EXPLORING THE DEAF CULTURE EXPERIENCE IN INTERIOR ARCHITECTURE

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ABSTRACT

Understanding the deaf culture experience of public space accessibility facilities is very important for space designing. Deafness is one of the invisible disabilities, but deaf people can replace their hearing senses with their eyes (visual) as a hearing tool to interact with the interlocutor or read the environment. The accessibility of the deaf room is often neglected by the community, and even the space requirement is relatively lower than that of non-deaf people. The existence of an inclusive architectural system is one of the applications of the concept of deaf space, which can assist them to have the opportunity to participate in quality activities together with non-deaf people. The concept of deaf space is to adapt the architecture to deaf culture to space. Apart from visuals, socially, most people consider deaf culture to be a linguistic minority group using sign language. This paper aims to analyze how the deaf's experience of space can be a reference for designers in interior architecture designing, and is carried out through exploration and study of related literature. The results of the exploration show that the concept of deaf space can be generated through several processing of interior elements including corridors between spaces, proximity, furniture, lighting, colors, materials, and acoustics. All of them contribute and complement each other in forming a complex space. The deaf cultural experience of space depends on the understanding of interior physical conditions of the deaf perception. The concept of deaf space can have an emotional impact on the experience for whoever deaf people are in the room.

Keywords: *Deaf Culture, Deaf Space, Interior Architecture, Inclusive Space.*

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A. INTRODUCTION

Humans build space to meet user needs. The building represent the user experience who lives in the room and begins to limit humans to move, behave, and the way humans live with their social lives. This concerns the stability between space and social where both live side by side in environmental harmony. Furthermore, to shape the Deaf experience it can be influenced by several interior architectural designs, such as the size and shape of the room, the layout of the furniture and its arrangement, color, material, accoustics, temperature, and lighting (Harahap, 2021).

Each room created on the basis of the needs of the Deaf which produces a different cultural experience effect on the space itself. Redevelopment of the room which was adapted from the needs and experiences of Deaf, would have an impact on his psychology.

Deaf people are people who have hearing and communication disorders, so they rely more on their eye senses to understand the other person and the environment (Boothroyd, 1982 in

Harahap, 2021). Based on the classification of deafness, deaf is a condition that has a hearing deficiency and the ability to perceive, visual stimuli, or listen to sounds, is below the ability of non-deaf. Dr. Connix (1982 in Bunawan, 1991) classifies deafness by the sound intensity scale, from 0 dB (hearing threshold) to 140 dB (deaf threshold). In addition, without the use use of hearing aids (ABD), and/or an Cochlear implants, the sense of the eye will be dominant.

The Deaf cultural experience of space in terms of physical does not have a distinctive characteristic, because they do not experience any physically visible disturbance. As a result of their deafness, they have distinctive characteristics in different ways. From a physical point of view, Deaf is different from non-Deaf, but it has an impact on communicating with space, especially in terms of behavior with conditions that are not commonly experienced. According to D. A. Ramsdell (1962 in Bunawan, 1991), there are several functions of the sense of hearing for the deaf, namely as follows:

a. Primitive level; function as a sound catcher from space or its environment. This makes the Deaf get more information that is not obtained from the sense of sight and feel more at one with the space or environment;
b. Level of signs/warnings; serves as an "antenna" for the deaf so that it is able to pick up danger signals from the surrounding environment. As a result, Deaf is able to act quickly to save themselves from unexpected events; and
c. Symbol level; serves to identify various kinds of sounds issued by the deaf, so that a language is formed to communicate with other people.

Based on the description above, it is clear that the ear has an important role in experiencing physical space, recognizing the environment, absorbing information, protecting oneself, communicating, and forming language.

According to Bauman (2005 in Harahap, 2021) the needs of the Deaf room are related to Deaf culture. Some of the unique cultures or customs of the Deaf cultural identity, are as follows:

a. Culture of vision – centricity. Deaf's experience of space is different from that of non-Deaf. Deafness is very thick with visuals, smells, and touch. Meanwhile, non-Deaf tend to use sound, visual, smell, and touch to feel the space. For example, to be able to enjoy music, Deaf tend to put their hands on the bass sound speaker, in order to feel the vibrations. Meanwhile, non-deaf people tend to use their ears to enjoy music.
b. Linguistic use. Most of the Deaf in the world use linguistic or sign language, both natural and standard.
c. Mobility and spatial aspects of gestures. What is meant by gesture is the experience of non-verbal Deaf communication using gestures, visual gestures (sign language), facial expressions,

and eye contact. Communication with gestures requires Deaf to look at each other. Therefore, Deaf must concentrate on the conversation, this causes them to become less aware of their surroundings. So the conversation for Deaf is not comfortable. This is because Deaf must share attention with the interlocutor and the room. In addition, the need for visual communication or gestures requires sufficient distance between Deaf and non-Deaf when communicating. For example in picture 1, wide corridors or sidewalks make it more possible for the Deaf to communicate visually or gestures without having to pay attention to the surrounding environment.

