

## Original Article

# The Challenges of Accessibility and Equity for Students with Disability in Higher Education Institutions with Special Reference to the University of Karachi, Pakistan

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## Abstract

This research investigates the problems that students with disability (SWD) encounter in higher education institutions, with emphasis on barriers, equitable participation, issues, faculty members' awareness, instructional techniques, and perspectives. A questionnaire with Cronbach's reliability of 0.80 was used to collect data from fifty-nine students. According to the demographic statistics, 56% of respondents were male, with 46% aged 18-22, 34% aged 23-26, and 20% above the age of 27 years. The disability distribution showed that 42% had vision impairment, 38% had orthopedic impairment, and 17% had hearing impairment. Only two had serious epilepsy and behavioral issues. The major findings suggested that the institution's physical infrastructure is average, but students with disabilities have difficulty accessing lifts, toilets, and tactile pathways. Library services are limited, and academic obstacles include building accessibility, course selection, teaching methodology, curriculum annoyance, and a lack of study resources. Social issues and a negative social attitude toward handicapped people also impede their learning opportunities. Technology has improved their lives, yet there remains a significant disparity between inclusive education theory and practice due to severe budgetary restrictions. Faculty members struggle to evaluate students with disabilities, and curricular standards do not match their abilities.

**Keywords:** Accessibility, Accommodation & adaptation, Assistive technology, Higher education, Inclusive education practices, Stigma, Students with disability

## INTRODUCTION

Education is crucial for everyone, regardless of age, gender, financial status, or disability. Students with disability (SWD) are generally perceived as disadvantaged, with limited economic, political, and social opportunities. This is congruent with Mcleod (2014), who claims that SWD have personal limitations in academic settings that influence their social, psychological, and intellectual domains, potentially compromising their academic progress. However, these obstacles may be addressed with parental, community, and government support, ensuring equal and quality education for all. Higher education helps individuals to advance their knowledge

and develop career skills. However, those with disabilities are routinely refused this opportunity (Southward & Kyzer, 2017).

According to Yssel, Pak, and Beilke (2016), students typically feel discrimination from teachers based on their disability. One participant was hesitant to disclose their disability, while another felt embarrassed and ashamed when faculty members discussed accommodations in class. Lyman, Beecher, Brooks, Call, and Jackson (2016) found that some students jeopardized their academic success by failing to request accommodations in order to prevent unfavorable social reactions or being treated differently, and that they felt burdened when utilizing their accom-



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modations in class. Denhart (2008) and Hong (2015) identified reluctance among SWD to use accommodations for fear of being perceived as lazy by their teachers. This anxiety stems from a fear of being perceived as less capable.

Students with disability (SWD) commonly encounter bias from their peers in higher education, as evidenced by Yssel et al.'s (2016) study, in which participants reported receiving negative attention when teachers recognized their learning needs. Hong (2015) observed that SWD felt pressured to comply by their peers in order to be viewed and treated fairly. During the debate about testing room accommodations, one member shared this sentiment. The participant said that she would rather strive to blend in with her classmates than go to a testing room and get drawn in. Denhart (2008) found that students with impairments often experience distress due to the increased commitment and effort required for assignments and studying compared to their peers.

Yssel et al. (2016) found that despite facing challenges with university faculty, most students with disability (SWD) reported feeling positive about their affiliation and experiences in higher education institution, despite facing difficulties. Fleming, Oertle, Plotner, and Hakun (2017) examined SWD satisfaction with social factors in tertiary education and also analyzed that a student's sense of belonging and ability to advocate for themselves were linked to better levels of satisfaction and retention.

Hughes (2005) stated that persons with disability have less academic possibilities, particularly in developing nations, due to lower priority in curriculums, instructional materials, infrastructure, special programs, environmental difficulties, and overall educational quality. Historically, they have been disadvantaged and denied equal participation owing to negative psychological variables such as prejudice, preconceptions, and stigma. The major challenge among SWD to pursuing higher education is a lack of accessible infrastructure; including unsupportive classrooms, labs, libraries, bathrooms, dining halls/rooms, and sports/games facilities. This feature of the educational system, along with a lack of accessible infrastructure, prevents a large number of disabled students from continuing further education (Croft, 2010).

