) provide a framework for creating digital and physical environments that honor every learner's unique lived experiences and supports the expectations of learners for their individual life goals. Each learner brings their own unique lived experience; multi-level intersectionality[1] and cognitive and social learning variabilities to his/her/their educational journey. Many of these present obstacles to their realizing successful learning outcomes. Learners on the journey are racially and ethnically diverse, and identify as: LBGTQ+; first-generation learners; veterans; older adults; international learners; learners with physical disabilities, neuro-diversities[2] and mental health challenges; and learners with housing and food insecurities.

Understanding the lived experiences in the learner's journey and creating environments that remove barriers to learning requires a deep understanding of inclusion. Inclusion is a broad umbrella of social justice requirements such as antiracism, equity, accessibility, and diversity. There is no inclusive campus ecosystem without addressing these social justice requirements.

Recent data on learners' diverse variabilities highlights potential challenges for learners:

- As of the academic year 2015-2016, 56% of undergraduate students, defined as first-generation students, had parents who did not have a bachelor's degree (RTI International, 2019).
- From 2000 to 2018, college enrollment rates among 18- to 24-year-olds increased for those who were Black (from 31% to 37%) and Hispanic (from 22% to 36%). The college enrollment rate was not measurably different between 2000 and 2018 for those who were American Indian/Alaska Native, but rates were lower in 2018 than in 2010 for those who were American Indian/Alaska Native (24% vs. 41%; NCES, 2020).

---

[1] Kimberlé Crenshaw, who coined the term intersectionality, describes the current context of the term as "a lens, a prism, for seeing the way in which various forms of inequality often operate together and exacerbate each other" (Steinmetz, 2020).

[2] Neurodiversity refers to neurological differences in how the brain organizes and responds to stimuli. Dyslexia, Attention Deficit Hyperactivity Disorder, Autistic Spectrum Disorders, Tourette Syndrome, and others are included in the concept of neurodiversity. https://neurodiversitysymposium.wordpress.com/what-is-neurodiversity/

- A [2016 survey](#) of more than 33,000 students by the American College Health Association found that 10% identified as gay, lesbian, bisexual, trans, asexual, pansexual, or questioning (Best Colleges, 2020).
- Sixty-eight percent of Post-9/11 veterans do not have a bachelor's degree or higher. Of the 32% who do, 20% of the degrees were attained at for-profit institutions (Cate et al., 2017).
- The number of international students in the US reached 1.09 million in 2018 (Education USA, 2018).
- Ninety-four percent of learners with learning disabilities receive accommodations in high school, compared with 17% in college[3] (Cortiella & Horowitz, 2014).
- Researchers estimate that 30-50% of students attending post-secondary education experience food insecurities at some point during their school year (Ciciora, 2019).
- Research on housing insecurities indicates "at least one-third of 2-year students are housing insecure, including up to 14% who are homeless, whereas between 11% and 19% of 4-year students are housing insecure" (Broton & Goldrick-Rab, 2018).

A learner-centric framework for creating inclusive physical and digital environments requires an awareness of what learners need from a campus ecosystem that recognizes the realities of neurodiversity, social justice, multi-level intersectionality, and cognitive, social, and physical well-being. As shown in Figure 1, Maslow's (1943) Hierarchy of Needs provides a mental map for developing inclusive solutions that support every learner:

Figure 1
Maslow's Hierarchy of Needs

---
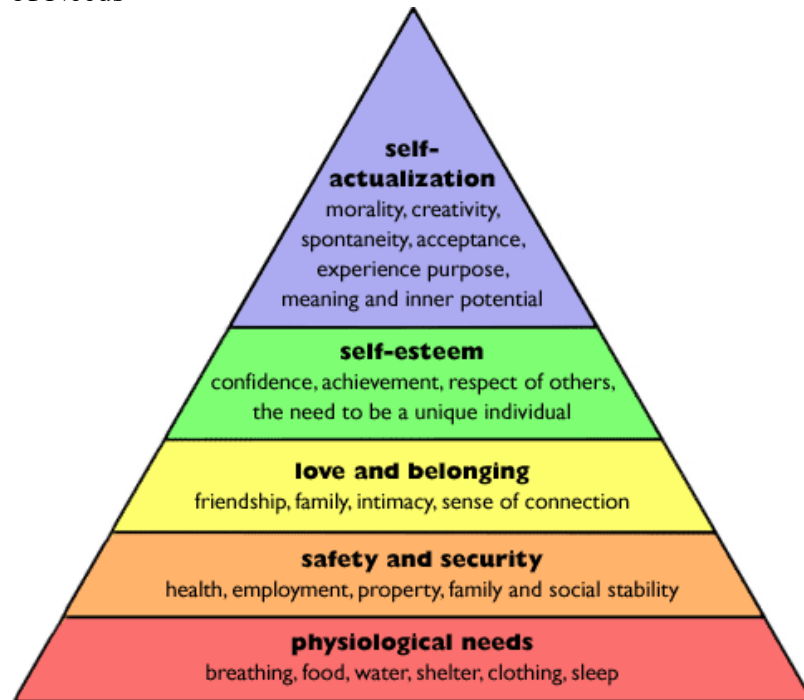
[3] To receive accommodations in higher education, the student must contact the Disability Resource Office and complete a process to be accepted for accommodation. This process is referred to as self-advocate.

The positive and negative implications for Maslow's Hierarchy of Needs are incorporated into the principles and strategies of UDL. Unmet needs lead to anxiety and depression, which are among the biggest factors that negatively affect academic performance.

Food and housing insecurities are those hidden struggles that harm the physical, emotional, and mental well-being of learners, and negatively impact their academic performance and their desire to persist. Research indicates there is a statistically significant relationship between food and housing insecurities, a learner's academic performance, and persistence to completion (Goldrick-Rab et al., 2018; Martinez et al., 2016).

Learners perform better when they feel safe in their environment. The rise in racist violence and cyber-bullying makes safety top of mind for learners, whether the learning environment is physical or digital. An inclusive environment is a place where all learners, regardless of their lived experiences and learning variabilities, feel safe to engage with peers academically and socially, without fear for personal safety. An inclusive environment is also one where learners feel emotionally and mentally safe to fail, fail fast, and recover, so they develop the resilience necessary to thrive in their chosen career. This type of support leads to the development of a sense of belonging.

Sense of belonging, connectedness, and community take on heightened importance for learners who are traditionally underserved.[4] A sense of belonging is defined by author Terrell Strayhorn (2019): "students' perceived social support on campus, a feeling or sensation of connectedness, and the experience of mattering or feeling cared about, accepted, respected, valued by, and essential to the group (e.g., campus community) or others on campus (e.g., faculty, peers)". Feeling accepted for their uniqueness and being connected to the campus community expands opportunities for the positive outcomes of engagement, improved performance, well-being, and persistence to completion.

The current organizational mindset of higher education puts a roadblock on the journey to becoming a unique individual, which creates policies, curricula, campus planning, and metrics of success based on the false notion of the "average" learner. The average learner does not exist: no two brains are alike, and all learners bring their own lived social and cultural experiences to the learning community (Rose, 2016). If, as Maslow argues, developing healthy self-esteem and empowerment is a result of honoring the uniqueness of every individual, then the organization bears responsibility for creating physical and digital environments that are welcoming and safe for all learners. As with every big challenge facing administrators, faculty, instructional designers, and technology developers, there is no one-size-fits-all solution for teaching and learning. There is a framework, however, that provides sustainable strategies for educators across the learning spectrum that empowers all learners to activate a passion for lifelong learning.

Universal Design for Learning Framework

Universal Design for Learning (UDL) is a framework based on research in the learning sciences (e.g., education, educational psychology) and the brain sciences (e.g., cognitive science and neuroscience). UDL calls for an emphasis on honoring the uniqueness of every learner and their lived experience. Although UDL does not explicitly call out all the social, psychological, and emotional barriers to learning, the strategies and guidelines within the UDL framework

---

[4] Underserved students can include learners with disabilities, veterans with Post-Traumatic Stress Disorder (PTSD), students with Autism Spectrum Disorder (ASD), international students, first-generation students, students in the LGBTQ+ community, students in racially and ethnically minorities, and others.

provide pathways for addressing the barriers in learning and removing the obstacles in the path of becoming an expert learner.

