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Types of Visual Impairment as Factors Shaping the Sense of Place of Visually Impaired Students in the School Environment

Devrian Syah Putra ¹, Joni Hardi ^{2*}

^{1,2} Architecture Department, Mercu Buana University, Jakarta, Indonesia

*Correspondence: E-mail: joni.hardi@mercubuana.ac.id

ABSTRACT

Spatial comfort in SLB learning environments is often understood as merely the physical quality of the space. However, visually impaired students experience space through their bodies, sounds, touch, and consistent non-visual environmental patterns. As a result, when spaces are difficult to recognize or have physical barriers, students not only hesitate to move, but also exhibit adaptive behaviors such as slowing down, avoiding certain areas, or even always seeking companions for a sense of security. Based on these conditions, this study aims to analyze the relationship between spatial comfort, behavior, and the formation of a sense of place among visually impaired students at SLB-A Pembina Tingkat Nasional Jakarta. This study uses a qualitative method with a phenomenological approach. Data were collected through field observations and in-depth interviews with students at the SMALB level, then analyzed using content analysis. The findings were interpreted from a behavioral architecture perspective that emphasizes the reciprocal relationship between space and user behavior. The results show that consistent, accessible, and easily readable spaces through non visual cues not only encourage more independent, active, and confident behavior but also strengthen students' sense of place through repeated activity experiences. Meanwhile, changes in the spatial context, intensity of crowds, or inconsistencies in layout reduce comfort, weaken the sense of place, and increase behavior defensive. These findings confirm that the spatial environment acts as an active factor that shapes behavioral variations as well as the meaning of place for visually impaired students.

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1. INTRODUCTION

Education is a fundamental right for every citizen, including students with disabilities, which is accommodated by special education units, namely Special Schools (SLB). The implementation of SLB education is important because it not only functions as a formal educational institution but also as an environment that plays a role in supporting students' cognitive, emotional, social, and independence development (Kementerian Pendidikan dan Kebudayaan Republik Indonesia, 2019). SLB-A Pembina Tingkat Nasional Jakarta is one of the educational institutions for the visually impaired that has achieved A accreditation status from BAN-PDM, making it a relevant context for examining the quality of the learning environment from an architectural and behavioral perspective.

In architectural studies, spatial comfort is not only understood as the fulfillment of the physical dimensions of space, but also as bodily experience and environmental perception formed through user interaction with space during activities (Barker, 1968; Laurens, 2004). Visually impaired students form spatial experiences through non-visual inputs, such as sound, touch, floor texture, interior configuration, circulation consistency, and auditory identity of space (Lang, 1987; Rapoport, 1982). Through these repeated experiences, space not only functions as a container for activities, but also begins to be interpreted, recognized, and given emotional value by its users.

A number of studies show that clear and consistent spatial arrangements can shape adaptive behavior patterns in a behavior setting (Barker, 1968). Ergonomic and sensory friendly learning environments have been shown to support spatial orientation, social interaction, and student participation in activities (Pratiwi & Puspitasari, 2017; Ramli et al., 2018), while spatial legibility and physical accessibility affect the mobility and psychomotor responses of users with visual impairments (Pamungkas & Ratri, 2019; Putri et al., 2020). However, most of these studies still place space as a physical setting or support system, and have not yet discussed in depth how repeated non-visual spatial experiences form a meaningful connection between users and space, especially for blind students in special needs schools.

According to (Barker, 1968), human behavior is formed in a systemic unit called a behavior setting, which is an inseparable unity of people (the actors present), place (the physical milieu where the event takes place), and activity (the pattern of activities that take place). This setting has a standing pattern of behavior, which is a stable and repetitive pattern of behavior because it occurs in the same milieu. Milieu is understood not only as physical space, but also as environmental conditions that support and regulate behavioral opportunities, including orientation and how users respond to space. The compatibility between activity patterns and spatial configuration is explained through the concept of synomorphy, which is the compatibility or harmonious alignment between human behavior (activity) and its physical environment (spatial layout), where both influence each other to create consistent and functional behavior patterns, making them a single, complete unit. When synomorphy is high, users' adaptation efforts decrease and the space feels more harmonious and comfortable. However, if synomorphy is low, pressure for adjustment arises, indicating that the comfort of the space has not been established and users must adapt excessively.

Previous research has demonstrated that sense of place plays a significant role in shaping how users interact with communal spaces. (Joni Hardi et al., 2020) found that in low-cost housing environments, residents' attachment to communal spaces is strongly influenced by repetitive social activities, territorial familiarity, and spatial identity. Their findings indicate that sense of place emerges not merely from physical configuration, but from the continuity of social interaction patterns occurring within the space. This suggests that place meaning is constructed through lived experiences and recurring activities rather than visual attributes alone.