Chataika (2010) emphasizes the issue of overcrowded classrooms, insufficient seating, standing space, and bad acoustics for SWD. Even during lectures, the large number of students

compels these students to remain in the back, making it impossible for them to hear the speaker well, significantly harming their academic achievement. According to Filmer (2005), more than 60% of students with disabilities who study in unsuitable environment suffer academically owing to extensive traveling distances, restricted access to learning resources, and difficulties mounting building stairs.

Studies in developing nations frequently show a dearth of knowledge concerning support services for SWD in higher education. Madriaga (2007) found that it is unclear who assesses their requirements and what facilities and rights are accessible, causing tension and worry among these students. This lack of legal rights and reasonable accommodations impedes their preparedness for higher education courses, emphasizing the need for greater support services. The review of the related literature suggested that many SWD face significant obstacles in accessing formal education systems in universities, leading to low attendance, retention, survival, and academic completion rates. Croft (2010) suggests that these students are less favored by academic infrastructures and structured environments.

### **Justification and Significance**

This study looks at the academic and social views of students with disability (SWD) in higher education, specifically in Karachi, Pakistan. Its goal is to better comprehend the connection between faculty members and SWD when it comes to accommodations. The study aims to provide faculty members a greater awareness of their duties and obligations to SWD, allowing them to better help them academically and socially. The core idea was to investigate the issues confronting SWD in higher education institutions, identify better solutions, and offer appropriate measures.

## **METHODOLOGY**

### **Study Site**

In 1988, the University of Karachi initiated a special education teacher training program as part of a project supported by the Directorate General of Special Education, Government of Pakistan. This was a significant step forward for Pakistan's education system, as there had been little effort to develop such a program at tertiary levels. The program aimed to create a curricular program that met the training needs of Pakistan's special teachers, train faculty members to bring teachers up to professional level, and cre-

ate a management framework for institutional growth. The program should continue to adapt and seek new growth prospects, both vertical and horizontal. Vertical growth includes M.Phil. and Ph.D. programs in research and disability areas, as well as short-term training courses or ongoing education programs for children with special needs and the disability community. Horizontal growth includes reaching out to the community, particularly parents of children with special needs, and starting a bachelor’s degree program focusing on inclusive education and early childhood special education.

The University of Karachi is providing following provision and services to students with dis-

**Table 1**

Number of SWDs Getting Admission on Reserved Seats

Year	No. of Students
2014	08
2015	21
2016	16
2017	13
2018	14
2019	16
2020	18
2021	20
2022	17
2023	25
2024	15

Source: Directorate of Admissions, University of Karachi

Mostly physically handicapped candidates were got admission due to the fact that this category actually has observable characteristics as compare to hearing impairment, emotional disturbances and health impairment. Visual impairment becomes the subsequent most common category, and a few departments had an enormous range of blind and partially sighted students. Even after one has allowed for underestimates, the real numbers suggested and the huge variation in this information recommend that the provision to be had for students with disability is a ways too little.

For the justification of this finding, two arguments may be considered. Firstly, the lack of authentic and reliable information is a serious barrier to the making effective plans and monitoring of provision. As a common practice; SWD seek hide their problems due to avoiding stigmatization. But it does not mean to avoid accommodation needs of these students. Secondly, SWD exist within social systems which have the

ability:

- i. 2% quota is reserved for persons with disabilities who provide district assessment board registration certificate of disability. The applicant to this quota for people with disability will be processed with the aid of the “Disability Committee” to judge the suitability of candidates. The information given on the number of students with disability at the University of Karachi is summarized in Table 1. The Office of the Director Admission Committee is provided data of SWDs got admission on reserved quota (2%) during the years 2014 – 2024.
- ii. A provision of 100% fee exemption has only been offered to students with blindness. At present, this provision to the blind students doesn’t observe to other disabilities.
- iii. In University of Karachi, the office of Student Advisor is to grant certified students with disabilities services or reasonable accommodations, tutorial adjustments or changes meant to limit the effect incapacity may also have on their overall performance in a regular tutorial setting. Services do no



longer lower path standards or extensively alter degree necessities but, instead, provide students a better chance to reveal their academic abilities.

