

Identifying User Needs for Inclusive Library Spaces for Students with Disabilities: A Qualitative Study of the Disability Corner at the Universitas Sebelas Maret Library

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ABSTRACT

Purpose – Inclusive library spaces are essential for students with disabilities to access information and participate in academic activities. This study identifies spatial barriers and needs and formulates user-centered requirements for developing an inclusive Disability Corner at the Library of Universitas Sebelas Maret, Indonesia.

Methods – A qualitative descriptive-exploratory design was employed using purposive sampling. Data were collected through one Focus Group Discussion (FGD) involving 25 participants comprising disability practitioners, librarians, students with disabilities, and the Disability Corner management team, complemented by library-environment observation and document analysis. Thematic analysis was used to identify spatial barriers, needs, and design requirements.

Findings – Five dimensions emerged: physical accessibility and mobility; quiet and sensory-friendly spaces; comfort and privacy; concentration and academic well-being; and user involvement in spatial design. Participants identified noise, crowding, and excessive sensory stimulation as barriers to concentration, indicating the need for quiet and sensory-friendly spaces with greater environmental control. The findings show that inclusive library design must address physical, sensory, psychological, and learning-related needs.

Research Implications – The study provides an empirical basis for translating stakeholder experiences into user-centered spatial requirements for the Disability Corner. However, its single-site, pre-implementation design limits generalizability and does not establish the effectiveness of the proposed requirements. Further research should validate them through post-occupancy evaluation and comparative studies across academic library settings.

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Introduction

Inclusive higher education requires more than providing students with disabilities with equal opportunities to enroll and participate in academic programs (Erza et al., 2024). It also requires learning environments that enable students to access information, study independently, interact with others, and participate meaningfully in academic activities (Alu & King, 2024). Inclusion in education is therefore concerned not only with the presence of students with diverse abilities but also with identifying and removing barriers that restrict their participation and achievement (Onaolapo et al., 2026). Rather than requiring learners to adapt to existing structures, inclusive environments should respond to differences among learners and provide conditions that enable equitable participation (Alabi & Okiki, 2023a). For students with disabilities, barriers may arise from curriculum and teaching practices as well as from the physical, sensory, informational, and social environments in which learning takes place (Brunskill & Gilbert, 2023).

In the Indonesian higher education context, academic libraries are an important part of this inclusive learning environment because they provide access to information, study spaces, and academic support. However, the availability of library facilities does not necessarily ensure that these spaces respond adequately to the diverse physical, sensory, and academic needs of students with disabilities. This issue is particularly relevant at the Library of Universitas Sebelas Maret (UNS), where the development of a Disability Corner reflects an institutional effort to strengthen inclusive library services. The development of such a space requires more than the provision of designated facilities; it requires an understanding of how students with disabilities experience existing library environments and what spatial conditions they consider necessary for accessibility, comfort, concentration, privacy, and academic well-being. Consequently, empirical identification of user needs is important to inform the development of an inclusive library space that is responsive to the actual experiences of students with disabilities at UNS.

Academic libraries form an important part of this environment because they support independent study, access to academic resources, research activities, group learning, and informal academic interaction (Abdullayeva, 2024; Azizah & Rahmi, 2023; De Prosperis, 2026b). Library accessibility, therefore, extends beyond whether students can enter a building or use a particular facility. The spatial organization and environmental conditions of a library can influence users' ability to move independently, locate and use resources, concentrate on academic tasks, regulate sensory stimulation, obtain assistance, and feel safe and comfortable (Cudjoe et al., 2026). The *IFLA Guidelines for Making Libraries Accessible for People with Disabilities* similarly emphasize that accessibility should be addressed comprehensively through universal design, physical and informational accessibility, assistive technology, staff preparedness, leadership, and the involvement of people with disabilities (Maina et al., 2026). This broader perspective suggests that an accessible academic library should not merely remove physical obstacles

but should provide an environment that accommodates different ways of learning, communicating, moving, and using information resources (Fan & Hu, 2026).

The need for such an approach is particularly important because students with disabilities do not constitute a homogeneous group. Their spatial requirements may differ according to physical, sensory, cognitive, and psychosocial characteristics (Carter, 2017; Conner & Plocharczyk, 2024). Students with physical disabilities, for example, may require adequate circulation space, accessible furniture, appropriate desk dimensions, and independent access to collections and study areas (Çakmak & Uğurlu, 2025). Students with visual or hearing disabilities may require environmental arrangements that facilitate orientation, communication, and access to information (Alabi & Okiki, 2023b). Other students may experience barriers associated with excessive noise, crowding, visual stimulation, inadequate lighting, limited privacy, or the absence of quiet areas for concentration. These variations challenge approaches that treat accessibility as a single technical or architectural requirement. An inclusive library space consequently needs to accommodate diverse patterns of use rather than assume that one standardized spatial solution will meet the needs of all students with disabilities (Fife et al., 2021).

This spatial perspective is also closely connected to academic well-being. In this study, academic well-being refers to students' capacity to experience positive and supportive conditions that enable them to engage effectively in academic activities. It is conceptualized through five interrelated dimensions: comfort, concentration, safety and belonging, the ability to manage academic demands, and engagement in learning activities (Leong, 2023). These dimensions reflect not only the absence of physical barriers but also the extent to which the learning environment supports students' psychological and academic functioning. Comfort concerns students' ability to study without undue physical or sensory discomfort, while concentration refers to the capacity of the environment to support sustained attention. Safety and belonging relate to whether students feel secure, accepted, and socially included within the library environment. The ability to manage academic demands concerns whether the environment enables students to regulate their study activities and cope with academic requirements, whereas engagement refers to students' sustained participation and involvement in learning activities.

