

I don't need sympathy, I just need accessibility: The impact of accessibility in creating welcoming environments for wheelchair users on campus.

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Abstract: Students with disabilities are attending college in increasing numbers (Pavan & Shore, 2015). This includes students who use wheelchairs on campus (Hoover, 2022). Students' experiences with wheelchair accessibility vary greatly and accessibility can be experienced as an afterthought. The physical environment of campus impacts a student's ability to learn and communicates inherent messages of belonging (Strange & Banning, 2001). Strange and Banning's (2001) hierarchy of learning environments frames the movement from a safe and inclusive campus to one in which all members are part of the community. Using this framework and a qualitative content analysis methodology, this research project explores the features of campus that help to create welcoming and unwelcoming experiences for students who use wheelchairs. The findings include the importance of working accessibility features in creating a welcoming environment and a desire for campus leaders to consider the needs of all students.

Keywords: accessibility, mobility, wheelchair, belonging

1. Introduction

Increasing numbers of students with disabilities are attending institutions of higher education (Ingersoll, 2016; Pavan & Shore, 2015). Aided by better support during their K-12 educational experience and utilization of transition services, students are better prepared to gain admission into the higher education setting (Leake & Stodden, 2014). This increased participation includes students with mobility impairments. "Research from 2011 found that about 7 percent of students reporting a disability have a mobility impairment." (Hoover, 2022, para. 3).

While virtual options exist, in-person education remains a staple of the American higher education system. In person education provides opportunities for college students to interact with professors and peers and allows individuals to learn through their experiences outside of the classroom with this space serving as a laboratory for the in-class learning that is happening. For individuals who have a mobility impairment or use a mobility aid like a wheelchair, equal access to education must involve ensuring physical accessibility to all of campus.

Passed in 1990 and amended in 2008, The Americans with Disabilities Act (ADA and ADAAG) prohibits discrimination based on an individual's disability. This prohibition against discrimination includes requirements to provide physical access to public spaces. In combination with the Architectural Barriers Act (ABA) of 1968 and Section 504 of the Rehabilitation Act of 1973, these laws form the legal foundation for access expectations at institutions of higher education across the United States. Thirty-five years after the passage of the ADA, obstacles remain, especially on college campuses that typically have older buildings. "Finding a campus that is 100% accessible is

a rarity” (Gilmer, 2020, p. 4). The physical accessibility required by the ADA should be seen as the floor not the ceiling when considering access (Hoover, 2022). While a campus may meet the legal requirements of equal access, it can fail to provide an opportunity for a wheelchair user to have an equal college experience.

As higher education leaders look to recruit and retain students, a student’s sense of belonging on campus plays a significant role in this process (Strayhorn, 2019). For students with mobility impairments, physical accessibility can play an important part in creating this sense of belonging (Strange & Banning, 2001). In order to better understand student experiences, this research project investigated, what aspects of the physical environment on a college campus help to create a welcoming experience for students who use a wheelchair?

2. Literature Review

2.1. Defining Disability and Mobility Impairment

There is no single definition of disability (Erickson & von Schrader, 2022). How one defines disability may depend on the model through which they view disability (e.g. moral, medical, rehabilitation, or social). “Definitions and conceptualization of Disability presented in models reflect the worldview of specific time periods and cultures” (Evans et. Al, 2017, p. 54). Depending on the definition of disability, the prevalence of disability with a population or group may also change. Narrowly defined definitions of disability reduce the prevalence of students with disabilities on campus simply by altering the definition. Prevalence statistics can be beneficial in developing an understanding of the number of individuals who are impacted by a lack of physical accessibility on college campuses. Therefore, we must consider how disability is defined as we consider the presence of students with disabilities on campus.

When measuring prevalence of ambulatory disabilities, the American Community Survey (ACS) asks, “Does this person have serious difficulty walking or climbing stairs?” (Erickson & von Schrader, 2022). According to ACS, 6.8% of the U.S. population reported having an ambulatory impairment. According to Center for Disease Control (CDC) data, 13.7% of individuals have serious difficulty walking or climbing stairs (CDC, 2022). The CDC defines this functional limitation as a mobility impairment. The Americans with Disabilities Amendments Act of 2008 (ADAAA) defines an individual with a disability as someone who has an impairment that sustainably limits a major life function. For the purposes of this research, mobility impairment was used, utilizing the language of the CDC and ADAAA definitions. Individuals with mobility impairments use a variety of mobility aides to access their environment. These mobility aids can be divided into two main categories, "wheelchairs (manual or power-driven) and manually powered devices" or "other powered options, such as golf carts" (ADA.gov, n.d.)