- iv. The university's main library and some recently constructed departments provide wheelchair ramps which typically built in order to improve accessibility for students who can't use stairs. However, civic infrastructure in almost major buildings in the university still fails to furnish for the needs of students with disability. As a signatory of the United Nations Convention on the Rights of Persons with Disabilities, Pakistan has committed to gradually retrofit public areas to make them more accessible for people with disability. Disabled Persons (Employment and Rehabilitation) (Amendment) Act, 2014 ensure that the currently constructing buildings and the buildings to be developed furnish an easy get right of entry to the disabled persons.
- v. The University also has a society for students who are differently abled. Since the University of Karachi beliefs in inclusivity, this society encourages students with disabilities to join this platform and participate in various curricular and co-curricular activities. The society continuously has conducted various programs since its inception, including a mega-sports event for all the differently abled students of the University of Karachi.
- vi. The University is making each and every effort to make sure that SWDs are in a position to take part absolutely in their degree award ceremony/convocations and experience this day along with all their fellow graduates. In such instances the parents of such students are ought to be particularly invited to the match to feel them proud over the achievement of their ward.

### Instrumentation

The investigators did not utilize standardized instruments during the study since there were no adequate alternatives. Instead, they constructed the study apparatus utilizing previous research and their professional experiences. The survey was prepared individually for students with disability, as explained below. This survey classified into three separate sections. The first section asked about the demographic information about the students which include gender, age, faculty and department and type of disability,

official disability certificate and disability National Identity Card (NIC).

The second section which was a rating scale developed to assess accessible infrastructure and barrier-free settings for students with impairments at university campuses. The scale was developed utilizing literature and questions focusing on the objectives. It examined higher education institution infrastructure, library service accessibility, and SWD support services. The scale consisted of 22 items ranging from Advance to Not at All. The item scores decreased from positive to negative. The instrument was given to respondents individually and then distributed for testing. The researcher clarified misconceptions and reframed questions in simple language so that respondents could respond quickly.

The purpose of the third section of the questionnaire was to identify problems found in higher education institutions. The questionnaire includes 25 items on the admissions process, academic problems, financial assistance, social relationships, and support services. Six open-ended questions were included to help clarify. The questionnaire was semi-structured, including both open and closed-ended questions. Closed-ended items had three options, but open-ended questions required respondents to express their ideas.

The tool was tested separately on a small sample and then reframed for clarity. The technique was developed based on prior research and reviewed by three specialists. The draft was validated, and its content validity was determined. A pilot study of 10 students with disabilities was done to assess the tool's reliability. The Cronbach's Alpha test was performed yielding a score of 0.72. After removing three questions with low correlation, the tool's reliability was revised, achieving a score of 0.80. The items were chosen following validity and reliability testing.

### Procedure

Before data collection, the approval was obtained from the Registrar of the University of Karachi. Data was collected through a questionnaire which focused on policy understanding and execution of support services. Purposive sampling was utilized by the investigators to obtain data about students with disabilities in fifty-six (56) departments where a graduate program was running. Because there existed a proper database on the number of SWD enrolled, it was the simplest method to receive information about them from the university administration or the student adviser office.

## RESULTS & FINDINGS

### Demographic Information

As shown in table-2, the majority of the respondents were male (56%), with the remainder 44% female. The table also reveals that 46% of students were between the ages of 18 and 22, 34% between the ages of 23 and 26, and around 20% were older than 27. Typically, students graduate between the ages of 22 and 23. As a result, it is possible to conclude that SWDs graduated

later than expected. Usually, persons with disabilities begin their education late owing to a lack of awareness among parents, restrictions in their experiences as a result of their disability, confusion, a lack of resources, and so on. Table-2 also shows that 42% of students had visual impairment, 38% were orthopedically handicapped, and the remaining 17% had hearing impairment. Only two respondents were placed in the “others” group because they had severe epilepsy and some behavioral difficulties.

**Table 2**

Demographic Information of SWDs (N = 59)

Demographic Information	N	Percentage
<b>Gender</b>		
Male	33	56
Female	26	44
<b>Age (in years)</b>		
18 – 22	27	46
23 – 26	20	34
> 27	12	20
<b>Type of Disability</b>		
Visual impairment	25	42
Hearing impairment	10	17
Physical handicapped	22	38
Others (Epilepsy, ADHD, Autism, etc.)	02	03

### Problems faced by Students with Disability

The students face several problems in higher education, problems faced in admission process is one of them. There are three components to

investigate the problems faced by students with disability in higher education. Each component has three options; Yes, No and Can't Say/ Not Applicable. The percentage of respondents for each aspect has been given in the table-3.

