BOARD # 337: CAREER: Innovation for Inclusion: Establishing the Landscape of Disability Access and Policy in Higher Education

Dr. Cassandra McCall, Utah State University

Dr. Cassandra McCall is an Assistant Professor in the Engineering Education Department at Utah State University (USU). Her research focuses on the intersections of disability, identity formation, and culture and uses anti-ableist approaches to enhance universal access for students with disabilities in STEM, particularly in engineering. At USU, she serves as the Co-Director of the Institute for Interdisciplinary Transition Services. In 2024, Dr. McCall received a National Science Foundation CAREER grant to identify systemic opportunities for increasing the participation of people with disabilities in engineering. Her award-winning publications have been recognized by leading engineering education research journals at both national and international levels. Dr. McCall has led several workshops promoting the inclusion of people with disabilities and other minoritized groups in STEM. She holds B.S. and M.S. degrees in civil engineering with a structural engineering emphasis.

Kristine Marie Peterson, Utah State University - Engineering Education

Kristine Peterson is a Graduate Student in the Engineering Education Department at Utah State University. She holds a B.S. in Biological Engineering from the same institution, where she developed a strong interest in inclusive teaching practices and STEM outreach. Her research focuses on accessibility and the inclusion of individuals with disabilities in engineering, informed by her personal experiences with chronic illness. She has eight years of research experience in biomaterials and pharmaceuticals, with publications in peer-reviewed journals and presentations at national conferences. Peterson has also served in multiple teaching assistant roles and is committed to engaging students through creative methods such as visual tools, humor, and analogies. She is an active member of the Society of Women Engineers and a recipient of several academic awards.

Ms. Le Tram Huong Dang, Utah State University - Engineering Education

Ms. Le Tram Huong Dang is a Graduate Student in the Engineering Education Department at Utah State University (USU). Her research focuses on how institutional structures and policies shape the experiences of students with disabilities in higher education. As a lecturer in civil engineering in Vietnam, she has experience in teaching, educational technology, civil engineering education. She has conducted studies on teaching methods and course design in civil engineering education. She holds B.S. and M.S. degrees in mapping, remote sensing, and geographic information systems (GIS).

BPE: CAREER: Innovation for Inclusion: Establishing the Landscape of Disability Access and Policy in Higher Education

Introduction

Recent calls for action on equitable access for people with disabilities have been gaining increasing attention among political leaders (e.g., Executive Order No. 13985, 2021), STEM research agencies e.g., [1], [2], [3], [4], [5], professional engineering societies e.g., [6], [7], and engineering education scholarship e.g., [8], [9]. Engineers with disabilities, having the lowest representation among awarded STEM doctorates at 8 percent, continue to be underrepresented in higher education and in the workplace [10], [11], pointing to broader systemic gaps in access that continue pervade academia [12], [13], [14]. Due to their routine interactions with students, faculty are positioned to significantly influence the ways systemic access is experienced, yet they are disconnected from university accommodation policy and procedures and lack the time and training necessary to support students on their own [15], [16]. As a result, students are required to initially "train the trainer" by supporting faculty with informal information about their learning needs, management strategies, and past effective or ineffective accommodations. The academic system is not able to convey or capture this information in a timely or effective manner to support the student *a priori* for classroom engagement and participation.

This CAREER project will systemically address challenges placed on students with disabilities to know a new system, faculty, and field as well as their own learning and accommodation needs by developing support structures that foster collaboration between students, faculty, and administrators. It is grounded in the premise that systemic inaccessibility is individually experienced through interpersonal and physical interactions within classroom and university contexts and requires collective action across institutional levels to enact systemic change. The findings discussed in this paper are those associated with the partial completion of the first project task to explore and identify systemic access for engineering undergraduates with disabilities across university levels. To gain an initial understanding of the ways systemic access is mandated and monitored, a summative content analysis [17] was conducted on the policies and practices documented at each of the 25 sample universities.