2.2. Accessibility in American Higher Education

Accessibility describes the opportunity for an individual to receive benefit or participate in a program or experience to the fullest extent possible. The DO-IT Center at the University of Washington (2012) describes how accessibility can refer to both physical access and to accessing materials or information.

Accessibility expectations are impacted by a variety of laws that provide legal requirements for accessibility at institutions of higher education. The Architectural Barriers Act (ABA) of 1968 “requires that buildings or facilities that were designed, built, or altered with federal dollars or

leased by federal agencies after August 12, 1968 be accessible” (U.S. Access Board, n.d.). Section 504 of the Rehabilitation act of 1973 “protects qualified individuals from discrimination based on their disability” (U.S. Department of Health and Human Services, n.d.). The Americans with Disabilities Act of 1990 (ADA) and subsequent Amendments Act of 2008 (ADAAA), “prohibits discrimination against individuals with disability in state and local government services, programs, and activities (including public schools), regardless of whether they receive Federal financial assistance” (U.S. Department of Education, 2020, para. 3). Whether an institution is public or private, new or old, these laws along with subsequent case law and findings by the Office of Civil Rights have implications on the requirements for access for students with disabilities.

The field of research on and about college students with disabilities is significant and growing. Numerous studies about the experiences of students with disabilities have been conducted and published in recent years. These include studies about sense of belonging (Vaccaro et al. 2015), identity development (Broido et al., 2023; Forber-Pratt et al., 2017; Forber-Pratt & Zape, 2017), and overall barriers in higher education (Evans et al. 2023; Hong, 2015). These studies often include participants with mobility impairments but are not typically focused on the experiences of students with mobility impairments, a few examples not withstanding (Battalova et. al, 2022).

Published by the student newspaper at the University of Maryland "Disability on Campus: Life navigating accessibility and accommodations at UMD" (Vuttaluru et al., 2022) is a detailed, multi-part story published by the University of Maryland student newspaper where reporters interviewed students, faculty, and disability experts to write a multipart story. This UMD project describes how physical accessibility on campus has often involved retrofitting campus buildings to meet legal expectations rather than anticipating this in new builds. Another recent look at college campuses was conducted by New Mobility and The United Spinal Association. Titled "Wheels on Campus," this list of the top 20 wheelchair friendly campuses utilized a survey sent to campus leaders at 400 institutions of higher learning. Researchers used responses to calculate overall scores utilizing wheelchair-inclusive criteria, including programs, services, and community support. While initially created through institutional survey responses, the guide also includes the voices of many wheelchair users on its editorial staff and specific students enrolled at many of the campuses that are mentioned.

Evans et al. (2017) wrote that the physical environment of a campus can be difficult: “Individuals with mobility impairments may have difficulty traversing the campus, negotiating entrances to building, and moving through spaces that contain stairs or non-movable seating” (p. 226). Physical accessibility is not the only barrier individuals with mobility impairments face. “The greatest obstacles we all face are mostly cultural. In the world of higher education, we must upend long-held assumptions by others who think our abilities are severely limited because our bodies work differently” (Gilmer, 2020, p. 4). Breaking down the obstacles as Gilmer (2020) describes requires campuses to move beyond the medical model and to view disability through the social model where an individual’s disabilities are a result of the environment and culture they live in more than impairments the individual possesses.