A space may therefore satisfy formal accessibility requirements while remaining difficult to use if it is uncomfortable, overstimulating, crowded, lacks privacy, or does not support individual learning preferences (Erza et al., 2024; Little et al., 2022). These conditions can influence students' experiences of independence, comfort, concentration, participation, and engagement. Thus, physical accessibility and academic well-being should not be considered independent dimensions. Rather, accessibility provides the conditions for students to use the library, while the quality and fit of the spatial environment can shape how effectively they can study, participate, and remain engaged.

This position broadens the conventional understanding of library accessibility from a focus on physical entry and facility provision toward a broader consideration of how space supports students' academic functioning and well-being (Oud, 2018).

A user-centered perspective offers a way to address this broader understanding of inclusion. Conventional approaches to accessible space often begin with technical standards, institutional requirements, or architectural assumptions. While these provide necessary foundations, they may not fully capture how users experience a space in everyday academic activities. In this study, user-centered design is operationalized by systematically connecting users' reported experiences and needs with identified spatial barriers, required spatial characteristics, and potential design responses. Rather than treating user input as routine consultation or a general needs assessment, the approach uses users' experiences as empirical evidence for interpreting barriers and translating them into specific spatial requirements. This is particularly relevant to disability inclusion because the same physical environment may be experienced differently by different users (Onaolapo et al., 2026). Direct engagement with students with disabilities and relevant stakeholders therefore serves not merely to collect preferences, but to inform the analytical progression from user needs to spatial requirements and design responses (De Prosperis, 2026a).

This distinction also reveals an important issue in the development of dedicated disability facilities in academic libraries. At the Library of Universitas Sebelas Maret (UNS), the Disability Corner is being developed as a dedicated facility within the library to support students with disabilities in accessing information, studying, and participating in academic activities. Its intended users are students with disabilities, while its development also involves relevant library personnel and disability-related stakeholders. In this study, the Disability Corner is examined from a user-centered perspective, focusing on the spatial and environmental conditions required to support accessibility, comfort, concentration, privacy, and academic well-being. Thus, the Disability Corner is not treated simply as a designated room or service point. Its effectiveness depends on whether its location, circulation, furniture, noise level, lighting, privacy, sensory conditions, and overall atmosphere correspond to the activities and experiences of its intended users. The central issue is consequently not only whether an academic library provides a disability-oriented facility, but whether its development is informed by the experiences and needs of the students it is intended to serve.

Despite increasing attention to disability inclusion and accessible library services, an empirical gap remains in understanding how the everyday spatial experiences of students with disabilities can be translated into specific design requirements for inclusive academic library spaces. Previous studies have addressed physical access, assistive technologies, accessible information, and dedicated disability services (Onaolapo et al., 2026), but less attention has been given to systematically translating users' lived spatial experiences into

requirements for circulation, sensory conditions, comfort, privacy, and study environments. Moreover, the relationship between library space and academic well-being has received limited attention, particularly in examining how spatial conditions influence concentration, comfort, participation, and engagement in academic activities. There is also limited empirical work that integrates these dimensions into a user-centered framework within a specific academic library setting. Addressing these gaps is important because facilities developed without sufficient understanding of users' experiences may meet formal accessibility requirements while remaining insufficiently responsive to students' academic needs.

This gap provides the rationale for examining the development of the Disability Corner at the Universitas Sebelas Maret Library from a user-centered perspective. The study is motivated by the need to move beyond a facility-oriented understanding of disability inclusion and to identify how students' experiences can inform concrete spatial decisions. Accordingly, the study explores the spatial and environmental barriers experienced by students with disabilities, identifies the characteristics and facilities they perceive as necessary, and examines how these needs can be translated into a framework for inclusive library space design. The study addresses three research questions:

The study addresses the following research questions: RQ1. What spatial and environmental barriers are experienced by students with disabilities when using academic library spaces?. RQ2. What spatial characteristics and facilities are perceived as necessary to support accessibility, comfort, concentration, privacy, and academic well-being?. RQ3. How can students' needs and experiences be translated into a user-centered framework for designing inclusive library spaces that support the academic well-being of students with disabilities?.

The study contributes a User-Centered Inclusive Library Space Framework that connects disability-related user needs, experienced spatial barriers, spatial requirements, inclusive design responses, and academic well-being. The principal conclusion is that inclusive library space should be understood not simply as a physically accessible facility but as part of the academic learning environment, in which accessibility, sensory conditions, comfort, privacy, concentration, and user participation are interconnected. By translating users' experiences into spatial requirements, the study provides both a conceptual contribution to discussions of inclusive academic libraries and a practical basis for developing more responsive Disability Corner facilities.

The remainder of this article is structured as follows. The next section describes the research design and methods used to identify user needs and formulate spatial requirements. The subsequent section presents the findings of the study, followed by a discussion that interprets the findings in relation to inclusive library space, user-centered

design, and academic well-being. The final section presents the conclusions and implications of the study for the development of inclusive academic library environments.

Methods

1. Research Design

This study employed a qualitative descriptive-exploratory design with a design-oriented and framework-development focus. The study was designed to identify spatial needs, barriers, and environmental characteristics required to develop an inclusive academic library environment for students with disabilities, while translating these findings into a user-centered framework. A qualitative approach was appropriate because the study sought to understand participants' experiences, perceptions, needs, and recommendations rather than measure spatial accessibility through predetermined quantitative indicators. The inquiry focused on how library spaces are experienced in relation to physical accessibility, mobility, sensory conditions, quietness, comfort, privacy, concentration, academic activities, and academic well-being. The resulting framework represents an empirically informed conceptualization of spatial requirements and design responses rather than an evaluation of a completed physical design intervention.