Shifting from a focus on disability type to accessibility needs

Limited studies in engineering education have begun to explore and examine the experiences of students with specific disabilities such as mental health disabilities [18], [19], [20], [21], [22], [23]; ADHD [24], [25], [26]; and blind and low vision students [27], [28]. This work has added valuable insights into how the context-specific experiences of these students can be better supported as they move into academic settings and through engineering education environments. However, single disability studies pose challenges for systemic change. Epistemologically, this type of scoping inherently favors the medical model of disability that emphasizes disability as an impairment or individual bodily condition to be accommodated [29]. It is not learner-centered for students with disabilities and the engineering faculty who interact with them in classrooms and labs. While the medical model is valuable for biological aspects of disability (e.g., blind/visucally impaired, chronic pain, allergy, etc.), it does not account for the ways that disability is intentionally or unintentionally socially-produced and perpetuated through the institutional polices, attitudes, and practices within classroom and lab curricula that also

constitute a significant part of students' experiences in the academic system. Methodologically, many students with disabilities report having more than one disability [11] requiring intersectional approaches that holistically consider how one experiences and navigates the world [30], [31]. Practically, implications generated for a specific disability group can be more challenging to transfer to other contexts without significant revision or rework. For these reasons, shifting from disability-based to needs-based research has the potential to significantly impact the structure and role of access support as it is currently known. To support this shift, data will be collected from engineering students with a variety of physical and cognitive disabilities.

Guiding Frameworks and Philosophy

This project draws from frameworks to conceptualize engineering education as an ecosystem that serves as both a source and as an outcome of the actors within them. As a source, Bronfenbrenner's [32] Ecological Systems Theory (EST) posits that human development is influenced by the type of systems in which those humans act. As an outcome, the Social Worlds Framework emphasizes the role of actors creating and maintaining these systems. Actors are defined the human and non-human factors (e.g., people, policies, attitudes, norms, things, etc.) that constitute a particular context [33]. This system can be further explicated through the Ecological Process Model of Systems Change EPMSC; [34], [35], which can be used to contextualize the roles of actors and how they contribute to and are informed by social processes in a dynamic system [34], [35], [36]. In the context of this project, these frameworks are particularly useful for examining systemic access as a social process within universities.

Research Approach

Publicly-available accessibility and accommodations policies were reviewed for 25 sample universities using a summative content analysis [17]. For this portion of the study, only those policies that could be accessed online – and without university login credentials – were considered for inclusion in the analysis. We emphasized this perspective in our search to gather information from the perspective of an individual outside of the university system (e.g., a prospective student who is disabled, a family member, etc.) who is not enrolled at a particular institution but is attempting to identify options and procedures for accommodation. The content analysis was conducted using the following steps: (1) identify policies related to the support of students with disabilities at their institution of higher education, and (2) cluster and categorize policies based on emergent themes. In this paper, we highlight the preliminary quantification of commonalities across accessed policies, with the overarching goal to identify access typologies that capture common accommodations processes at the sample universities.

Selected Preliminary Findings

In our findings to date, we focus our discussion on accessing foundational information regarding institutional support services (i.e., disability resource and support centers), the common types of academic accommodations offered to students, and the known availability of accommodations guidelines for faculty. As shown in Figure 1, all institutions included in the sample have a dedicated, publicly available website for disability services and support. Out of the 25 institutions examined, 80 percent (n = 20) mention that students will have access to an accessibility consultant, 52 percent (n = 13) provide access to an institution-specific disability

handbook, and 56 percent (n = 14) require that students request accommodations at the beginning of the semester.