**Table 3**

Problems faced in Admission Process

No.	Factors	Yes	No	Can't Say/ Not Applicable
1	Completion of admission form submission	19 [33%]	35 [59%]	05 [8%]
2	Admission on disability quota/Reserved seats	10 [17%]	14 [24%]	35 [59%]
3	Extra time in entrance test	20 [34%]	20 [34%]	19 [32%]
4	Facility of writer	06 [10%]	28 [47%]	25 [42%]

Table 3 demonstrates participant responses to certain processes/restrictions throughout admissions. Fifty-nine percent of the participants had no trouble completing forms. Some respondents (33%) had network issues while completing online applications, paying fees online, and validating their names in entry results. Some applicants sought to get admission to their selected department but were denied due to low

merit. Thirty-four percent did not get extra time on entrance exams, remaining 34% got it while 32% were not answered. Forty-seven percent of the respondents did not receive a reader/writer/assistant facility, 10% did, and the remaining 42% did not need it. These findings highlight the difficulties that participants had in navigating admissions processes and determining their eligibility.

### Academic Problems faced by Students with Disabilities

The rate of completion of course of students with disabilities is lower than the rate of completion of course of general students. One of the factors behind the dropout rate of students with disability is that they face academic problem during completion of the course. Table 4 reveals that the majority of participants (61%) had not got admission to their desired course, while 29% were admitted as per their choice. The reasons for not getting admitted to their selected program were handicap limits, low merit, and a lack of understanding.

**Table 4**  
Academic Problems encountered by Students with Disability

No.	Academic Problems	Yes	No	Can't Say/ Not Applicable
1	Selection of department as per choice	17 [29%]	36 [61%]	06 [10%]
2	inaccessible buildings	45 [76%]	10 [17%]	04 [7%]
3	No relaxation in time for assignment deadline/final exam.	28 [47%]	14 [24%]	17 [29%]
4	Facing discrimination/avoidance	18 [30%]	24 [41%]	17 [29%]
5	Effect of disability on achievement	25 [42%]	28 [48%]	06 [10%]
6	Unavailability of study material in required mode	31 [53%]	18 [30%]	10 [17%]
7	No access of assistive technology	35 [59%]	17 [29%]	07 [12%]
8	Problem of interaction with teachers	41 [70%]	18 [30%]	00 [0%]

Similarly, when it comes to time flexibility, the majority of respondents (47%) thought the timing is not flexible for them, while some (24%) found the timetable flexible, and a few respondents (29%) were unsure. In conclusion, the majority of participants found the institution's schedule inflexible. The table shows that 41% of participants did not experience prejudice due to their disability, while 30% did, and 29% did not know. This suggests that most participants did not face prejudice, but some students experienced it from peers and non-teaching personnel.

The majority of participants (48%) reported no impact of disability on their academic advancement, while 42% felt it did. They reported working more to understand lessons and find materials, wasting time. The impairment is now affecting around half of the participants' academic development. The majority of responders (53%) reported difficulty getting study materials, whereas 30% did so readily and 17% were ignorant. Approximately half of the participants were unable to locate items, and some were unaware

Furthermore, when asked about building accessibility, the majority of interviewees (76%) reported inaccessible infrastructure and issues accessing buildings, whereas a small percentage (7%) claimed they were unaware. The results showed that the majority of respondents had difficulty accessing the library building, laboratories, and computer labs. Some participants also stated that they were unable to attend all of the lessons because they were held on the second or third floor of the building, there were no lifts, and they could not use the stairs. Aside from this, the majority of respondents cited a shortage of disabled-friendly toilets in campus buildings.

of accessible materials for students with visual and hearing impairments. Some participants experienced difficulty finding resources in Urdu, while students with visual impairments noted a lack of Braille books and audiobooks in the library. However, with the teacher's consent, they can record lectures.

The study reveals that 59% of participants have not accessed computer software, while 29% have, and 12% are unaware of it. The majority of participants do not use computers or laptops due to lack of knowledge, while some are unaware of the software. Besides these problems, some students with disability struggle to complete assignments in print form since lecturers do not allow Braille submissions. As a result, students rely on their sighted peers, which lead to late submissions. When teachers require group participation from students who do not have disabilities, they lag behind academically. Access to information is also an issue, with some students having trouble navigating campus and locating courses due to a lack of tactile pathways. Some

students with visual impairments struggle to navigate the software due to the many components necessary.