d. The Takete and Maluma phenomenon. The takete and maluma phenomena related to phonetic (sound) and visual patterns were first discovered by Wolfang Kohler in 1929. The maluma phenomenon is related to circular patterns (Figure 2b), while the takete phenomena are related to sharp, stiff, and angular patterns (Fig. Figure 2a). When viewed from an aesthetic point of view, the maluma phenomenon is related to a soft or smooth image. While the takete phenomenon is the opposite. The application of architecture with the maluma phenomenon tends to make it easier for the deaf to enjoy space and communicate. While the application of the takete phenomenon actually gives the opposite result. An example of an illustration can be seen in Figure 2, where Deaf seems to have difficulty observing the lips movement of the interlocutor while sitting in the "takete" corner. While in Figure 3 it can be seen that Deaf relatively have no difficulty in seeing the lips movement of the interlocutor when sitting in a "maluma" (circle).
e. Space or environment as a supervisor (navigator). In a conversation of three people, one of the Deaf will take on the role of supervisor. Supervisor or navigator whose aim is to keep the Deaf from harm on the road or the surrounding environment. For example, if Deaf communicates and at the same time a vehicle passes by, then Deaf can endanger himself. Thus, a supervisor is needed, who is not involved in the conversation, and is tasked as supervisor. The role of the deaf supervisor in the illustration can be seen in picture 4; a deaf supervisor wearing a black shirt is seen watching his two colleagues who are communicating while walking.


Figure 1. the width of the corridor for sign language users (personal doc., 2018)

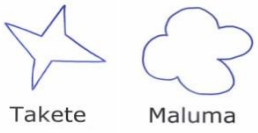


Figure 2a. Takete shape and Pcture 2b. Maluma shape. https://commons.wikimedia.org/wiki/File:Maluma_und_Takete.jpg

Figure 3. The form of "Takete" sitting room. (personal doc., 2018)

f. Proxemic. Proxemics is a science that studies the relationship between distance and the way humans interact. This term was first proposed by Edward T Hall in 1966. In previous studies, it has been reported that deaf people feel more comfortable when interacting with close distances. For the deaf, body expressions, namely subtle or subtle movements, are easier to catch. In addition, at close range, Deaf will be easier to interact, for example to attract the attention of the interlocutor, at close range deaf people will be comprehensive to the interlocutor.


Figure 4. Sign language user corridor width (personal doc., 2018)

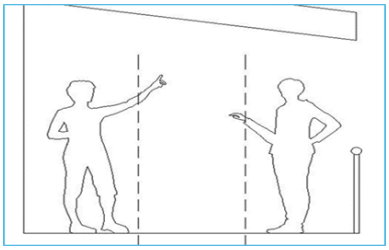


Figure 5. Deaf's close range attracted the attention of the interlocutor. Illustration : Personal, 2018

Based on the description above, this unique culture was formed because the Deaf depend on the sense of sight. The way of adapting the cultural experience of the Deaf to the environment is different from the non-Deaf in the perception of space, communication mode, and visual orientation.

Deaf cultural experience has a close relationship with the way of thinking and feeling. Thinking and feeling for the Deaf in activities in spaces that cannot be avoided. Understanding the situation can be something that influences the Deaf cultural experience. To experience Deaf culture in interior architecture, we will need to understand what and how they think. Understanding the situation can be something that influences the Deaf cultural experience.