The research was conducted at the Library of Universitas Sebelas Maret (UNS) in Surakarta, Indonesia, in the context of developing the Disability Corner as part of the library's efforts to strengthen inclusive and user-centered services. The Disability Corner served as the empirical context for examining the spatial needs and experiences of students with disabilities, rather than as a completed design intervention being evaluated. Primary data were collected on June 12, 2026, through a Focus Group Discussion (FGD) held in the Nakula Room of the UNS Library. The FGD was complemented by observations of the library environment and an analysis of relevant institutional documents to provide contextual information about the spatial and service conditions related to inclusive library development.

The researcher was directly involved throughout the research process as the facilitator and primary instrument of the qualitative inquiry. The researcher facilitated the FGD, explored participants' experiences and perspectives through questions and follow-up prompts, conducted observations of the library environment, reviewed relevant documents, organized the collected information, conducted thematic analysis, and synthesized the findings into spatial requirements. Given this dual role, reflexivity was incorporated throughout the research process to minimize potential facilitator and interpretive bias. During the FGD, the researcher used open-ended questions and neutral probing prompts to avoid directing participants toward predetermined responses and encouraged participants to express differing or critical perspectives. Particular attention was given to power relations between the researcher, librarians, disability practitioners, and students with disabilities by providing opportunities for all participants to contribute

and by avoiding privileging the views of institutional stakeholders over those of service users. The researcher also maintained reflexive notes during data collection and analysis to document personal assumptions, emerging interpretations, and potential confirmation bias. During the thematic analysis, emerging interpretations were reviewed through peer discussion to challenge assumptions and examine whether themes were adequately supported by participants' accounts. The researcher maintained an exploratory position throughout the process, allowing themes to emerge from the data while using the research questions to guide interpretation. These reflexive procedures were intended to reduce selective interpretation and strengthen the credibility and transparency of the findings.

2. Research Population and Participants

The target of the research was stakeholders involved in or affected by the development and use of inclusive academic library spaces, particularly spaces intended to support students with disabilities. Participants were selected using purposive sampling, based on their knowledge, experience, or involvement in disability services, library services, or the development of the Disability Corner.

The FGD involved 25 participants purposively selected from four stakeholder groups: [n] practitioners from the UNS Disability Studies Center, [n] librarians, [n] students with disabilities, and [n] members of the management team responsible for the Disability Corner at the UNS Library. The composition was intended to obtain complementary perspectives from service users, disability practitioners, library professionals, and service managers. The students with disabilities represented [specify disability types, e.g., visual, hearing, physical, or other disabilities], while [specify gender distribution, if ethically appropriate] and their academic status included [undergraduate/postgraduate students, if applicable].

Participants were recruited purposively based on their relevance to the development of an inclusive library space. The inclusion criteria were: (1) students with disabilities who were enrolled at Universitas Sebelas Maret and had experience or a potential need to use library facilities; (2) disability practitioners with professional or institutional experience related to accessibility and disability services; (3) librarians involved in library services or facilities; and (4) personnel responsible for managing or developing the Disability Corner. Potential participants were identified through relevant university units and professional networks and were invited to participate in the FGD. Participation was voluntary, and participants were informed about the purpose of the study, the nature of their participation, the use of the collected information, and their right to decline participation or withdraw. Informed consent was obtained from all participants before data collection. To protect confidentiality, participants' identities were not disclosed in the reporting of the findings.

The inclusion of these stakeholder groups enabled the study to capture different dimensions of inclusive spatial requirements. Students with disabilities contributed lived experiences concerning spatial barriers, preferences, and requirements; disability practitioners contributed perspectives on accessibility and disability-related needs; librarians provided information concerning library services and operational conditions; and Disability Corner management personnel contributed perspectives on existing facilities and the feasibility of spatial development.

The participants were therefore not intended to statistically represent all students with disabilities or all academic library users. Instead, they were selected as information-rich participants who could provide detailed and relevant accounts for understanding the spatial requirements of an inclusive library environment.

3. Data Collection Techniques and Instrument Development

Data were collected through three complementary techniques: Focus Group Discussion (FGD), environmental observation, and document analysis. The FGD served as the primary source of evidence, particularly for identifying participants' experiences, perceptions, spatial barriers, and needs across the five themes. Environmental observation was used to corroborate and contextualize FGD accounts by examining the actual physical and sensory conditions of the library. Document analysis provided institutional context and supported cross-checking of facilities, services, and Disability Corner development information. Where observations or documents differed from participants' accounts, these discrepancies were retained to enrich the interpretation. The three sources were integrated through qualitative triangulation.

Observation was conducted during the fieldwork on June 12, 2026, at the UNS Library to examine existing physical and environmental conditions relevant to students with disabilities. One observation session was conducted alongside the FGD, covering entrances and circulation routes, reading and service areas, furniture and movement space, lighting, noise, privacy, and existing Disability Corner facilities. Accessibility indicators included ease of entry, unobstructed circulation, adequate movement space, furniture accessibility, sensory conditions, and opportunities for comfortable and private use. Field notes and [photographs/checklists] were used to document observed conditions. The observations were compared with FGD accounts to corroborate reported barriers and identify differences between participants' perceptions and the observed library environment.

Document analysis was conducted to obtain contextual and institutional information relevant to the development of the Disability Corner. Documents were purposively selected based on their relevance to accessibility, facilities, services, spatial requirements, and institutional support. The types of documents examined and their analytical use are summarized in Table 1.