Upon further review, recurring patterns of experience in behavioral settings form the basis of a sense of place, which is the attachment between individuals and their environment that grows through experience, memory, and daily activities (Relph, 1976; Tuan, 1977). For visually impaired students, a sense of place is not built through visual images, but rather through route memory, the rhythm of steps, the character of the sounds of the space, and points of orientation recognized by the body. In the context of SLB-A Pembina Tingkat Nasional Jakarta, students build this attachment through the repeated use of space, such as walking down corridors as spatial anchors, stopping at certain points as decision points, or recognizing a place from the character of the sounds and activities around it. This process shows that spatial comfort not only influences immediate behavior, but also contributes to the formation of a sense of place that is perceived as safe, recognizable, and trustworthy.

However, when the spatial milieu changes without pattern, such as changes in interior layout or use of space by other parties, it signals a decline in synomorphy, disruption of cognitive mapping, and increased pressure for adjustment. This condition not only affects behavioral efficiency but also disrupts the continuity of the sense of place that students have built, so that spaces that were previously familiar can become confusing or uncomfortable.

Based on these gaps, this study aims to explain the reciprocal relationship between spatial comfort, behavior, and the formation of a sense of place among visually impaired students in special needs schools. This study focuses on how space triggers adaptive behavioral responses through the behavior setting framework, as well as how behavioral strategies and repeated bodily experiences shape perceptions of comfort and attachment to space. Referring to behavior setting and architectural theories, this study positions sense of place as the result of dynamic interactions between people, place, and activity in special school environments.

2. METHODOLOGY

This study uses a qualitative approach with a phenomenological approach, because the research focuses on understanding the essence of blind students' experiences in feeling the comfort of space directly (Creswell, 2014). This method is naturalistic without variable manipulation and emphasizes the process of spatial perception (Barker, 1968; Moustakas, 1994).

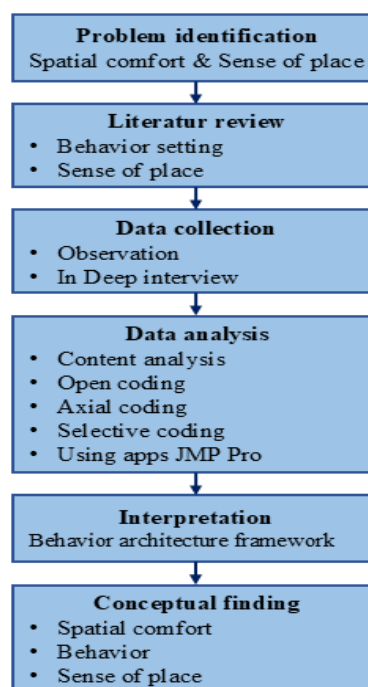


Figure 1: Research Stages

Source: Author, 2026

The object of this study is SLB-A Pembina Tingkat Nasional Jakarta, a state run special education institution for visually impaired students that has mobility orientation facilities, a braille library, guiding blocks, and a talking computer laboratory (screen reader).



Figure 2: SLB-A Pembina Tingkat Nasional Jakarta
Source: Author, 2026

Data was obtained through structured in-depth interviews and passive participatory observation. The interview technique was conducted using a ladder interview with a bottom-up and middle-out approach to capture the meaning of comfort in space based on personal experience. Field observations were conducted by observing the research object's environment. Field observations found that the building and land of SLB-A Pembina Tingkat Nasional Jakarta are wholly owned by the Directorate of PKLK (Directorate of Special Education and Special Services) under the Ministry of Education and Culture, so in fact SLB-A Pembina Tingkat Nasional Jakarta is only occupying the directorate's land. Because of this, to the south of the building, there is another school from SLB-A Pembina Tingkat Nasional Jakarta that is used by SLB Negeri 1 Jakarta, and to the east of the building, there is one classroom that is also used by SLB Negeri 1 Jakarta (as can be seen in Figure 3). as well as an auditorium building that is still owned by the Directorate of PKLK, so all activities that want to use this space must have direct permission from the Directorate of PKLK, not from the Jakarta National Level SLB-A Pembina. The auditorium is also sometimes used by the Directorate for various events, even events that are not related to the activities of the SLB-A Pembina Tingkat Nasional Jakarta.