2.3. Sense of Belonging

Framed as a basic human need and connected to the work of Maslow’s (1954) Hierarchy of needs (Strayhorn, 2019), sense of belonging for college students is a “students’ perceived social support on campus, a feeling or sensation of connectedness, the experience of mattering or feeling cared about, accepted, respected, valued by, and important to the group (e.g., campus community) or others on campus (e.g. faculty, peers)” (Strayhorn, 2019, p. 4). Experienced by individuals in a

wide variety of settings (e.g. work, social, spiritual), a sense of belonging has the potential to impact many areas of a college student's life. Many scholars connect sense of belonging to Tinto's (1993) model of student retention (Freeman et al., 2007; Hurtado & Carter, 1997; Vaccaro et al.; 2015). Sense of belonging may be particularly important for students who believe they are on the margins of mainstream college life (Hurtado & Carter, 1997; Strayhorn, 2019); this includes students with disabilities. Vaccaro et al. (2015), identified three tasks as critical in the development of sense of belonging for students with disabilities: self-advocacy, social relationships, and mastering of the demands of the role of a college student. Vaccaro et al.'s (2015) theory illustrated how these three critical tasks for students with disabilities positively impacted sense of belonging and how sense of belonging had a positive impact on these tasks.

2.4. Research Framework

In order to better understand the experiences of students with mobility impairments on college campuses, this research utilized the framework proposed by Strange and Banning (2001) in their book *Educating by Design* and also articulated by Strange (2000) in a journal article. Strange and Banning (2001) identified four components of environments that impact the experiences and outcome for students. Strange (2000) describes these key components as (1) "physical design and layout," (2) characteristics of people who inhabit them," (3) "the organizational structures related to their purposes and goals," and (4) "inhabitants' collective social constructions of the prevailing press, social climate, and culture" (p. 20). Each of these elements impacts the learning environment and a student's ability to learn and develop within the environment. Strange and Banning (2001) framework is titled a "Hierarchy of Learning Environments." A campus climate must progress through each level of the hierarchy to create the type of environment where every member of the community is able to learn and develop.

Strange (2000) describes three tiers of cultures or environments in the hierarchy when considering the experience of students with disabilities on campus. The first and lowest level of this hierarchy is titled *Safety and Inclusion*. "Provision of physical accessibility and accommodation is the bottom line in addressing the attraction, satisfaction, and stability of these students. Limits in either of these conditions can compromise the learning experience in fundamental ways" (Strange, 2000, p. 24). Through these safe and inclusive environments, students are able to pursue education and learning (Strange, 2000).

The second tier, *Involving Environments*, looks to move beyond the physical presence of individuals with disabilities and towards active participation in the learning experience (Strange, 2000). In this level of the hierarchy students are not just passive participants but are invited into membership. Members of the campus engage in "meaningful roles and responsibilities so that each is afforded appropriate opportunities for individual growth and development" (Strange, 2000, p. 26).

The third and top tier, *Community*, occurs when community or communal learning environments are created. "Conditions of community become evident as individuals assume significant roles over time and contribute to the very ethos and culture of the setting" (Strange, 2000, p. 27). Strange and Banning (2001) describe this top category of the hierarchy as a place where individuals are encouraged and invited to participate, take on roles, and be decision makers.

2.5. Researcher Positionality

I do not currently have a mobility impairment or use a wheelchair. I serve as the Disability Resource Officer on a small liberal arts campus in the Midwest in the United States. The desire to

conduct this research was born out of my experiences with students exploring my own campus. I undertook this project with a desire to amplify the voices of those impacted by inaccessibility and unwelcoming environments through data collection and analysis that could be presented to decision makers and other stakeholders with a desire for meaningful change.

3. Method

3.1. Research Design

The purpose of this research project was to understand what aspects of the physical environment of a college campus help to create a welcoming experience for students who utilize wheelchairs. This research question was explored using a qualitative content analysis methodology. Qualitative content analysis (QCA) is used as a research method for a systematic, detailed analysis of non-numerical data (Kuckartz & Rädiker, 2023; Mayring, 2022; Schreier, 2012). By using open coding and inductive category formation researchers are able to develop categories directly out of the material.

Data were collected through an online survey. This questionnaire was developed by the researcher using experience working in the American higher education environment as a disability services provider. Questions included both numerical ratings based questions and open ended questions that would allow individuals to communicate broadly about their experiences. In addition to specific questions related to the research question, demographic information was collected. Both the study broadly and the data collection tool were reviewed and approved by the Institutional Review Board at the researcher's institution.