Table 1. Document Review Matrix and Data Triangulation

Document type	Date/period	Selection basis	Information extracted	Comparison with FGD/observation
Library service planning documents	2026	Relevant to service development	Existing and planned services for users with disabilities	Compared with participants' reported service needs
Institutional policies/guidelines	Current during study period	Relevant to accessibility and inclusion	Institutional commitments and service provisions	Compared with observed accessibility conditions
Existing facility information	2026	Relevant to library spatial conditions	Existing facilities, spatial functions, and accessibility features	Compared with observed physical conditions
Disability service-related documents	2026	Directly related to disability services	Existing support mechanisms and identified service needs	Compared with FGD accounts
Disability Corner development documents	2026	Directly related to the research focus	Planned facilities, spatial requirements, and institutional support	Compared with FGD recommendations and observations

Relevant information was organized using a document review matrix and compared thematically with FGD findings and observation notes to identify convergence and discrepancies among institutional information, observed conditions, and participants' experiences.

The FGD guide, observation guide, and document review matrix functioned as complementary qualitative instruments. These instruments were developed to correspond with the research questions and were used flexibly so that relevant issues emerging during data collection could be explored further.

4. Data Analysis

The collected data were analyzed using thematic analysis through a hybrid inductive–deductive coding approach. Deductive codes were initially informed by the research questions and literature on accessibility, user-centered design, sensory

conditions, comfort, privacy, and academic well-being, while inductive codes were developed from issues emerging directly from the data. Coding was conducted by the researcher as the primary coder across FGD transcripts, observation notes, and documentary information. The data were repeatedly reviewed, initially coded, and compared across sources before similar codes were grouped into categories and broader themes. As a single-coder study, disagreements between coders were not applicable; instead, potential interpretive bias was addressed through reflexive notes and peer discussion of emerging themes. Final themes were reviewed against the underlying data and triangulated across FGD, observation, and document sources to assess their consistency and relevance to the research questions.

The analysis focused on identifying the relationship between user needs, spatial barriers, spatial requirements, design responses, and academic well-being. Information from the three data sources was compared to determine whether similar issues emerged across participants' accounts, environmental observations, and institutional documents. Through this process, five principal themes were identified: (1) physical accessibility and mobility; (2) quiet and sensory-friendly spaces; (3) comfort and privacy; (4) concentration and academic well-being; and (5) user involvement in spatial design.

The thematic findings were subsequently translated into specific spatial requirements and potential design characteristics for the Disability Corner. Rather than treating each requirement as an isolated facility, the analysis examined how different spatial characteristics could collectively support independence, comfort, safety, concentration, participation, and academic well-being. The final synthesis was represented in the User-Centered Inclusive Library Space Framework, which connects users' needs and experiences with environmental barriers, spatial requirements, inclusive design responses, and their potential contribution to academic well-being.

5. Trustworthiness and Validity of the Findings

The credibility of the findings was strengthened through data source and method triangulation, complemented by reflexive documentation, peer debriefing, and an audit trail. Data source triangulation compared perspectives from students with disabilities, disability studies practitioners, librarians, and the Disability Corner management team, while method triangulation compared FGD findings with environmental observations and document analysis. The researcher maintained reflexive notes and an audit trail documenting coding decisions, category development, and theme refinement. Emerging interpretations were discussed with peers to challenge assumptions and reduce selective interpretation. Attention was also given to divergent or contradictory evidence rather than only recurring patterns. Detailed descriptions of participants' accounts and observed spatial conditions were retained to provide sufficient contextual information for assessing the transferability of the findings.

The interpretation of the findings was also strengthened through iterative comparison between the research questions, coded data, emerging themes, and the resulting spatial requirements. The researcher reviewed the thematic categories to ensure that the identified themes were grounded in the collected data and remained relevant to the objectives of the study. The resulting framework was therefore developed from the convergence of user experiences, stakeholder perspectives, observed spatial conditions, and documentary evidence rather than from architectural assumptions alone.

Overall, the methodological process positioned the researcher as the primary instrument of qualitative inquiry and placed the experiences and perspectives of students with disabilities at the center of the analysis. This approach enabled the study to move from identifying users' experiences and spatial barriers toward formulating practical spatial requirements for a more inclusive, accessible, comfortable, and supportive academic library environment.

Result

The findings show that students with disabilities require more than physical accessibility when using academic library spaces. Their needs also encompass sensory conditions, comfort, privacy, concentration, academic well-being, and opportunities to participate in spatial planning. Analysis of the FGD involving 25 participants generated five main themes, with supporting evidence from environmental observations and document analysis. Representative participant accounts, observation notes, and relevant documentary evidence are presented within each theme to distinguish the empirical findings from their interpretation. The five themes were: (1) physical accessibility and mobility; (2) quiet and sensory-friendly spaces; (3) comfort and privacy; (4) concentration and academic well-being; and (5) user involvement in spatial design.

The FGD revealed that participants viewed the library environment as an important factor influencing the ability of students with disabilities to access information, study, interact, and participate in academic activities. The discussion identified several interconnected conditions that may support or hinder the use of library spaces. Physical conditions such as circulation, furniture, and movement space were discussed alongside environmental factors such as noise, lighting, privacy, and comfort. Participants also emphasized that an inclusive space should provide opportunities for students with disabilities to use the library independently and should respond to their individual needs and experiences.

The FGD was conducted as a participatory process involving students with disabilities, disability studies practitioners, librarians, and the Disability Corner management team. The discussion enabled participants to share their experiences, identify spatial and environmental barriers, and express their expectations regarding the development of more inclusive library spaces. The perspectives generated through this

participatory process formed the primary empirical basis for identifying spatial needs and developing the study themes.

The analysis identified five interconnected themes concerning inclusive academic library space at the Library of Universitas Sebelas Maret (UNS). FGD data provided the primary empirical evidence, supported by environmental observations and document analysis. Table 2 traces the analytical relationship from empirical evidence and identified barriers to spatial requirements and their corresponding design implications.