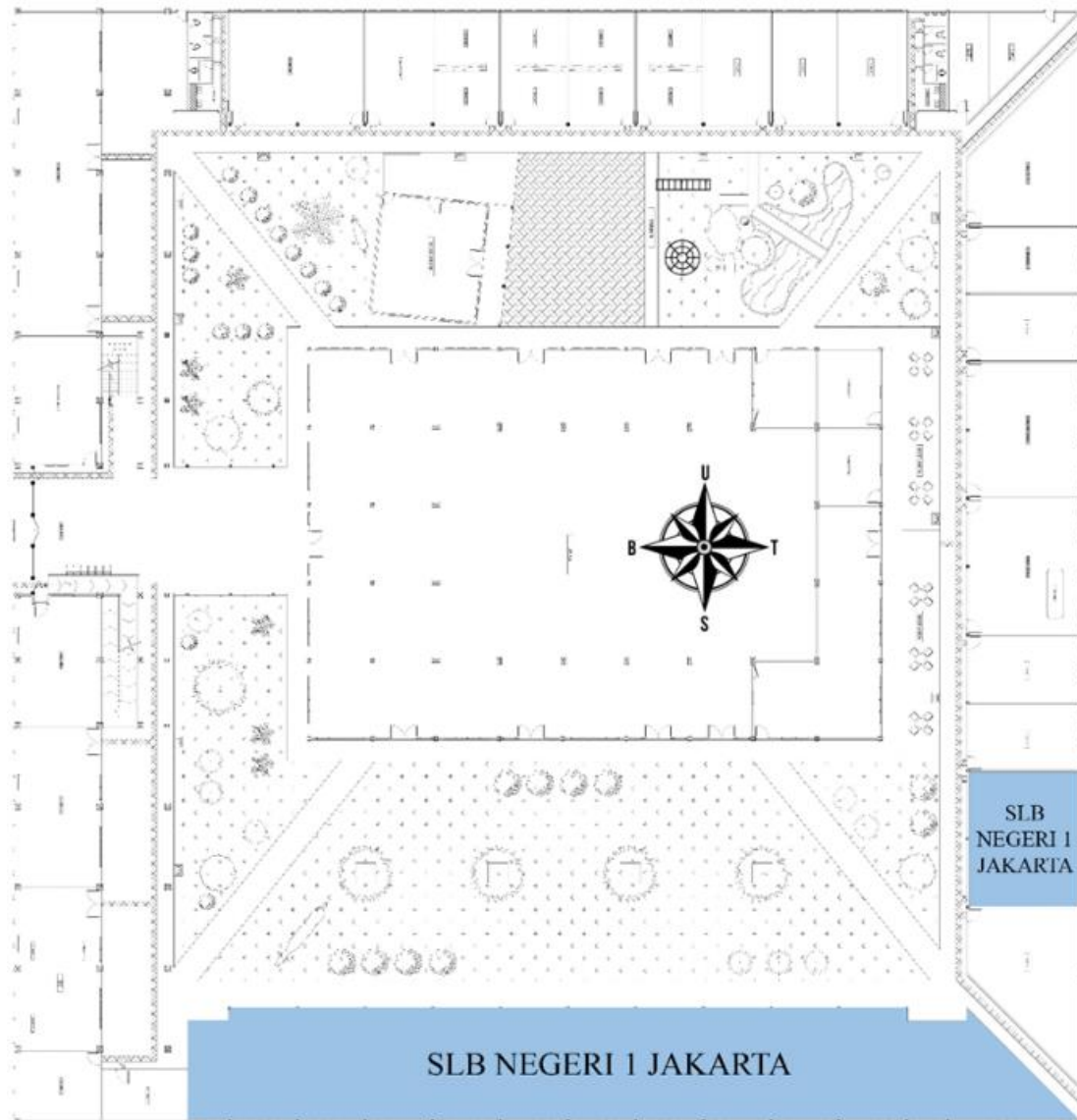


Figure 3: SLB-A Pembina Tingkat Nasional Building
Source: Author, 2026

Data analysis used content analysis through three stages of coding, namely open coding, axial coding, and selective coding (Corbin & Strauss, 2012; Creswell, 2014). Audio data was converted into text transcripts, then open coding was performed to extract keywords and form categories based on people, place, and activity. Next, axial coding was used to connect categories visually through a 0-1 logic diagram, which was then synthesized into hypotheses in selective coding, while comparing them with relevant theories to identify similarities, differences, and novelty of the findings (Kusuma, 2019).

3. RESULTS AND DISCUSSION

To explore the relationship between the behavior of visually impaired students and spatial comfort, this study views the school space as an environment that is directly experienced and interpreted by visually impaired students in their daily activities. Therefore, spatial comfort and behavior are not analyzed as two separate things, but as an interaction that is interrelated and repetitive, especially when students are active outside the classroom. Within this framework, the analysis focused on the interrelationship between the categories of people, place, and activity to understand how the spatial milieu shapes activity opportunities and how

repeated activity experiences influence how students move, build interaction patterns, and develop mobility strategies and space selection. This process of repeated experiences not only shapes immediate behavioral responses but also contributes to the formation of a sense of place, namely how space is perceived as safe, recognizable, or, conversely, requiring further adaptation. Thus, the results and discussion of this study explore the interconnection between people, place, and activity as a behavioral ecosystem that determines comfort, spatial adaptation pressure, and student attachment to their school environment, within the framework of behavior setting (Barker, 1968) and behavioral architecture (Laurens, 2004; Rapoport, 1982).

3.1. Analysis of the Relationship between the Categories of People, Place, and Activity

The significance values of the results of the analysis of the relationship between the people category (visual impairment), the place category (preferred and disliked places, places that are difficult to use, places that make people feel safe, and places that make people feel afraid), and the activity category (activities outside of school) are shown in Table 1. From this table, we can see several results of the analysis between categories that meet the commonly used Pearson P Value significance value of 0.05, which indicates the beginning of a relationship. With a Pearson P Value <0.05, the relationship will show stronger results, and if there is a Pearson P Value <.0001, it means that there is a very strong relationship between categories. Therefore, this study will discuss categories ranging from those that begin to show a relationship to those with a very strong relationship.