The questionnaire was piloted with a population of wheelchair users to gather feedback and further understand the effectiveness of the tool at providing meaningful data in response to the research question. The online survey method allowed for the potential of increased participation across a wide variety campuses and geographies. Additionally, a digital survey was intended to limit barriers to participation in this exploratory study that could include availability and time required for in-depth interviews. Participation criteria included individuals age 18 or over, currently enrolled in college, self-identifying as having a mobility impairment that impacts the accessibility of their campus, and who use a wheelchair or powerchair for mobility on campus.

This study utilized purposeful sampling to collect meaningful data. "Purposeful sampling focuses on selecting information-rich cases whose study will illuminate the questions under study" (Patton, 2002, p. 230). As Patton (2002) describes, "information rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry" (p. 230). An online data collection tool was designed to gather participant responses. To increase the potential population of participants meeting the criteria for the sample, the researcher connected with an organization that provides scholarship opportunities to individuals with spinal cord injuries. This organization then connected me with individuals (gatekeepers) at institutions of higher education who participate in the organization's scholarship program. These gatekeepers were informed of the nature of the study and invited to share the opportunity to participate with members of their community. Gatekeepers were sent an email that could be utilized as an invitation to participate and gate keepers communicated with individuals on their campuses. Potential participants were directed to an online form to complete the survey. In the initial email invitation, potential participants were notified that the first 50 individuals who met the participation criteria and participated in the survey would receive a \$20 gift card to Amazon.

Individuals were provided an informed consent notification and asked to affirm that they met the eligibility criteria for the study before they began answering questions.

3.2. Data Analysis

Four hundred and eighty-one responses were initially received; however, most of these responses did not meet the criteria of the study or were not completed by a human (e.g. incomprehensible responses or ten of the exact same responses were received within seconds of each other). The remaining data were analysed in Microsoft Excel using inductive category formation. Inductive category formation uses the material to develop categories in a data-driven way (Mayring, 2022; Schreier, 2012). “It aims at an authentic description without bias owing to the preconceptions of the researcher, and an understanding of the textual material in the language of the material, using formulations and concepts from the material” (Mayring, 2022, p. 81-82). Open coding and then analytical coding were used to create these categories. Open coding is the initial process of “identifying any segment of data that might be useful” (Merriam & Tisdell, 2015, p. 205). Analytical coding is the process of assigning these open codes to categories or themes (Merriam & Tisdell, 2015). These themes are the basis for the findings that follow. Some quantitative descriptive analysis of the findings was utilized to share numerical frequency and to further illustrate the phenomenon.

Of the responses collected, 33 met the criteria of being over 18, currently enrolled in college, self-identifying as having a mobility impairment, and reporting that they were a wheelchair or powerchair user. These 33 respondents are the basis for the findings of this study.

3.3. Participants

Demographic information was collected to better understand the participants in this study. Most of the 33 participants ($n = 27$) reported being enrolled at a campus with more than 10,000 students and the remaining six participants reported not knowing the size of their campus. About half ($n = 17$) of the participants reported living on campus at their university. Participants varied in the amount of time in which they had been enrolled at their current university with the greatest number being first year students ($n = 11$), but at least three students reported being enrolled for each time period of two, three, four, and more than four years. Participants identified as men, women, transgender/trans man, non-binary, and gender-queer. The greatest number of responses were received from men ($n = 16$) and women ($n = 12$). Almost two thirds of participants ($n = 20$) reported that White/Caucasian was the race or ethnicity that best described them. Participants reported a variety of race or ethnicities including African American, Asian, Hispanic or Latino, Multiracial, and NZ European.

Participants were given the opportunity to share about their mobility impairment to the level that they felt comfortable. The decision to allow participants to describe their own situation in an open-ended way was intentional given the diverse reasons for wheelchair use. The reason for a student’s mobility impairment was not the focus of this study. Given the open-ended nature of this question, responses varied significantly. Therefore analysis, and classification of this information was broad Responses included descriptions of both congenital and acquired impairments, nerve damage, paralysis, and Duchenne Muscular Dystrophy.