The UDL framework clearly establishes three principles that correlate to the organized structure of the brain (Kurzweil Education, 2019):

1. Multiple means of engagement-tap into learners' interests, offer appropriate challenges, and increase motivation.
2. Multiple means of representation-give learners various ways of acquiring information and knowledge.
3. Multiple means of expression-provide learners alternatives for demonstrating what they know.

In her recent book *Antiracism and Universal Design for Learning*, Andratesha Fritzgerald (2020, p. 24) provides a summary of the 2018 UDL guidelines that help educators create instructional pathways that are flexible, customizable, and culturally sustainable. Such pathways:

- activate or supply background knowledge,
- highlight patterns, critical features, big ideas, and relationships,
- foster collaboration and community,
- vary the methods for response and navigation,
- promote expectations and beliefs that optimize motivation,
- facilitate personal coping skills and strategies,
- heighten salience goals and objectives,
- promote understanding across languages,
- optimize relevance, value, and authenticity, and
- minimize threats and distractions.

Curricula, assessments, and classroom management practices must be developed with these principles and guidelines in mind for learners to establish a sense of belonging, boost their self-esteem, and cultivate their self-actualization. Adoption of pedagogical practices based on research on how learning happens have elevated the need to introduce research-based practices that recognize cognitive and social learning variabilities.

Consider a neuro-diverse learner, a veteran with PTSD, an international learner, or a learner whose lived experience is at the intersection of all three identities. Each of these learners may have elevated levels of stress in active learning environments due to the expectation of higher levels of engagement. Opportunities to mitigate their stress include: 1) engage with all learners, 2) open opportunities to guide learners who need help with the team or group dynamics, 3) find ways to introduce content into coursework or physical/digital environments that connect diverse learners' lived experiences and cultures to the content, 4) organize the environment to promote predictable routines and transitions, and 5) give learners a choice for how and where they like to work in the learning environment.

The UDL principles and strategies can also serve as guideposts for designing physical and digital environments in the education ecosystem. Legibility is a crucial element of inclusive physical and digital environments. On an inclusive campus, no matter where the daily journey takes the learner, walkways and paths should be physically accessible. Paths should include established edges that create order, and physical cues should provide wayfinding, fostering a

connection from one building to the next. Examples of physical cues are sculptures, cultural artifacts, and digital dashboards. The spaces within the buildings themselves should be straightforward and easy to navigate. Inclusive environments have surroundings, furniture, and tools that help learners understand how the space will support their activities and behaviors. What learners see in the environment around them, such as physical artifacts and messaging, tells them whether they belong or not.

Inclusive Environments Activated

Remote learning in 2020 has amplified the barriers of the digital divide that has existed for many years. The difference is that pre-COVID-19, these barriers had not been acknowledged in the US to the extent they have in other parts of the world. And even when learners have access to a computer and hours of Zoom classes, inequities are amplified in the disparity of what is in the physical background of every learner's space. Many learners hesitate to join a class with their camera on because they are embarrassed by the environment around them, adding to the stress and anxiety that already exists. At a very basic level, a shift in mindset that focuses more on the learner and less on traditional practices would permit the learner to join with their camera off. And in the spirit of new possibilities, curated virtual backgrounds that replicate an inclusive environment where no one is judged, and everyone feels welcomed, should exist.

A more robust platform for inclusive learning is developed at Arizona State University (ASU). ASU Sync is described as a platform that "provides students with technology-enhanced, fully interactive remote learning using live lectures via Zoom. This approach can be combined with in-person instruction to accommodate students in various circumstances and enable social distancing measures in classrooms, or as stand-alone technology. It offers the benefits of face-to-face instruction in an interactive group learning environment" (Arizona State University, 2020).