Table 1. Relationship between the categories of people, place, and activity

People Aspect	Place Aspect	Pearson (P value)
Visual impairment	Unfavorable places	0.0081
	Hard to access locations	0.0010
	Places that provide a sense of security	0.0109
People Aspect	Activity Aspect	Pearson (P value)
Visual impairment	Using tools in activity	0.0068
	Incident experience	0.0033
	Guiding blocks can assist with activities	0.0037
Activity Aspect	Place Aspect	Pearson (P value)
Out of class activities	Preferred place	<.0001
	Easily accessible places	<.0001
	Places that often cause confusion	<.0001
	Easily recognizable locations	<.0001

Source: Author, 2026

3.2. Relationship between the People category and Place

In the analysis of the relationship between the People category and Place, there were responses indicating disliked places, difficult-to-access places, and places that evoke a sense of safety, which were influenced by visual impairment with a Pearson P-value < 0.05.

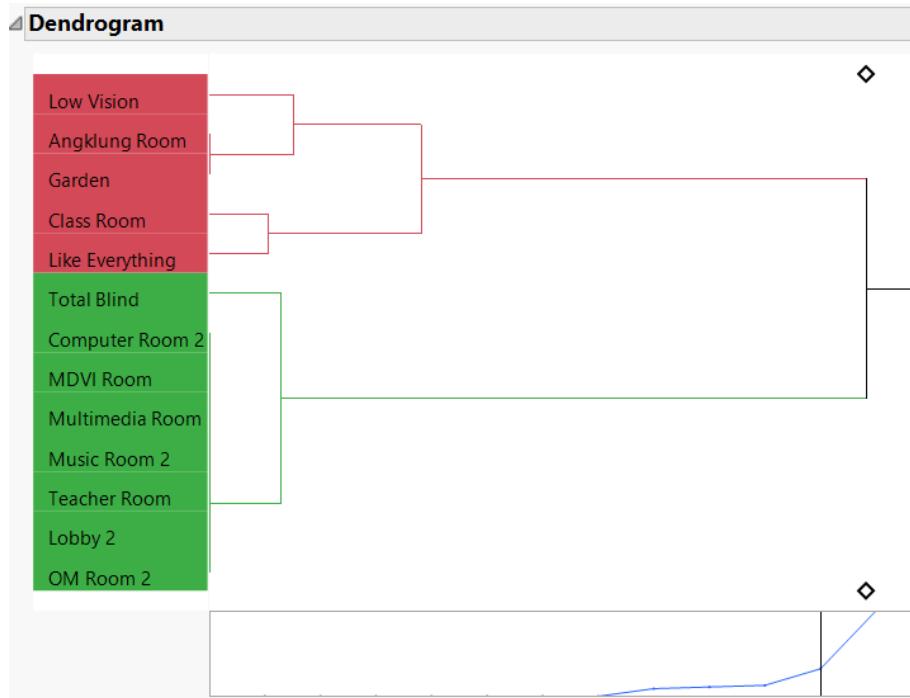


Figure 4. Dendrogram results of the relationship between people and place categories
Source: Author, 2026

The dendrogram analysis results show the formation of two main clusters that represent differences in spatial experiences between low vision and totally blind students. The first cluster is dominated by more open and exploratory spaces, which are associated with low vision students, while the second cluster is dominated by spaces with more structured and consistent functions, which are associated with totally blind students. These findings indicate that the spatial comfort and behavior of visually impaired students are shaped by the interaction between visual impairment and spatial characteristics, as described in the theory of architecture and behavior (Laurens, 2004).

Based on field findings, visually impaired students with low vision tend to prefer spaces with clear spatial boundaries, contrasting materials, and consistent circulation patterns, such as changes in floor texture or relatively fixed interior arrangements. This type of spatial milieu is easier to learn through bodily experience, thereby providing confidence when moving and reducing hesitation when taking steps. As the duration of students' stay in the same school setting increases, some low vision students show an increase in mobility independence, as seen from their reduced dependence on the use of canes. In certain situations, they even choose not to use them because they feel that canes actually slow down their movements.

This phenomenon cannot be interpreted as a rejection of assistive devices, but rather as an indicator that stable and predictable spaces have been internalized in the body's sensory memory, so that orientation no longer depends entirely on devices, but on recognition of the space itself. Meanwhile, when the space is inconsistent, frequently changes function, or lacks tactile and auditory cues, students perceive it as an unpleasant or difficult space to use. This condition occurs because the non-visual maps they have constructed are no longer synchronized with the reality of the space, triggering excessive caution, slowed movement, or even avoidance. This confirms that the character of space directly shapes students' bodily activity strategies, in line with the behavior setting view (Barker, 1968), where behavior arises from the compatibility between activity and the spatial milieu.