4. Findings

4.1. Experience of Accessibility

Participants were asked to respond to several questions about the accessibility of their current campus. Almost all participants said that they were able to access all of the places that you need to go on their campus ($n = 28$) When asked “Are you able to access all of the places you want to go?” Fourteen participants responded “Yes,” while 19 participants responded that they were not able to access all of the places on campus that they wanted to.

Participants were asked to rate the overall accessibility of their campus on a one to ten scale with one being “Not accessible at all” and ten being “Extremely Accessible.” When considering this overall accessibility of their current campus, 24 participants rated their campus as a seven or higher on a one to ten scale. No participants rated their campus lower than four. The average rating among the 33 participants was 7.36.

Participants were asked to explain the reason for the rating that they chose. These responses were coded and themed for understanding. Most responses fit into two main themes. Aspects of the physical environment like campus terrain, landscape of their campus, snow clearing were mentioned 11 times. Aspects of the built environment of campus like ramps, elevators, door buttons, sidewalks, and accessible entrances were mentioned 68 times. As participants described aspects of their campus, items were named by participants making positive and negative comments about the element. The physical environment and built environment both added and detracted from campus accessibility.

Several items consistently appeared in participant comments. These most consistently mentioned items were elevators (2), ramps (16), sidewalks (7), accessibility door buttons (7), and building entrances (6). In this open-ended portion of the question, each of these items was mentioned as both a reason for a higher or positive rating and as a reason for a lower or negative rating. One participant who rated their campus at a four of ten said, “Many buildings don't have door buttons, the sidewalks are in shambles and I cannot get my wheelchair over them...”. While another participant who rated their campus as a nine out of ten said, “Every building has an accessible entrance as well as accessible classrooms. The school takes good care of their sidewalks and the handicapped buttons for doors work a majority of the time.” The presence or absence of working methods of access led to both positive and negative ratings from participants.

Participants who rated their campus highly (nine or ten) described positive overall feelings about their campus with responses like, “Everywhere that I have been is accessible,” “[University Name] is one of the most accessible campuses,” and “[University Name] is very much accessible from all aspects.”

4.2. Physical environment as welcoming or unwelcoming for wheelchair users

Participants were specifically asked what aspects of the physical environment of their campus they found to be most welcoming and which they found to be least welcoming. Like the responses about overall campus accessibility, response themes were present on both the lists of welcoming and least welcoming aspects of the campus environment. Participants mentioned the location of accessible entrances, the presence or absence of working accessibility door buttons, and elevators as both welcoming and unwelcoming.

“Most of the ramps and elevators on campus are in easily accessible places, the elevators work, campus facility workers are quick to shovel snow off the sidewalks.” Another student stated, “Just being able to go from building to building and being able to access the front of the building most of the time is quite nice.” When considering what aspects of the physical campus they found least welcoming, a participant said, “I can get in to all the building for class but[sic] really annoying because the wheelchair access entrance is all the way on the other side of the building.” Another participant said, “Areas with stairs that require a special side elevator make me feel like an after-thought.” A third student stated, “Some buildings are not truly accessible because the automatic door openers don't work, and some you have to search the back or side entrances to find an accessible entrance.” These responses identify similar elements (entrances, door buttons, and elevators), but describe them differently as both welcoming or problematic.

Two unique items were mentioned several times as unwelcoming in participant responses that did not show up in the positive responses. First, a few students mentioned classroom spaces as unwelcoming. A participant said, “Classrooms with tiny spaces in between desks, I can't get around my own classroom without making a racket or having to have other students move the desks.” Another participant said, “Some classrooms don't have any accessible seating, so I have to ask for a table to be added, or I am stuck at the top of lecture halls with no way to go down the stairs to talk to the professor.”

A second area that was noted in the least welcoming responses is student's experiences in extracurricular programming. This is not an aspect of the campus physical environment as the question asked; however, several participants mentioned it. One student said, “utilizing extracurricular activities is not welcoming.” Another student said, “A lot of events targeted at students are inaccessible, like skating at the ice rink or walking in the park, and it makes me not want to participate in those events.” A third participant wrote that the element that was least welcoming to them was, “Campus events that is [sic] created by students.” While the question specifically asked about aspects of the physical environment students found least welcoming as wheelchair users, their experiences at campus events were significant enough that participants desired to express their negative experience.