Table 2. Theme–Data Matrix and Spatial Implications

Theme	Empirical evidence	Barrier	Spatial implication
Physical accessibility and mobility	FGD identified the need for easier movement and access to library facilities; observation considered entrances, circulation, furniture, and movement space.	Restricted circulation and unsuitable spatial arrangements may limit independent mobility.	Barrier-free routes, adequate circulation space, and accessible furniture.
Quiet and sensory-friendly spaces	Participants identified noise, crowding, lighting, and excessive sensory stimulation as factors affecting comfort and concentration; observation examined these conditions.	Noise and excessive sensory stimulation may interfere with concentration and comfortable use.	Designated quiet/sensory-friendly areas with appropriate environmental control.
Comfort and privacy	FGD emphasized comfortable use, appropriate seating, and opportunities for privacy; observation considered seating arrangements and spatial density.	Limited privacy and unsuitable seating may reduce comfort and security.	Varied seating, flexible layouts, and private or semi-private areas.
Concentration and academic well-being	Participants related environmental conditions to concentration and academic activities; observation and documents provided supporting contextual evidence.	Distractions and unsuitable conditions may interfere with concentration and academic well-being.	Study areas designed to minimize distractions and support focused academic activities.
User involvement in spatial design	Participants expressed experiences and expectations concerning inclusive space development; documents provided institutional context for Disability Corner development.	Planning may not fully reflect users' lived experiences without systematic participation.	Participatory mechanisms involving students with disabilities in planning, implementation, and evaluation.

1. Physical Accessibility and Mobility

The first theme concerns physical accessibility and mobility within the library environment. Participants identified circulation, movement space, furniture arrangement, and independent access to library facilities as important conditions affecting the usability of library spaces by students with disabilities. Accessibility was therefore understood not only as the ability to enter the library but also as the ability to move between spaces, approach furniture, access resources, and use study areas without unnecessary physical barriers. One participant emphasized that accessibility should support independent movement, noting that *“akses tidak cukup hanya bisa masuk, tetapi mahasiswa juga harus bisa menggunakan fasilitas secara mandiri.”* This concern was also reflected in the field observation, where the arrangement of tables and chairs in several study areas created relatively narrow circulation paths, potentially making movement more difficult for wheelchair users. These findings indicate that physical accessibility requires attention to both spatial circulation and the arrangement of furniture and facilities within study areas.

The findings further indicate that spatial arrangement can influence users' independence. Insufficient movement space or inappropriate furniture placement may require users to depend on assistance from others, whereas adequate circulation and appropriately arranged furniture can facilitate more independent use of the library. Thus, physical accessibility needs to be considered throughout the user journey within the library rather than at the entrance or in isolated facilities.

The observation findings supported the FGD accounts by identifying existing spatial conditions related to circulation, furniture arrangement, and movement within the library environment. These findings indicate that physical accessibility constitutes a foundational requirement for inclusive library space, but it does not by itself encompass all of the needs identified by participants.

2. Quiet and Sensory-Friendly Spaces

The second theme concerns the sensory characteristics of library spaces, particularly noise, lighting, crowding, and the availability of quiet areas. Participants noted that these conditions may affect users differently. Students with autism spectrum conditions or sensory sensitivities may experience difficulty concentrating in noisy or crowded environments, while students with hearing impairments may face challenges when multiple sounds interfere with communication. Participants therefore highlighted the need for quiet areas that accommodate users requiring reduced sensory stimulation.

The availability of quiet and sensory-friendly areas was consequently identified as an important spatial requirement. Such spaces are expected to provide a more controlled environment in which users can read, study, complete academic tasks, or temporarily withdraw from stimulating surroundings. The findings suggest that quietness should not

be regarded simply as a general library rule but as a spatial characteristic that can be intentionally supported through the organization and zoning of library areas.

Observation of the library environment provided complementary information concerning noise, lighting, spatial density, and environmental conditions. The convergence between participant perspectives and environmental observations indicates that sensory conditions should be incorporated into the planning of inclusive library spaces alongside physical accessibility.

3. Comfort and Privacy

The third theme relates to comfort and privacy. Participants described comfort as an important condition for sustained use of library spaces, particularly when students need to remain in the library for academic activities over an extended period. Comfort was associated with the physical arrangement of study spaces as well as environmental conditions that allow users to feel secure and at ease.

Privacy also emerged as an important requirement, with different spatial implications. Visual privacy was needed to reduce exposure to surrounding users, while acoustic privacy was relevant for conversations and support involving personal matters. Confidential support services require enclosed or designated spaces, whereas psychological comfort depends on users feeling safe and undisturbed. These findings indicate the need for flexible spatial arrangements that accommodate different forms of privacy.

The findings therefore indicate that an inclusive library space should provide different levels of privacy rather than relying on a single open-plan arrangement. A combination of more open areas and spaces offering greater privacy can provide users with choices according to their activities and individual preferences.

4. Concentration and Academic Well-being

The fourth theme concerns the relationship between spatial conditions and academic well-being. Participants emphasized that library spaces should enable students to concentrate, complete academic tasks, access information, and participate in learning activities in a comfortable and supportive environment.

The findings show that environmental barriers such as excessive noise, crowding, inadequate privacy, and uncomfortable spatial conditions may affect users' ability to concentrate. Conversely, spaces that provide appropriate sensory conditions, comfort, privacy, and opportunities for independent study can contribute to a more supportive academic experience.

In this context, academic well-being emerged not as a separate outcome from accessibility but as an aspect influenced by the quality of the library environment. The results indicate that inclusive library design should consider whether a space enables

users to remain engaged in academic activities while maintaining comfort, safety, independence, and concentration.

5. User Involvement in Spatial Design

The fifth theme concerns the involvement of users with disabilities in spatial planning and development. Participants emphasized that students with disabilities possess direct knowledge of the barriers they encounter and the environmental conditions they require. Their experiences therefore provide information that may not be captured through technical accessibility standards or institutional assessments alone.