Meanwhile, totally blind students interpret their favorite spaces primarily through consistent auditory and tactile identities, such as the presence of guiding blocks, recognizable

floor textures, and the echo of footsteps that help estimate distance and position. A sensory stable spatial milieu has been shown to reduce cognitive orientation load, allowing students to move more structured and confidently. Meanwhile, spaces that they rated as disliked or frightening generally had sensory uncertainty, such as areas that were too quiet without echoes, or spaces that did not provide cues for distance and direction. In these conditions, students more often exhibited avoidance behavior, waited for other people to be present, or walked alongside a companion as a form of adaptive strategy.

These findings also show that blind students' sense of security and fear are shaped by the ability of a space to provide sensory feedback that can be predicted by the body. Spaces with consistent activity patterns and strong sensory identities become lively interaction zones where students can stop, talk, or gather without losing their orientation. Fear arises when spaces cannot be read by the body and spatial memory, forcing students to adapt excessively to the milieu rather than to their activities. This shows that spatial comfort and consistency of bodily experience are prerequisites for the formation of meaningful attachment to space. Spaces that are stable, recognizable, and provide a sense of security tend to be integrated into students' meaningful experiences as places that are trusted and actively used. However, spaces that demand high adaptation pressure tend to fail to form a sense of place and can even damage the continuity of attachments that have been built previously. Thus, the sense of place in visually impaired students does not arise from the visual quality of the space but from the harmony between the body, activities, and sensory milieu, which is formed through repeated experiences in the school behavior setting.

This finding is consistent with ecological psychology theory (Barker, 1968), which states that behavior occurs within a behavior setting unit that has a standing pattern or stable and repetitive pattern. When there is synomorphy between student activities and a low-quality space milieu, pressure for adjustment arises, forcing users or students to over-adapt to the space. This can be seen in the way visually impaired students respond to an unfriendly milieu with defensive and cautious mobility strategies.

3.3. Relationship between the People Category and Activity

In the analysis of the relationship between the people category and activity, there were responses regarding the use of assistive devices in activities, incident experiences, and guiding blocks that can assist activities, which were influenced by visual impairment with a Pearson P Value < 0.05.

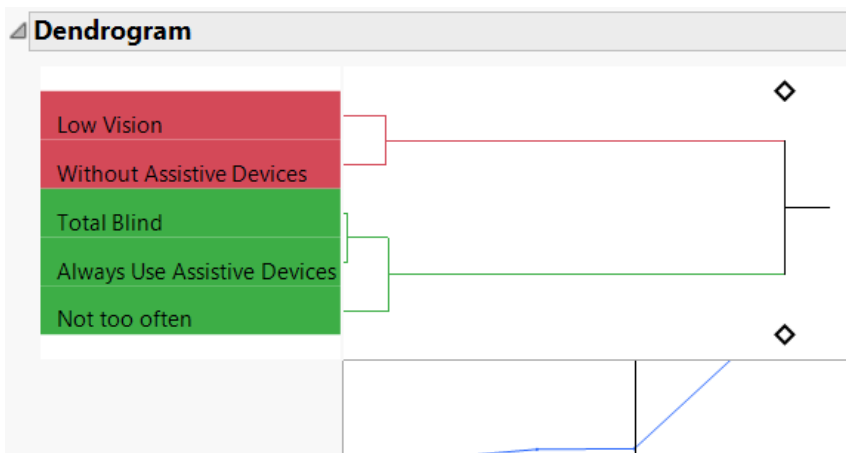


Figure 5: Dendrogram results of the relationship between people and activity categories
Source: author, 2026

The dendrogram analysis results show a clear grouping between types of visual impairment and patterns of assistive device use. Low vision students tend to be in the group

that does not use assistive devices, while totally blind students are in the group that consistently uses assistive devices. These findings indicate that the use of assistive devices is a behavioral strategy closely related to spatial comfort, where assistive devices act as mediators between individual limitations and the characteristics of the space encountered.

Based on the results of field interviews, the mobility behavior of visually impaired students is shaped through interactions between activity experiences, social relationships with friends, and bodily responses to architectural barriers in the school environment, which views behavior as the result of the integration of the actor, the activity, and the milieu in which the activity takes place. In activities outside the classroom, the presence of close friends not only serves as a companion but also becomes part of a social orientation system built through repeated activity experiences. This is evident in the habit of walking side by side following friends who have memorized the route, playing and chatting in places for conversation, and in zones that consistently become centers of social interaction.

These friendships also influence how students respond to activities when faced with environmental obstacles, especially in transitional spaces with minimal auditory and tactile stimuli. In these conditions, students more often rely on trusted friends, ask questions before proceeding, or follow the movement patterns of small groups of friends that have already formed. These findings indicate that a stable social activity milieu plays a role in reducing orientation uncertainty, allowing activities to proceed with greater confidence. Thus, responses to architectural barriers are not only individual but also collective, formed from shared bodily experiences and repeated social interactions in the same school setting.