Figure 2
Features of ASU Sync

Features of ASU Sync

In ASU Sync classes, students experience many features of the on-campus classroom experience from wherever they are learning.

Live and Interactive

Students attend interactive classes in-person at the same time as classmates who are attending remotely, and engage in active learning together.

Flexible

Students learn in classes that are accessible from afar and accommodate individual learning circumstances.

Experiential

Students participate in on-campus work and experiential learning opportunities accessible from anywhere.

Personalized

Students receive personalized learning support based on their individual progress and needs.

Consider the learner who might be struggling with food or housing insecurities. Providing a food pantry and a "nap space" where learners with housing insecurities can rest if needed can make all the difference in performance and persistence for these learners. One example of this type of space is located in the Wellness Suite of the Lola & Rob Salazar Student Wellness Center at the University of Colorado (UC) Denver (2019). The Wellness Suite is socialized across campus as well as the UC Denver website so that learners are aware that there is a place where they can go for food and respite. In addition to providing physical spaces on campus that support learners with these insecurities, UC Denver is developing a framework for empowering learners to have a voice in policies that impact their lived experiences.[5] The Lola & Rob Salazar Student Wellness Center is an exemplary model for learner support spaces that are clearly defined, foster a sense of belonging, build community, and add to the legibility of the campus.

Permeability, defined as the ability to be passed through, is another crucial element of inclusive physical and digital environments. Environments that are permeable support the connection between learners' academic content, activities, and experiences throughout their learning journey, anytime, anywhere. A permeable campus reduces barriers to learner interaction both physically and digitally, reduces cognitive stress, and fosters a sense of belonging and community. For the digital experience, the ASU Sync platform provides a model for how a learner's experience can exist in a digital environment and permeate to the physical. ASU has also developed a digital campus using collaboration hub, Slack. It is described as a way for learners to connect with each other and their faculty through real-time messaging, content sharing, and learning[6].

Interdisciplinary programs can provide connectivity of content, but often the learners' experience building-to-building across the campus is not permeable. One example of permeability on the physical campus is in common spaces in corridors just outside of or adjacent to classrooms, where students can continue discussions after a class or talk to faculty before or after class. When these spaces are designed for every academic building on campus, the campus becomes more permeable.

Other examples of permeable spaces are the multi-sensory spaces near the classroom. Multi-sensory spaces are quiet spaces that provide respite for learners who might need a few minutes to decompress or to soothe their anxieties brought on by the chaotic motions of active learning. Multi-sensory spaces are designed according to specific lighting and acoustic properties that help to relieve anxiety and stress. Locating multi-sensory spaces in every building on campus serves the social and quiet activities that are part of every learner's experience. A variation of multi-sensory spaces could serve international learners as a safe and comfortable environment for private connections to their families. Anecdotal evidence has shown that many international learners sit in dingy, dark stairwells to Skype with their families because it is the only quiet, available space where they feel they can share family time. Multi-sensory or safe quiet spaces should be considered in the library, student center, wellness centers, and residence halls.

An environment that is ideal for modeling inclusive practices is makerspaces. Well designed and curated makerspaces offer opportunities to make the principles of UDL actionable and on display. Makerspaces offer learners multiple means of engagement—they tap into

---

[5] https://www.youtube.com/watch?time_continue=124&v=LXS91jaNkeQ
[6] https://uto.asu.edu/slack

learners' interests, offer appropriate challenges, increase motivation, offer multiple means of representation, provide different ways of acquiring information and knowledge, offer multiple modes of expression, and provide learners alternatives for demonstrating what they know.

Makerspaces are chaotic due to the nature of the engagements within them. Makerspaces should be: welcoming; legible, meaning that there is a balance of chaos and order; safe; and supportive of learners who need consistency to learn and perform at their best. It is the activity of making that is the most essential ingredient of makerspaces, so it is the activities that become the permeable agent from the Engineering building to the Fine Arts building to the Library. A learner should be able to connect their journey through the learning activities of makerspaces across campus (and across the curriculum), no matter the physical form, scale, or complexity of the spaces.