The findings indicate that students with disabilities should be positioned not merely as recipients of disability-oriented library services but as participants in the planning, evaluation, and improvement of library spaces. User involvement can provide a basis for identifying practical requirements and evaluating whether proposed spatial solutions correspond to actual experiences.

The involvement of disability studies practitioners, librarians, and the Disability Corner management team further contributed complementary perspectives concerning accessibility, library operations, service provision, and institutional feasibility. The findings consequently support a participatory and user-centered approach in which spatial decisions are informed by the experiences of those who use and manage the environment.

6. Synthesis of the Findings: From User Needs to Inclusive Spatial Design

The five themes demonstrate that the requirements of an inclusive academic library space are interconnected. Physical accessibility and mobility provide the basis for independent movement, while sensory-friendly conditions, comfort, and privacy influence how users experience and utilize the environment. These conditions are subsequently related to concentration, participation, and academic well-being. At the same time, user involvement provides an important mechanism for ensuring that spatial decisions remain responsive to actual experiences and needs.

The findings were synthesized into a conceptual framework through comparison and integration of the coded themes. User needs and identified spatial barriers were translated into spatial requirements and corresponding design responses, with academic well-being representing the intended outcome. The framework was subsequently reviewed during the research process with relevant participants and stakeholders to assess its consistency with the identified user needs. The resulting relationship is presented in Figure 1.

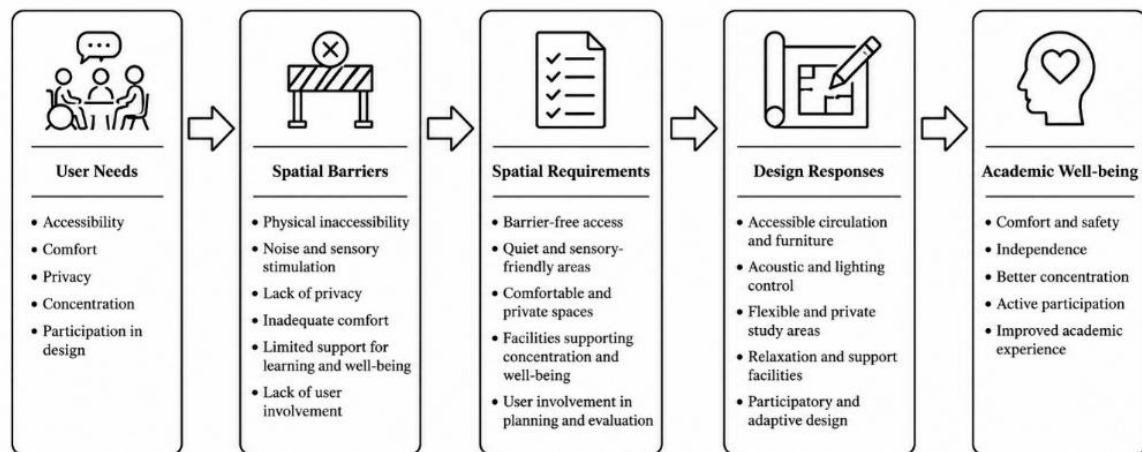


Figure 1. User-centered relationship between needs, spatial barriers, spatial requirements, design responses, and academic well-being

Figure 1 presents a user-centered framework derived from the study's coded themes. User needs inform the identification of spatial barriers, which are translated into spatial requirements and potential design responses. Academic well-being represents the intended consideration of these design responses rather than a demonstrated causal outcome. The framework allows feedback from user experience to inform subsequent refinement of spatial requirements and design responses. Its applicability is limited to the context of inclusive library-space planning identified in this study and requires further evaluation after implementation.

Discussion

The findings indicate that inclusive academic library space comprises five interconnected dimensions: physical accessibility and mobility, quiet and sensory-friendly spaces, comfort and privacy, concentration and academic well-being, and user involvement in spatial design. These dimensions show that accessibility involves not only physical entry and movement but also the ability to study, concentrate, interact, and obtain support independently.

These findings can be interpreted through Universal Design and Person-Environment Fit. Universal Design provides a basis for understanding the need to accommodate diverse users, while Person-Environment Fit explains how spatial conditions may be experienced differently according to individual physical, sensory, and academic needs. Thus, features such as circulation space, quiet areas, flexible furniture, and privacy can be understood as design responses to the needs identified in the empirical data. This theoretical integration informs the User-Centered Inclusive Library Space Framework developed in this study.

This study draws on Universal Design and Person-Environment Fit as complementary analytical perspectives. Universal Design emphasizes environments that

accommodate user diversity, while Person–Environment Fit focuses on the correspondence between individual needs and environmental conditions. These perspectives guide the interpretation of how students with disabilities experience and identify spatial requirements in academic library environments.

1. Physical Accessibility as a Foundation for Independent Participation

The first finding concerns physical accessibility and mobility. Participants emphasized unobstructed circulation, sufficient movement space, accessible furniture, and safe independent movement. These findings reinforce the principle that accessibility should support users' ability to perform activities independently rather than merely provide formal access to a building. This interpretation is consistent with Universal Design principles, particularly equitable use and low physical effort (Roberson et al., 2022).

The findings also suggest an important distinction between formal accessibility and functional accessibility. A library may comply with technical accessibility requirements while remaining difficult to use when furniture arrangements obstruct circulation, service points are difficult to approach, or study areas cannot be reached independently. From the Person–Environment Fit perspective, the effectiveness of an accessible environment depends on how its characteristics correspond to users' capabilities and activity requirements. Consequently, accessibility should be evaluated across the entire user experience, from entering the library, moving through the space, locating resources, selecting a study area, and accessing services.