Other findings show that visual impairment does not determine the level of students' social activity, but rather influences the activity strategies used when facing spatial obstacles. Students with longer school experience tend to show more exploratory activities, while newer students more often display defensive activity responses, such as delaying steps or following friends, especially when the milieu does not provide stable directional stimuli. This pattern indicates that friendship functions as an ecological adaptation mechanism, rather than a form of dependence, to maintain the continuity of activities in an environment that is not yet fully predictable.

In certain contexts, students with low vision demonstrate a combinative approach to activity, i.e., they still utilize their residual vision to read spatial boundaries through shadow or color contrast, but remain dependent on non-visual cues when the space feels asymmetrical or too quiet. This condition often triggers activity responses such as sudden stops, slowing down, or feeling the walls to confirm direction, indicating that movement activities are always negotiated with the sensory conditions of the spatial milieu.

Overall, these findings reveal a pattern of defensive mobility among visually impaired students, especially when faced with spaces that are inconsistently laid out, lack guiding blocks, and have minimal auditory and textural identity. These conditions demand a high pressure for adjustment (Barker, 1968) causing students to respond by avoiding, seeking companions, or asking for help from teachers and friends. From (Laurens, 2004) perspective, this phenomenon confirms that built spaces are not neutral; they can shape behavior and be reinterpreted by the behavior of their users through repeated physical activities. This is in line with the theory of sense of place, which is a relationship between people and activity that shows that the attachment of meaning to a space is not only built through physical recognition of the place but also through the patterns of social activity that take place within it. Spaces that allow social activities to run stably and repeatedly tend to create a sense of familiarity, safety, and trust, thereby integrating into students' sense of place. However, spaces that disrupt the continuity of social activities and demand excessive adaptation tend to fail to form

meaningful connections and are more often interpreted as confusing or avoided spaces. Thus, it can be concluded that spatial comfort for visually impaired students lies not only in ease of movement, but also in the ability of space to support the continuity of social activities and adaptive strategies that enable students to build a sense of place through bodily experiences and friendships within the school behavior setting.

3.4. Relationship between Activity Categories and Place

In the analysis of the relationship between the activity category and place, there were responses regarding preferred places, easy places, places that often cause confusion, easily recognizable places, and places that cause fear, which were influenced by activities outside the classroom with a Pearson P Value < 0.05.

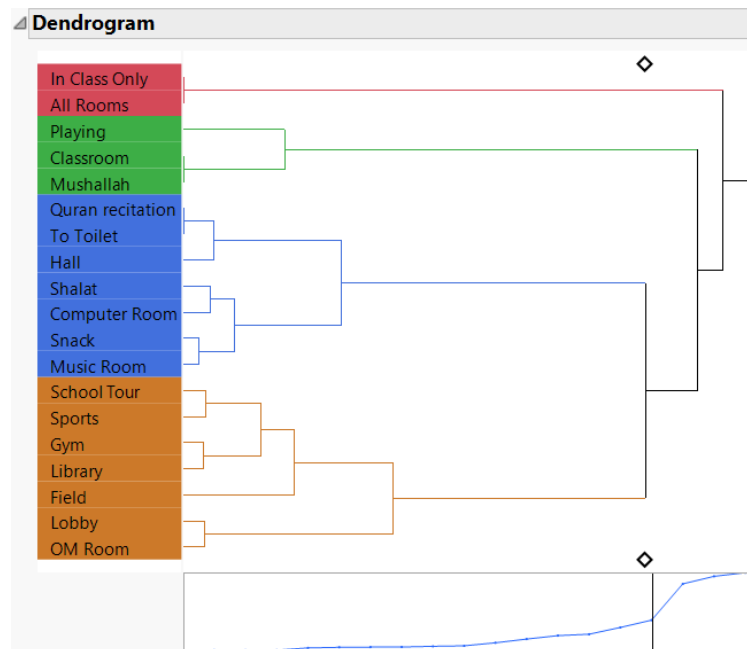


Figure 6. Dendrogram results of the relationship between activity categories and place
Source: Author, 2026

The dendrogram analysis results show the grouping of activities and spaces based on the similarity of experiences and behaviors of visually impaired students. Routine and structured spaces and activities tend to form clusters with higher spatial comfort levels, while spaces with high mobility and social interaction form separate clusters that require behavioral adaptation strategies. These findings indicate that the behavior of visually impaired students is a response to spatial complexity and the nature of the activities that take place within it.

The results of this study indicate that the relationship between activity and place is not only related to the physical assessment of space, but also to how students' activity patterns shape their perceptions and meanings of the school environment. Field observations show that spaces that can be used comfortably are always related to the continuity of uninterrupted activities, such as corridors that lead directly to activity points, gathering areas with routine interaction patterns, or hallways that are often passed through when moving between activities. In these spaces, students do not need to make many movement corrections because the flow of activities and the configuration of the space are in harmony. However, categories of spaces that are difficult to use and confusing arise when activity patterns are not synchronized with the configuration of the space, for example, due to sudden

changes in the function of the space or transition points that do not allow time to prepare a physical response, forcing students to stop repeatedly to rearrange their movement patterns.