4.3. Campus leadership

In the final area of the data collection, participants were asked what they wished campus leaders knew about their experience as a student with a mobility impairment.

Many students had a desire for campus leaders to seek more feedback. A participant wrote, “Get more disabled students involved in the planning aspects of the campus and accessibility in general.” Another student said, “Asking wheelchair users for direct feedback would make them feel more included in the conversation.”

Students also expressed a desire for campus leaders to consider the experience of everyone. One participant wrote, “I wish they would go around campus in a manual wheelchair to feel how difficult it is so they understood what structural challenges we face everyday.” Students were asking that leaders see and consider their experiences.

Several participants expressed that they believe there are simple solutions that can help improve accessibility. One participant wrote, “Easy fixes can be made to help us.” Another said, “A little goes a long way. A simple curbcut at the end of a sidewalk might make a stretch of road much more pleasant. Another participant said, “It's easy to fix if you try hard enough.” Students see

fixes and do not believe that campus leaders are doing enough. There is a desire for leaders to act with a student writing, “I don't need sympathy, I just need accessibility.”

5. Discussion

The purpose of this research study was to understand what aspects of the physical environment on a college campus help to create a welcoming experience for students who use wheelchairs. The information and responses that participants offered are rich with data and speak from personal experience that is critical to listen to for individuals who desire for their campuses to be not only accessible, but welcoming for wheelchair users. As I conducted this research, I was hopeful to find new or innovative solutions that could be implemented broadly on campuses. I anticipated that there were unexpected elements that would improve sense of belonging and provide hospitality and accessibility for all students. In coding and theming the data from student responses, these new and novel ideas did not present themselves. Students described simple elements like working elevators or working accessibility door buttons; they mentioned using the same entrance as their peers, and they described being able to get to all of the places they desired as welcoming and conversely, they named the inability to do the above-mentioned actions as unwelcoming. This presence of similar items in responses about both welcoming and unwelcoming aspects of campus should be informative. When accessibility items like door buttons or elevators are present and working, this is welcoming for students. When these same items are not present or are broken, it impacts a student's ability to access a location, and this is not welcoming. The methods for creating a welcoming environment already exist, they need to be intentionally utilized.

As I considered the data further, the participant's statements to campus leaders appeared to be instructive and descriptive of why at first glance the data lacks the innovative solutions I had been hopeful for. One participant appropriately wrote, “Easy fixes can be made to help us.” There are simple solutions that campus leaders can take if they desire to create accessible campuses for wheelchair users. The methods towards accessibility are not unknown; however, they are not always utilized or sometimes they are simply broken. As the previously mentioned quote states, students don't desire sympathy, they desire accessibility.

5.1. Hierarchy of learning environments

Strange and Banning's (2001) framework for learning environments can be seen throughout the responses of participants. Level one of the hierarchy of learning environments is safety and inclusion. Given both their functional and symbolic effects, it is obvious that the physical components of campus environments are relevant to the safety and inclusion of students with mobility, sight, and hearing disabilities. Provision of physical accessibility and accommodation is the bottom line in addressing the attraction, satisfaction, and stability of these students. Limits in either of these conditions can compromise the learning experience in fundamental ways (Strange, 2000). When this "bottom line" of physical accessibility is not met, a student's sense of belonging and therefore their learning experience is clearly impacted.

Level two of Strange and Banning's (2001) hierarchy is involvement. In this stage, individuals are active in the creation of the learning environment. Through creating opportunities for students with disabilities to actively take part in creating their learning environment, students are members of the community who are seen to have a level of expertise. In their responses, students expressed a desire for their experience to be seen, understood, and valued.

Finally, we can see level three of Strange and Banning’s (2001) hierarchy in student’s calls for inclusion in community events and experiences. “Conditions of community become evident as individuals assume significant roles over time and contribute to the very ethos and culture of the setting” (p. 27). Campus events that were not accessible did not demonstrate that all students were woven into the “ethos and culture of the setting.” Additionally, the design of buildings and location of accessible options made individuals feel as though they were an afterthought. A physical environment that communicates inclusion and community helps to create this culture in which individuals who use wheelchairs are not only considered in the physical environment of campus but campus events as well.