While makerspaces have great potential to build and support an inclusive campus culture, research suggests that work must be done to better promote a sense of belonging in makerspaces (Melo, 2020; Wood, 2018). The origins of makerspaces, centered around a narrow gender and ethnic community of makers, has manifested into the culture and design of the current makerspace framework, which has been slow to fully embrace inclusivity. Melo (2020) writes, "Makerspaces are both physically and ideologically at odds with serving racially, economically, and gender diverse communities." As innovation environments like makerspaces continue to evolve, there is a need for greater inclusivity in their design.

Creating an inclusive campus environment that is legible, permeable, and enacts inclusive classroom management practices can only succeed by using a blended approach that includes the digital experience: digital dashboards that serve as landmarks in every building, campus maps with rich wayfinding graphics, spaces and tools that support digital maker activities, layered technologies in learning spaces, and personal technologies that enhance the learning experiences of neuro-diverse learners—these are just a few examples of integrating the physical and digital campus experiences.

Measuring what matters is essential. Assessing the performance of an inclusive campus environment requires evaluation of space and building performance based on how well the physical, social, and cognitive needs of all learners are being met. Additionally, assessing performance requires an evaluation of curricula to make sure coursework is designed to engage all learners through multiple means of engagement, representation, and expression. Each of the following organizations is currently working on revising their built environment assessment tool to include metrics for inclusive design:

- Universal Design for Learning (UDL)
  https://udl-irn.org/
- Learning Space Rating System (LSRS) https://www.educause.edu/eli/initiatives/learning-space-rating-system
- Well Building Standard
  https://resources.wellcertified.com/articles/why-universal-design-is-critical-to-creating-truly-healthy-spaces/

Transforming the organizational culture of academic planning and campus planning can be complicated and is not always an integrated process. The best place to start an integrated planning process for an inclusive campus environment is conversations with stakeholders. Such conversations can occur in workshops with learners who have self-advocated for a disability, or

learners in peer support groups. In such conversations we can find out from learners about a valuable learning moment they experienced, what makes them motivated to learn, and when in their learning experiences they forget about their disability or challenges.

We can also ask faculty about the innovative ways they respond to learner variabilities and what practices have been successful, and what regulations or obstacles have kept campus leaders from promoting a culture of inclusivity and care. We can empower cross-disciplinary teams to ideate, create and implement academic and campus plans that foster student engagement, a sense of belonging, and community leading to improved performance and persistence to completion (Bracken & Novak, 2019).

Assessment tools are a vital part of the transformation process. Traditional thinking is that these tools are only used for post-occupancy evaluation, but they can be most effective when they are incorporated into the strategic planning process, where they can help build a roadmap for successful planning.

Creating an inclusive campus environment can also have a positive impact on the institution's financial planning. Research indicates that increasing the number of students who persist to completion reduces the amount of loss in unrealized tuition, fees, and alumni contributions (Raisman, 2013). While an inclusive campus environment does not eliminate the need for all accommodations, coaching, or counseling, it certainly would reduce the scale of such accommodations.

Conclusion

Learning environments have been designed based on Inclusive Design principles to ensure that access to well-designed built environments, services, and products is available to and can improve the lives of all users. Such inclusive environments improve the learner's experience, increase value of the higher education ecosystem, and enhance local communities and the larger world. To create such environments will require a shift in mindset across the education ecosystem and an organizing framework—such as Universal Design for Learning—that opens new possibilities for planning a physical and digital campus that humanizes learning for everyone. The work of Bracken & Novak (2019) is a reminder that the most critical work of the education community is to create inclusive learning environments that foster learner engagement and develop expert learners who graduate realizing "their true learning potentials in the wider worlds of social well-being, creativity, and employment" (p. 6). Is this not the purpose of education?