This interpretation is particularly relevant to academic libraries because students are not passive users of library facilities. They engage in multiple activities that require movement and independent decision-making. Physical accessibility therefore functions as a foundation for participation. If students cannot move or access resources independently, their participation in other library-supported academic activities may also be constrained.

2. Sensory Conditions and the Need for Environmental Choice

The second finding highlights the importance of quiet and sensory-friendly spaces. Participants identified noise, crowding, lighting, and excessive sensory stimulation as barriers to comfort and concentration. UDL is particularly relevant because the library functions as an academic learning environment, and its principles emphasize providing multiple ways for learners to engage with and access learning environments. In this context, varied spatial conditions, such as quiet areas, adjustable lighting, reduced stimulation, and flexible seating, can support different learning needs. Unlike Universal Design, which provides a broader accessibility principle, UDL specifically connects environmental flexibility with learning engagement. Therefore, UDL is used here as a complementary lens for interpreting the spatial needs identified in this study, rather than as evidence of causal effects.

The third finding concerns comfort and privacy. Participants viewed both as important for sustained library use. A physically accessible space may remain insufficient if it is uncomfortable or overly exposed. Students with disabilities may require privacy when using assistive technologies, receiving assistance, or studying in less visible settings. Therefore, inclusive libraries should provide a combination of open, semi-private, and individual spaces to accommodate different needs and activities.

The fourth finding demonstrates the relationship between library space and academic well-being. Participants expected the library to support not only access to information but also concentration, learning, relaxation, interaction, and psychological comfort. Environmental barriers such as noise, crowding, uncomfortable furniture, and limited privacy may increase physical, cognitive, and emotional demands, while supportive environments can help students focus on academic activities.

These findings extend the understanding of library accessibility by linking spatial accessibility with academic experiences and well-being. Quiet study areas, comfortable furniture, privacy options, and supportive environmental conditions should therefore be considered important criteria for creating genuinely inclusive library environments.

3. User Involvement in Spatial Planning

The fifth finding concerns the involvement of students with disabilities in spatial planning and development. Their direct participation in the FGD demonstrates the value of positioning users as contributors to the design process rather than simply as recipients of predetermined services. This finding corresponds closely with the principles of User-Centered Design (UCD), in which users' needs, experiences, capabilities, and feedback inform design decisions.

The importance of user involvement is heightened by the heterogeneity of disability. Standardized assumptions about what students with disabilities require may overlook differences in physical abilities, sensory preferences, academic activities, and personal coping strategies. User participation can reveal barriers that are difficult to identify through technical accessibility assessments alone. In this respect, participatory approaches complement rather than replace accessibility standards.

The findings further suggest that user involvement should not be limited to the initial planning stage. Consultation, participatory planning, prototype evaluation, user testing, and periodic feedback can form a continuous cycle of spatial improvement. This has practical significance for the Disability Corner at the UNS Library because the space can be evaluated and adapted as users' needs and patterns of use become more clearly understood.

4. Contribution of the User-Centered Inclusive Library Space Framework

Taken together, the findings support a conceptualization of inclusive library space as a user–environment system. The User-Centered Inclusive Library Space Framework developed from this study connects five elements: user needs and experiences, spatial and environmental barriers, spatial requirements, inclusive design responses, and academic well-being. The relationship is not simply linear because user involvement can influence each stage of the process. As illustrated in Figure 2, the framework presents these elements as an interconnected process in which users' needs and experiences inform the identification of barriers, the formulation of spatial requirements, and the development of inclusive design responses, with academic well-being as the intended outcome. Continuous user involvement provides feedback across the process, allowing spatial responses to remain responsive to users' changing needs and experiences.