Table 1. Mapping of Hierarchy of Learning Environments (Strange, 2000) and Results

Hierarchy of Learning Environments	Findings
Level I: Safety and Inclusion (Sense of Security and Belonging)	Physical Features of accessibility like ramps, elevators, and automatic door buttons are present and functioning. Wheelchair users can physically access the locations they need to on campus.
Level II: Involvement (Participation, Engagement, Role Taking)	Students with disabilities participate in the planning and creation of learning environments. Wheelchair users are viewed as having expertise about their needs and experiences.
Level III: Community (Full Membership)	Physical features of campus and campus events anticipate the presence of students with disabilities communicating that they are valued members of the community.

Our physical environment communicates nonverbal messages to those in the environment (Strange and Banning, 2001). University leaders need to understand that when environments are not accessible or require a special or different entrance, this communicates a message to students that they have not been considered in the planning or design of a physical environment. Strange and Banning (2001) also articulated that a physical environment may actually contradict the messages given verbally. Institutional leaders should be mindful of these realities as they create and design campus physical environments. As one participant suggested, leaders should “practice what they preach.” This student has heard the message of the value of diversity and inclusion, but their experience as a wheelchair user has communicated a different message. University leaders should utilize the physical structure of campus to emphasize the message they are trying to articulate.

These three levels have direct alignment with the theory of belonging proposed by Vaccaro et al. (2015). In the "Theoretical Model of Belonging for College Students with Disabilities" (Vaccaro et al., 2015), self-advocacy, social relationships, and mastery of the role of a student emerged as critical to the development of a sense of belonging. The findings of this study affirm these three critical tasks. When level one of the hierarchy (safety and inclusion) is not met and students are not able to attend their classes or university events because of physical barriers, students with disabilities will find challenges in mastery of the roles of a student. When level two of the hierarchy (involvement) is not met, students have not been able to practice self-advocacy in ways that help to form a sense of belonging. And finally, when level three (community) is not met, student's social relationships are not able to develop in the same ways that their peers without

disabilities experience. As Vaccaro et al. (2015) propose, the ability to practice these skills is critical in forming a sense of belonging.

5.2. Implications

Conducting research is valuable to develop knowledge and understanding, but hopefully it also leads to action and practical change in response to new information. The following practical responses align with each level of Strange's hierarchy.

Level I: Safety and inclusion

One potential step is to ensure that the features of campus specifically intended to increase accessibility on campus are in working order. Students gave positive ratings and reported feeling that their campus was welcoming when accessibility door buttons worked and when elevators allowed them to get to the places they needed to go. Similarly, when these items were not working, students gave negative ratings and reported feeling unwelcome. This may require funding to make broken items work or to install new items; but the methods of creating accessibility are already utilized on campus. Increasing their availability and usability will create a more welcoming environment. Practically, facilities services teams could develop a regular preventative maintenance routine in which they can review and fix these accessibility items when needed. Methods could also be created for users to report issues and concerns in a timely way and these methods could be promoted through a Disability Resource Office. Noting the importance of working accessibility features for student experiences, fixing broken items should be a high priority for facilities services when this work is needed. Students believe that there are easy fixes. When we believe something is an easy fix and yet these fixes are neglected, it can lead to us feeling like an afterthought. Maintaining working accessibility features could appear to be an obvious and oversimplified idea; however, the repeated mentioning of these issues by respondents highlights that it is both a problem and potential solution to creating a sense of belonging on campus for wheelchair users.

5.2.1. Level II: Involvement

A second important response to these findings is that university leaders and campus planners should consider the experiences of all students, including wheelchair users, as they develop, build, and remodel campus buildings, outdoor elements like sidewalks, and physical structures around campus. Strange (2000) describes involving environments as ones where "individual differences are appreciated, participation is expected, interactions are personal rather than functional, and risk taking is encouraged (Strange, 1983)" (p. 27). Participants communicated that they did not feel like their experiences were understood and they asked campus leaders to seek student feedback and put themselves in a student's experience by using a wheelchair. Campus leaders should be careful not to participate in performative theatre by using a wheelchair when it is not needed but asking for and listening to the voices of students who are wheelchair users could be a valuable step towards creating a physical campus environment that leads to involvement of its members.