References

AAC&U. (2020, May 15). Let's start with "How are you doing?": How resilience and hope can shape a new normal for learning and teaching [Webinar]. https://secure.aacu.org/iMIS/Shared_Content/Webinars/WEB200515.aspx?WebsiteKey=bce618ce-91ef-4ecc-9c9d-a116c1a6d37c

Arizona State University. (2020). *ASU Sync: Live hosted digital classes, wherever you are*. Office of the University Provost. https://provost.asu.edu/sync

Best Colleges. (2020). *College guide for LGBTQ students*. https://www.bestcolleges.com/resources/lgbtq-student-guide/

Bracken, S., & Novak, K. (Eds.). (2019). *Transforming higher education through Universal Design for Learning*. Routledge.

Broton, K. M., & Goldrick-Rab, S. (2018). Going without: An exploration of food and housing insecurity among undergraduates. *Review of Research in Education*, 121-133.

Cate, C. A., Lyon, J. S., Schmeling, J., & Bogue, B. Y. (2017). *National veteran education success tracker: A report on the academic success of student veterans using the post-9/11 GI Bill*. Student Veterans of America.

Ciciora, P. (2019, April 24). Scholars: Estimates of food insecurity among college students problematic. *Illinois News Bureau*. https://news.illinois.edu/view/6367/779141

Cortiella, C., & Horowitz, S. (2014). *The state of learning disabilities: Facts, trends and emerging issues.* National Center for Learning Disabilities.

Education USA. (2018). *Open doors report.* Author.

Fritzgerald, A. (2020). *Antiracism and Universal Design for Learning: Building expressways to success.* CAST Professional Publishing.

Kurzweil Education. (2019, July 28). *Three principles of UDL.* https://www.kurzweiledu.com/udl-three-principles-p4.html

Martinez, S. M. (2016). *Student Food Access and Security Program.* University of California-Santa Barbara.

Maslow, A. (1943). A theory of human motivation. *Psychological Review*, 370-396.

Melo, M. (2020). How do makerspaces communicate who belongs? Examining gender inclusion through the analysis of user journey maps in a makerspace. *Journal of Learning Spaces*, *60*.

National Center for Education Statistics. (2020). *The condition of education 2020*. http://nces.ed.gov/programs/coe/pdf/coe_cpb.pdf

Raisman, N. (2013). *The cost of college attrition at four-year colleges and universities.* Education Policy Institute. https://educationalpolicy.org/wp-content/uploads/2019/06/1302_PolicyPerspectives-1.pdf

Rose, T. (2016). *The end of average.* HarperCollins.

RTI International. (2019). *Center for First-Generation Student Success*. https://firstgen.naspa.org/files/dmfile/FactSheet-01.pdf

Steinmetz, K. (2020, February 20). She coined the term 'intersectionality' over 30 years ago. Here's what it means to her today. *Time*. https://time.com/5786710/kimberle-crenshaw-intersectionality/

Strayhorn, T. (2019). *College students' sense of belonging: A key to educational success for all students.* Routledge.

University of Colorado Denver. (2019). *Wellness and Recreation Services*. https://www1.ucdenver.edu/wellness/facilities

Winer, R. (2019, July 16th). Why universal design is critical to creating truly healthy spaces. *Well*. https://resources.wellcertified.com/articles/why-universal-design-is-critical-to-creating-truly-healthy-spaces/

Wood, L. M. (2018, July 31). *Making space for everyone in makerspaces.* UBC Vancouver Student Services. https://stu

Author Notes

Susan Whitmer
Susan Whitmer Studios
susanwhitmer@susanwhitmerstudios.com

Guest Editor Notes

Sean M. Leahy, PhD
Arizona State University, Director of Technology Initiatives
sean.m.leahy@asu.edu

Samantha Adams Becker
Arizona State University, Executive Director, Creative & Communications, University
Technology Office; Community Director, ShapingEDU
sam.becker@asu.edu

Ben Scragg, MA, MBA
Arizona State University, Director of Design Initiatives
bscragg@asu.edu

Kim Flintoff
Peter Carnley ACS, TIDES Coordinator
kflintoff@pcacs.wa.edu.au