As shown in table 4, majority participants (70%) said that there was insufficient connection between students with disability and teachers within the teaching-learning process or outside of classrooms. A healthy relationship between teachers and students is crucial to their overall development. On the other side, the results showed that the thirty percent of the participants had reported favorable interactions with teachers.

### **Interpretation of Open Ended Questions**

The responses of participants are discussed here under four themes:

#### ***Execution of Inclusive Practices***

Faculty members face challenges in teaching and learning with SWD due to lack of expertise and institutional obstacles. They face professional limitations, unhappiness, and institutional problems like ineffective communication, collaboration, and rules. Poor training and infrastructure contribute to inclusion difficulties, making classroom accommodations challenging.

#### ***Provision of Accommodations & Adaptations***

Faculty accept accommodation requests from SWDs but struggle to tailor their teaching to individual needs and deal with fairness. They report exceeding university and national disability support standards but are hesitant to make improvements. The Higher Education Commission's (HEC) "Policy for Students with Disabilities at Higher Education Institutions (HEIs) in Pakistan 2021) is a comprehensive document aimed at guiding individuals with disabilities in collaboration with HEIs and other relevant organizations. The policy aims to ensure equal participation in normal daily activities for students with long-term physical, mental, or sensory impairments.

#### ***Administrative Difficulties***

Faculty members are concerned about gaps in university activities, policies, and administration, particularly concerning students with minor medical disorders and those without a medical certificate. They are particularly concerned about acknowledging students with invisible impairments.

#### ***Maximum Opportunities for Inclusive Education***

Budget constraints limit the university's resources for disability accommodations and per-

sonnel, leading to teachers being unaware of these resources. Peer support, knowledge promotion, and teacher understanding are crucial for inclusive classroom environments.

### **Discussion**

This study examines the challenges faced by SWD in higher education institutions, focusing on their obstacles, equitable participation, issues, teacher awareness, instructional approaches, and perceptions. The institution's physical infrastructure is average; however some students with disability have difficulty accessing lifts, main doors, and disabled-friendly restrooms, while those with visual impairments struggle with tactile routes, making it difficult to locate classes and other campus buildings. Shevlin, Kenny, and Mcneela (2004) found that physical access remained a significant barrier to SWD's full participation in higher education. Paul's 1998 research revealed that students using wheelchairs face challenges in accessible classrooms and bathrooms. West et al. (1993) found that students with disability face barriers such as inaccessible facilities and classrooms, as well as a lack of alternate accommodations.

The library services are rated low, with students with disability having difficulty accessing Braille and audio books, embossing machines, note-taking, Braille indications, and audio amplifiers. The physical/attitudinal environment is not appropriately designed to allow full inclusion. Most students report a lack of study tools, such as Braille books, audio books, and Urdu books. According to Shevlin, Kenny, and Mcneela (2004), access issues exist at all levels of university life, including library services.

The findings highlights academic challenges faced by SWD, including building accessibility, course selection, teaching approach, curriculum annoyance, and lack of study tools. These issues are prevalent due to inadequate teacher awareness, lack of aids and appliances, and building inaccessibility, often hindering their learning experience (West et al., 1993; Vickerman and Blundell, 2010). The study found that students with disability face social problems in interactions with teachers, making friends, and participating in extracurricular activities, contradicting the importance of family, teachers, and peer acceptance. Perry et al. (2008) observed that students with disability frequently interact favorably with their peers, with just a few indicating negative experiences. The study suggests that teachers should be aware of their students' specific needs. According to Lau, Tsui and Jin's (2005) study,



teachers may struggle to meet the unique needs of students with disability, necessitating extra time and attentiveness.

The survey revealed a negative societal attitude towards disabled individuals, with compassion often overshadowing support. Peer behavior is often problematic, with sighted students often refusing assistance. Female students were found to be more reckless and had a harder time getting married than male students. Most students report that technology has significantly improved their lives, enabling them to complete daily tasks independently, study, work, and support themselves.