Participation of all users in the design process increases the probability of eliminating negative and unintended nonverbal messages. In fact, the likelihood that a campus design will meet the needs of the community may be a direct function of the extent to which community members participate in the design process (Strange & Banning, 2001).

A disability resource office could facilitate this connection or the collection of this information. However, there is likely value in campus leaders outside of those with a job title or responsibilities

related to disability services being actively engaged in the process of understanding accessibility needs. Campus leaders should be cautious that they do not communicate a desire to help with their words and something different with their actions.

5.2.2. Level III: Community

“Conditions of community become evident as individuals assume significant roles over time and contribute to the very ethos and culture of a setting” (Strange, 2000, p. 27). To reach this level of community, the expectation of the presence of students in wheelchairs must be woven into the fabric of campus culture. “When school is inaccessible then students don’t come to class, which is why you don’t see many disabled people. So please don’t say ‘why bother with accessibility, we have barely any disabled students?’, wrote one participant. University leaders must proactively plan for the presence of wheelchair users rather than only reacting to concerns when they arise.

Students communicated the value of easily apparent and available accessibility options, highlighting the value of shared or central accessible entrances. One participant said, “Areas with stairs that require a special side elevator make me feel like an after-thought.” This same student wrote, “ramps alongside stairs give me all the serotonins and make me feel included.” While renovating older buildings on campus may be a challenge as noted in The Diamondback (2022) article, prioritizing the visibility and centrality of accessibility options should be considered for new projects and renovations. When students have to work to find alternative entrances to their destination, this creates an alternative experience for students who may already feel marginalized. “Proximity establishes the ground from which the community’s agenda can grow” (Strange & Banning, 2001, p. 165). This proximity can be found through shared experiences and shared spaces that are readily accessible to everyone.

One method for prioritizing shared or similar user experiences is Universal Design (UD). Universal Design is intended to make “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design” (Center for Universal Design, in Burgstahler, 2014, p. 38). Originally created through the design and architecture process (Evans et al., 2017), the seven principles of universal design intend to respond to access and usability. Institutional leaders attempting to create welcoming environments for students with mobility impairments should consider prioritizing universal design in the planning and construction of physical spaces. Utilizing a checklist like the one created by UD expert Sheryl Burgstahler (2020) could be a proactive approach to being welcoming and accessible.

5.3. Global Context

This research study was conducted in the United States with students on American higher education campuses. While there may be some generalizability to a global context, the research context limits this generalizability. United States law helps to guide practice on American campuses. With variance in law from country to country, there could be significant variance in practice.

5.4. Limitations

Like any research study, this investigation into the physical aspects of campus that create a welcoming environment has limitations. One specific limitation is that the vast majority of responses came from wheelchair users on campuses that enrol 10,000 or more students. This type of campus is dramatically different in size and resources than a campus of 5,000 or one of

1,000 students. Participants in this survey generally rated their campus accessibility experience positively; however, this response is not generalizable.

6. Conclusion

Leaders at institutions of higher education should expect students who use wheelchairs to enrol on their campuses. Creating environments in which all students feel safe, involved, and part of the community is critical to creating learning environments that are conducive to the educational experiences our institutions hope to provide. Universities must move beyond simply meeting the legal standards of Section 504 and the ADA to create educational environments in which students with disabilities are welcomed onto campus and experience a sense of belonging.

Through a qualitative content analysis study, students who are currently enrolled in college and are wheelchair users reported elements of their experience that lead to feeling welcomed or unwelcomed on campus. This included elements of both the natural physical environment like weather and terrain, but more importantly it also contained elements of the built environment that campus leaders have the capacity to impact. Students viewed these natural and built elements as possessing the capacity to have both a positive or negative impact on their experience of feeling welcomed on campus.

In response to these findings, University leaders can find reasonable and simple solutions to enhancing wheelchair users' sense of belonging on campus. Through taking steps to ensure accessibility features on campus are present and working, involving students in planning and development of the campus physical environment, and working to ensure that the culture of a campus anticipates and plans for the presence of everyone, institutions can move from simply being safe and secure (compliant) to creating a community of learning and being truly welcoming.

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