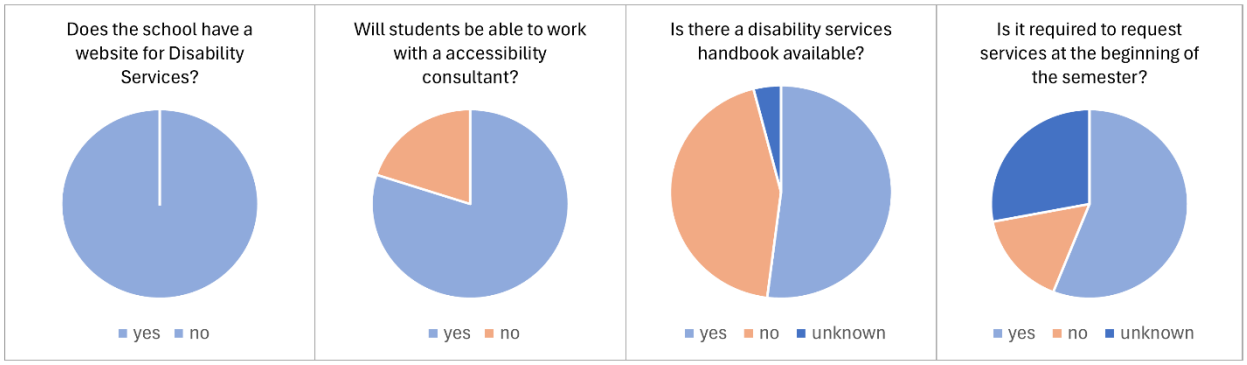

Figure 1: Trends in available information related to disability services and support centers

Trends in academic accommodations were also identified. As shown in Figure 2, the most common forms of academic accommodations include alternative testing (n = 92%; e.g., granting double-time on exams, taking exams in an alternative location), interpretive services for Deaf and hard of hearing students (n = 80%), note taking assistance (n = 80%), and alternative textbook formats (n = 88%). The least common academic accommodations include priority registration (n = 32%) and training for assistive technology use (n = 20%). Institutions classified as not offering a specific accommodation included those that explicitly stated that the accommodation is not offered and those that simply did not include the accommodation as an option on their website (i.e., unknown). Notably, while institutions made assistive technologies available for student use, it was unclear if training to use those technologies was offered. The last item highlighted in this paper is the availability of guidelines for faculty and staff who wish to provide accommodations for their students. Based on our review, 68 percent (n = 17) provided detailed guidelines for implementing accommodations, 24 percent (n = 6) did not. For the remaining 8 percent (n = 2) institutions, it was unclear if these guidelines were provided or not.

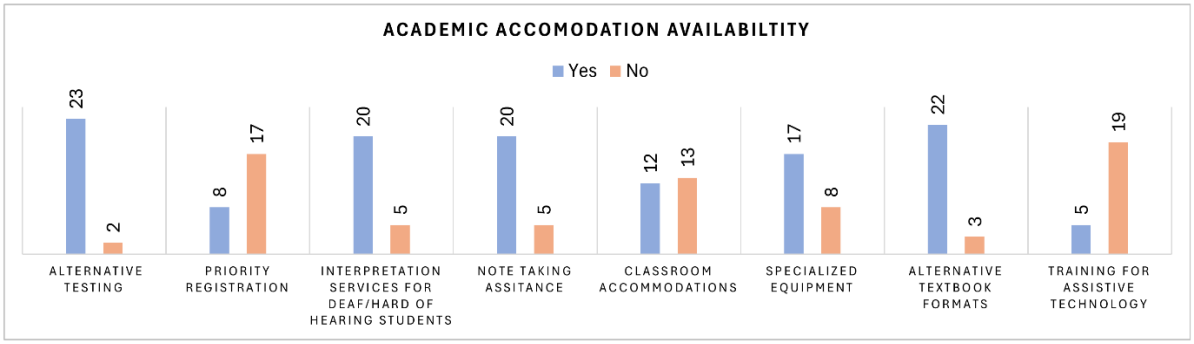

Figure 2: Trends in available academic accommodations by accommodation type

Conclusions and Future Work

Our findings reveal opportunities for cross-institutional learning and collaboration. The insights gained from this analysis will be used to inform the development of future data collection protocols aimed at conducting interviews with university students, faculty, and administrators in the subsequent phases of the project.

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