A spatial milieu that disrupts the flow of activities not only triggers orientation confusion but also changes the way students engage in activities to be more defensive. In these conditions, students tend to wait for other activities as directional cues, slow down their pace, or return to routes they have memorized. These findings indicate that activity does not simply take place within a place, but rather becomes the main mechanism for students to assess whether a place is trustworthy, avoidable, or safe to use.

This study also found that feelings of safety and fear in spaces are not formed solely by the physical characteristics of the space, but rather by the certainty of predictable activity patterns. Spaces that provide a sense of safety are those that allow activities to proceed without the disruption of uncertainty in configuration, such as areas with stable activity centers, floors that provide consistent walking stimuli, and stopping zones that maintain the continuity of previous activities. Fear arises when spaces do not provide predictable activities, such as transitional spaces without sensory feedback, stairs without easily recognizable handrails, or spaces whose functions frequently change because they are used by other parties. These conditions make it difficult for students to establish repetitive activity patterns, making it difficult to interpret these spaces in a stable manner.

The JMP analysis results reinforce these qualitative findings by showing a very strong relationship between the activity and place categories with a Pearson P Value < 0.0001, especially in the categories of preferred places, easily accessible places, places that often cause confusion, and easily recognizable places. This perception does not stem from visual assessment, but rather from bodily experience, social intensity, and the consistency of non visual sensory cues that accompany activities outside the classroom. Observations and interviews show that safe zones are formed in spaces where the flow of activities is clear and can be mapped through students' spatial cognition, such as areas with physical boundaries that are easy to touch. Meanwhile, spaces that are too quiet, have branching circulation without tactile information, or have poorly maintained accessibility elements trigger responses such as stopping, feeling around the environment, or turning back towards familiar routes.

Experiences such as tripping, losing one's way in crowded areas, or the absence of guiding blocks have also been shown to affect responses to both preferred and confusing places. For students, preferred spaces are not necessarily free of challenges, but are spaces that provide sufficiently strong and consistent sensory signals to be mastered through repeated experience. Confusion arises when these signals are unstable or absent during activities. The better the students' non-visual map of the school environment is formed, the more courageous they are in exploring activities, while the continuous presence of guiding blocks has been proven to reinforce the perception of space as recognizable, preferred, and safe. However, if the guiding blocks are broken or worn out (due to age), it increases caution and the possibility of confusion.

An interesting phenomenon is also seen in the perception of crowded spaces. Blind students tend to like crowded spaces when the crowds produce patterned auditory cues, such as centralized conversation sounds or consistent footsteps. However, crowded spaces can also be perceived as confusing when the auditory milieu is scattered without pattern, forcing students to slow down, look for additional cues, or ask for help. These findings confirm that crowds do not automatically mean discomfort, but rather depend on the regularity of the accompanying activities.

These findings are consistent with previous research emphasizing that sense of place is strengthened through repetitive activity patterns and social interaction within built environments. (Joni Hardi et al., 2020) demonstrated that in communal residential spaces, place attachment emerges from the continuity of shared activities and territorial familiarity rather than merely from physical spatial configuration. Similarly, in the context of SLB-A Pembina Tingkat Nasional Jakarta, the formation of sense of place among visually impaired students is closely linked to stable activity nodes, repeated mobility routes, and consistent interaction spaces. However, unlike the residential setting described by (Joni Hardi et al., 2020), where visual-spatial identity contributes significantly to attachment formation, this study reveals that in blind students, sense of place is predominantly constructed through non-visual bodily experiences, multisensory cues, and the predictability of activity flow. This distinction highlights the critical role of sensory-based environmental legibility in inclusive educational architecture, where attachment to place depends not on visual recognition but on the harmony between activity continuity and spatial consistency.

Within the framework of ecological psychology (Barker, 1968), these results show that school spaces function as behavior settings, where place provides opportunities for activity, and activity forms stable patterns of behavior. When harmony between activity and spatial milieu (synomorphy) is achieved, the need for adaptation decreases and behavior becomes more efficient. However, when harmony is low, pressure for adjustment arises, which is reflected in defensive behavior. These findings indicate that meaning attachment to space is formed through the continuity of activities repeatedly experienced by the body. Spaces that support stable and predictable activities are more easily integrated into students' sense of place as safe and trusted spaces, while spaces that disrupt activity patterns tend to fail to build such attachments and are perceived as confusing or avoidable spaces. Thus, the sense of place in visually impaired students emerges as a result of the dynamic interaction between activity and place, not from the visual quality of space, but from the harmony of non-visual bodily experiences in the school behavior setting.