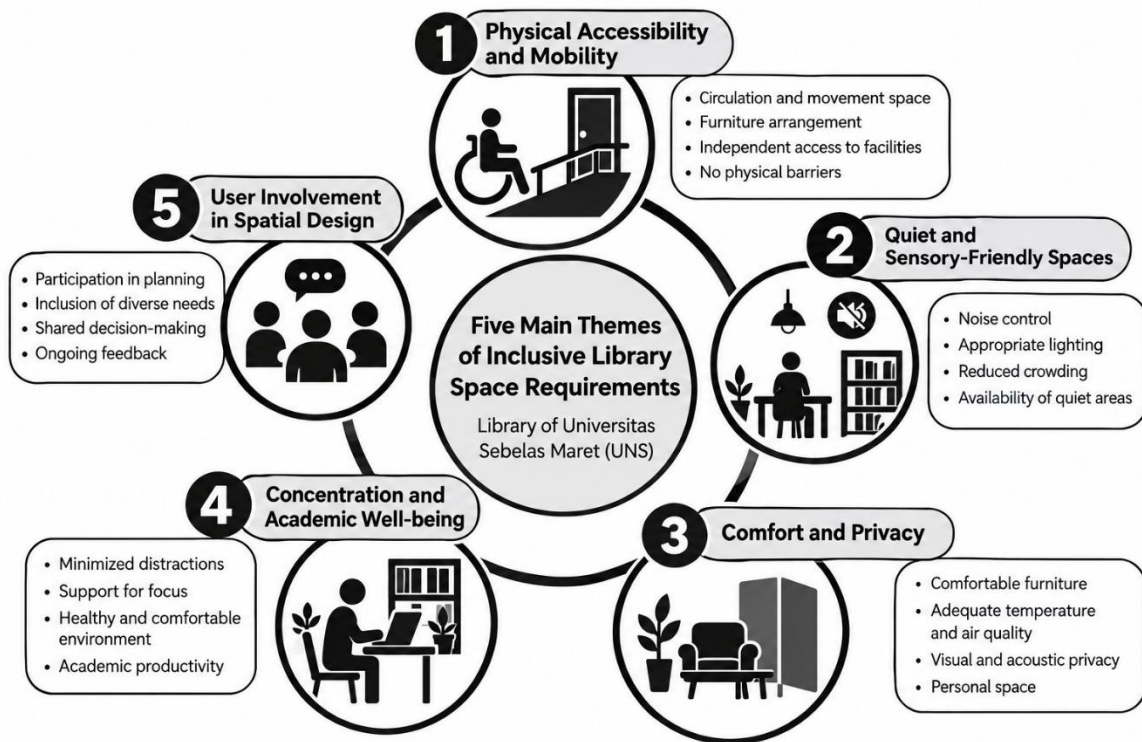


Figure 2. User-Centered Inclusive Library Space Framework

The framework proposes that users' experiences provide the starting point for identifying barriers; these barriers are translated into spatial requirements; spatial requirements inform design responses; and the resulting environment is expected to support comfort, independence, concentration, participation, and academic well-being. User participation operates throughout this process by enabling continuous identification, evaluation, and refinement of spatial solutions.

This study proposes a contextually grounded conceptual framework that brings together dimensions often considered separately in discussions of accessible library spaces. Physical accessibility, sensory conditions, comfort, privacy, academic activities,

and user participation are presented as interconnected aspects of an inclusive learning environment. Rather than a broadly validated model, the framework offers a context-specific perspective that extends the discussion from accessibility as compliance toward accessibility as user experience. Further implementation and validation across different library contexts are needed to assess its broader applicability.

The framework also has practical implications for the development of the Disability Corner at the UNS Library. Rather than functioning only as a dedicated service area, the Disability Corner can serve as a model for broader transformation of the library environment. Its development should consider not only the provision of accessible facilities but also spatial zoning, sensory conditions, furniture flexibility, privacy, quiet areas, opportunities for relaxation, and mechanisms for continuous user feedback. More broadly, academic libraries can use the framework as a basis for assessing whether their physical environments support meaningful participation by students with diverse abilities.

5. Implications and Future Research

The findings have implications for library practice and future research. For practice, library managers can conduct regular circulation and accessibility audits, establish clear zoning for quiet and collaborative activities, apply accessible and flexible furniture standards, and provide designated quiet or sensory-friendly rooms. Assistive technologies should be placed in accessible and clearly identified locations, while user feedback can be collected through periodic surveys, consultations, and accessibility reviews involving students with disabilities. Evaluation indicators may include ease of movement, noise and sensory comfort, privacy, accessibility of facilities, and user satisfaction. These measures can complement formal accessibility standards with evidence of users' actual experiences. Future research should implement and evaluate the proposed framework across different library contexts to examine its applicability and further development.

The study has several contextual limitations. The findings are based on a qualitative inquiry conducted in one academic library and a single FGD session with purposively selected stakeholders. Group discussion may have been influenced by dominant voices, while differences among disability types could not be examined in sufficient detail. The study also provides no longitudinal or post-occupancy evidence and does not directly measure changes in academic well-being. Therefore, the proposed framework should not be considered statistically generalizable or broadly validated. Rather, it provides contextually grounded analytical insights that may inform comparable settings, subject to further implementation, longitudinal evaluation, and validation across different disability groups and library contexts.

Future research could extend this framework through studies involving a larger and more diverse range of students with disabilities and through comparative research across academic libraries. Further research could also examine the framework through post-occupancy evaluation after the Disability Corner is implemented, combining qualitative user experiences with quantitative measures of accessibility, space utilization, satisfaction, concentration, and academic well-being. Such research would help determine whether the spatial requirements identified in this study produce measurable improvements in users' experiences and would enable the framework to be refined through an iterative evidence-based design process.

Conclusion

This study demonstrates that inclusive academic library space extends beyond physical accessibility and should be understood as a multidimensional user–environment system. Based on the Focus Group Discussion, environmental observations, and document analysis, five interconnected requirements were identified: (1) physical accessibility and mobility, (2) quiet and sensory-friendly spaces, (3) comfort and privacy, (4) concentration and academic well-being, and (5) user involvement in spatial design. These findings indicate that inclusive libraries should support students with disabilities in entering, moving, studying, concentrating, accessing information and support, interacting, and participating independently and comfortably. The resulting framework provides contextually grounded planning guidance for inclusive library-space development; however, its potential contribution to academic well-being requires implementation and systematic evaluation in practice.

The User-Centered Inclusive Library Space Framework developed in this study further explains how these requirements can be translated into spatial planning and design. The framework describes the relationship between users' needs and experiences, the spatial and environmental barriers they encounter, the spatial requirements arising from these barriers, and the corresponding inclusive design responses that can support academic well-being. User involvement is integrated throughout this process to ensure that spatial decisions reflect actual user experiences and can be continuously evaluated and refined. Thus, the main contribution of this study is the integration of physical accessibility, sensory conditions, privacy, comfort, academic well-being, and user participation within a single framework for understanding and developing inclusive academic library spaces.

In practical terms, the framework can be used as a planning and evaluation guide for the Disability Corner and the wider Library of Universitas Sebelas Maret (UNS). Its implementation should consider accessible circulation and movement, flexible furniture arrangements, quiet and sensory-friendly areas, different levels of privacy, comfortable study spaces, and environments that support concentration and relaxation. The

framework also recommends involving students with disabilities, librarians, disability practitioners, and other relevant stakeholders in spatial planning, user testing, evaluation, and improvement. Therefore, accessibility should be treated as an iterative and participatory process, rather than as a one-time provision of accessible facilities.

For future research, the framework should be examined across different academic libraries and disability groups through post-occupancy evaluation. Assessment should combine qualitative user experiences with indicators such as task completion, perceived safety, concentration, satisfaction, use frequency, and independence in accessing library resources. These measures can provide evidence for refining the framework and assessing its applicability across contexts.

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