Faculty has a significant role in enhancing academic and employment opportunities for students with disabilities (Moriña & Orozco, 2023). However, institutional limitations exist in higher education institutions in Pakistan that extend beyond training requirements and teaching skills. While most research in other parts of the globe focus on faculty impact, some stress the responsibilities of all educational process participants, as well as the need of mutual feedback and support for inclusive policies (Solis-Grant et al., 2023). The ecosystem approach highlights the importance of faculty involvement in creating a more inclusive learning environment for students with impairments, acknowledging that all school stakeholders contribute equally to an individual's training and development needs (Anderson et al., 2014).

The university's regulations for helping students with disability oblige professors and staff to give assistance, however there is a substantial gap between inclusive education policy and practice owing to the need for a medical certification. Faculty struggle to evaluate SWD and curriculum norms do not match their skills, indicating the need for greater flexibility in curriculum design. The study aligns with previous research highlighting the importance of faculty flexibility and adaptability in teaching styles for students with disability in the classroom (Elbeheri et al., 2020). The study highlights the lack of educational delivery skills, which is a concern echoed by Crawford and Cifuentes-Faura (2022), who argue that poor institutional development of sustainable practices has slowed development goals and decreased interest in inclusion initiatives. Leech et al. (2009) emphasize the need for a more collaborative approach to disability services.

Despite limited resources, the survey indi-

cated that the institution's accommodation efforts are appropriate and effective. However, in comparison to an American university case study, there was only moderate expansion in the whole support system, raising questions regarding meaningful access (Lehrer-Stein & Berger, 2023). Despite the institution's excellent efforts to promote student inclusion, they noted that disability assistance, especially accommodation, received little attention from management.

University policy standards recommend allocating departmental student advisor to students for occasional consultations; however faculty and management staff experiences indicate a lack of educational assistance at the administrative level. According to Moriña and Biagiotti (2022), even with institutional help, students with disability encounter academic problems that restrict their progress and have a direct influence on their graduation. Fernández-Cerero et al. (2023) pointed out a lack of emphasis on developing educational programs for teacher training in special needs that stress inclusive student outcomes.

The university's communication chain excludes faculty participation in accommodation processes, allowing them to determine whether to grant or restrict access. The communication network largely links students and support coordinators, omitting teaching staffs. Kamran et al. (2023) underlined the need of enough resources for educators while delivering high-quality student accommodations. Teaching personnel sometimes follow academic programs without specific diagnosis or pedagogical skills. Faculty concerns about feedback and timely communication with students are genuine because university regulations necessitate engagement with disabled students (Fovet, 2021).

## CONCLUSION

The study reveals that students with disability (SWD) have a low enrollment rate in higher education due to challenges in admission, academics, economics, social issues, and support services. The absence of major laws suggests insufficient equitable participation, necessitating the implementation of special policies and methods.

## Implications

The study highlights the need for increasing knowledge and enthusiasm to improve accessibility and productivity in higher education for students with disabilities, emphasizing the value



of inclusive education. Based on the findings of the study, the educational implications are stated below:

- Special provisions should be made to ensure equal participation of SWD in higher education institutions.
- Students with disabilities might benefit from advocacy programs that inform them of the resources available at higher education institutions.
- Students with disabilities should receive financial assistance for higher education, including scholarships, frees transportation, hostel accommodations, assistive equipment, and laptop computers.
- There is a pressing demand for access the library with cutting-edge software, a computer lab, and study resources geared to students' requirements.
- Provide services such as career counseling, wheelchairs, sign language facilities, tactile routes, adapted sports equipment, and aids and appliances.
- SWD's social participation in higher education institutions should be increased through various initiatives.
- Remedial or additional classes should be developed to address academic challenges for students with disabilities, emphasizing the need of maintaining a positive attitude when dealing with them.
- Students with disability should be taught using technology and assistive equipment.

### Recommendations for Further Studies

The study recommends that higher education institutions strengthen their disability support system, establish legal requirements to accommodate the academic needs of students with disabilities, and train faculty in inclusive pedagogies. A primary policy focus should be to care for SWDs throughout their studies, establishing clearer requirements for disability inclusion. Research on faculty experiences educating and accommodating students with impairments is critical. Comparative research among institutions should look at their inclusion policies and practical help for disability challenges. This might influence educational policy on disability assistance at various levels. A participatory design would provide a more comprehensive environment for research, putting student and faculty opinions at the center of policy creation.

### Competing Interests

The authors did not declare any competing interest.

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