4. CONCLUSION

This study shows that spatial comfort in SLB environments is not only determined by the physical quality of the space, but is formed through dynamic interactions between non-visual bodily experiences, repetitive activity patterns, and spatial milieu consistency. For visually impaired students, spatial comfort acts as an active factor that shapes mobility behavior, adaptation strategies, and the way students interpret and trust their environment. Through the behavior setting framework, it was found that spaces with stable activity flows, consistent non visual sensory cues, and opportunities for activity repetition tend to result in more independent, confident, and exploratory behavior. Meanwhile, changes in spatial configuration, sensory unreadability, and transitional spaces that do not provide activity predictions trigger pressure for adjustment, which is reflected in defensive behavior, excessive caution, and a tendency to avoid certain spaces.

The results of the study also show that the sense of place in blind students is formed not through visual perception, but through repeated bodily activity experiences, social relationships with friends, and the regularity of activity opportunities in the school milieu. Spaces that support the continuity of social activities and mobility are consistently easier to interpret as safe, recognizable, and trustworthy places, while spaces that disrupt activity patterns tend to fail to build meaningful connections and are interpreted as confusing or frightening. Thus, this study confirms that a sense of place is the result of harmony between activity and place, not the visual attributes of space, and is an important indicator in assessing

spatial comfort for visually impaired students. These findings are expected to form the basis for consideration in the design and management of special needs school environments that are more sensitive to non-visual experiences, the continuity of activities, and the formation of adaptive and meaningful behavior for visually impaired students.

4.1. Research Contribution and Recommendations

This study contributes theoretically by positioning spatial comfort as an active behavioral determinant within the behavior setting framework, extending previous discussions that primarily focused on physical accessibility. The findings also enrich the concept of sense of place by emphasizing non-visual bodily experiences as its core formation mechanism among visually impaired students. Practically, this research recommends that special school environments prioritize spatial consistency, tactile circulation systems, stable activity nodes, and predictable sensory cues. Guiding blocks must be maintained continuously to preserve spatial legibility. Transitional areas should provide gradual sensory orientation to reduce adaptation pressure. Future research may involve comparative studies across multiple special schools or quantitative spatial-behavior modeling to strengthen empirical generalization.

REFERENCES

- Barker, R. G. (1968). *Ecological Psychology: Concepts and Methods for Studying the Environment of Human Behavior*. Stanford University Press.
- Corbin, J., & Strauss, A. (2012). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). Sage Publications. <https://methods.sagepub.com/book/mono/preview/basics-of-qualitative-research.pdf>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.
- Joni Hardi, Arifin, & Dwisusanto. (2020). Role of Sense of Place in the Use of Communal Spaces as Places for Social Interaction at an Owned Low-Cost Flats Bendungan Hilir II. *International Journal of Engineering Research and Technology*, 13(12), 4048–4064.
- Kementerian Pendidikan dan Kebudayaan Republik Indonesia. (2019). *Pedoman layanan pendidikan bagi peserta didik tunanetra*.
- Kusuma, A. B. (2019). *Analisis data kualitatif dengan pendekatan grounded theory dalam penelitian arsitektur*. Universitas Indonesia.
- Lang, J. (1987). *Creating Architectural Theory: The Role of the Behavioral Sciences in Environmental Design*. Van Nostrand Reinhold.
- Laurens, J. M. (2004). Arsitektur dan Perilaku Manusia. In D. Novita (Ed.), *Arsitektur dan Perilaku Manusia* (Pertama, Vol. 42, Number 4). PT Grasindo. https://books.google.co.id/books?id=Ltvj89G2AP4C&lpg=PP1&hl=id&pg=PP1&redir_esc=y#v=onepage&q&f=false
- Moustakas, C. (1994). *Phenomenological research methods*. Sage Publications. <https://methods.sagepub.com/book/mono/preview/phenomenological-research-methods.pdf>
- Pamungkas, A., & Ratri, N. (2019). Non-visual spatial comfort factors affecting mobility behavior of blind students. *ATRIUM Journal of Architecture*, 5(1), 33–41.
- Pratiwi, R., & Puspitasari, D. (2017). Desain lingkungan sekolah ramah disabilitas. *Jurnal Arsitektur MODUL*, 17(2), 101–112.

- Putri, R., Pramitasari, D., & Wijaya, K. (2020). Spatial accessibility evaluation for visually impaired students in special education schools. *Journal of Disability Studies*, 6(2), 101–115.
- Ramli, M., Prasetyo, L. B., & Widyawati, L. (2018). Lingkungan belajar dan perilaku adaptif siswa berkebutuhan khusus. *Jurnal Pendidikan Khusus*, 14(1), 23–35.
- Rapoport, A. (1982). *The meaning of the built environment: A nonverbal communication approach*. Sage Publications.
https://books.google.co.id/books?id=bn_7_UFAbdUC&printsec=frontcover&hl=id&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false
- Relph, E. (1976). *Place and placelessness*. Pion.
- Tuan, Y. F. (1977). *Space and place: The perspective of experience*. University of Minnesota Press.