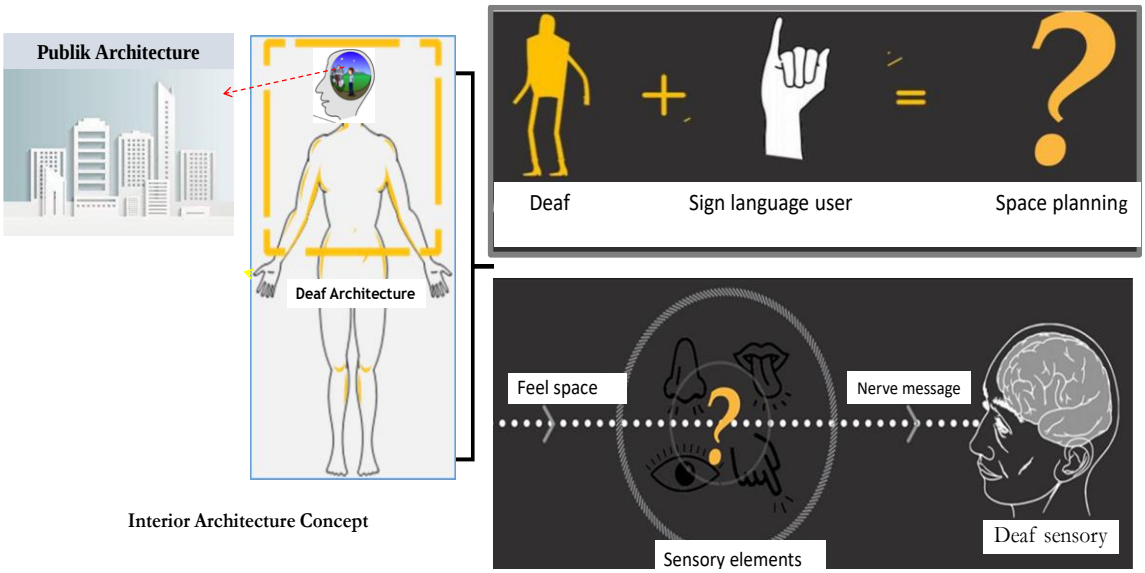


Figure 7. Deaf cultural experience of the use of space through the sensing process on the receptor system owned by the Deaf. (Illustration, Personal, 2022).

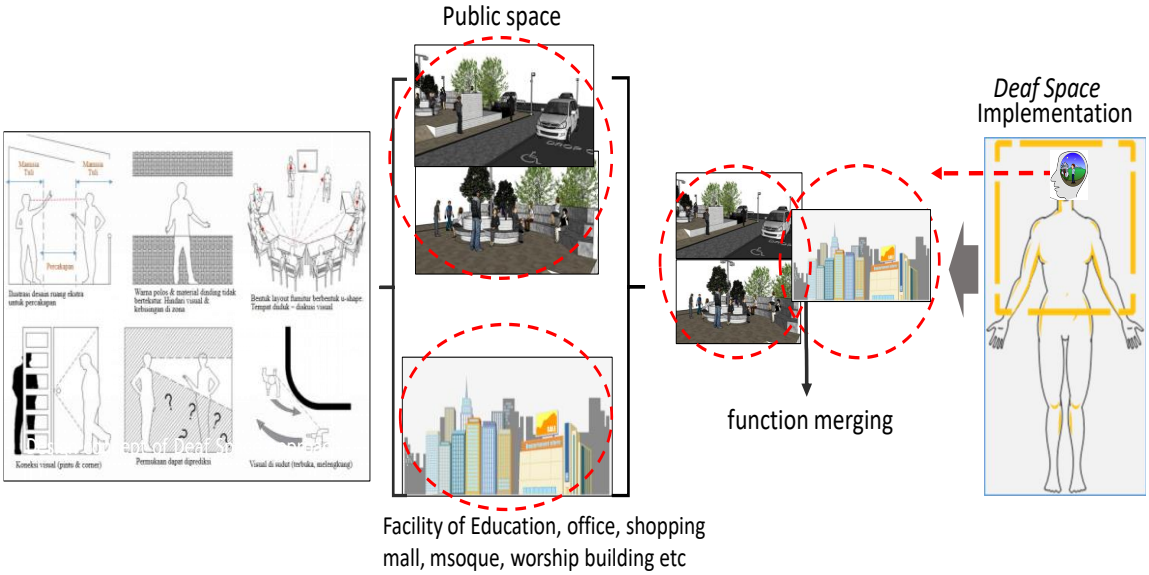


Figure 8. Diagram of the formation of the design object and the merging of the two functions. (Illustration, Personal, 2022).

Figure 8 above shows that the experience of Deaf culture has a close relationship with the way of thinking and feeling. Thinking and feeling for Deaf in their activities and social interactions cannot be avoided. Understanding the situation can be something that affects the Deaf. How the Deaf need to know what they need, what they think, and how they think. Understanding the situation can be something that affects the Deaf.

B. METHOD

The concept of interior architecture for the Deaf is basically a method of viewing a space as a system designed and adapted to the experience of the Deaf room without having to separate non-Deaf people. Deaf space is shown through the schematic in picture 9, 10, 11, 12 and 13. The method was born as a response to the term of Deaf Space which originated from movement for the deaf.

The term of deaf space was first proposed by architect Hansel Bauman in 2005. Deaf space is an architectural psychology approach and interior design developed for the deaf. Deaf space is a public space design concept to change the environment to be more deaf friendly. In addition, Bauman (2005) reveals that "The Deaf Space design guidelines are intended to guide and inspire the design of environments for deaf people that are completely responsive to, and expressive of, their unique ways of being" (Bauman, 2005 in Harahap, 2021). Deaf space design guidelines as a guide in guiding and inspiring the design of the built environment for the Deaf. The concept of deaf space originated from the Deaf Space Project which was designed to embody the determination of Gallaudet University as a global reference model for architecture and interior design for the Deaf.

The concept of deaf space has five aspects of space, namely (Bauman, 2005 in Harahap 2021):

1) space and proximity (Figure 9), 2? ensory reach (Figure 10), 3) mobility and proximity (Figure 11), 4) lighting and color (Figure 12), and 5) accoustics (Figure 13). In the approach to the concept of deaf space, it is hoped that the spaces where the deaf work in it will be optimally utilized. This shows the importance of conducting a deaf space study on the implementation of interior architecture related to Deaf cultural experiences that are in space. This discussion can be used a reference in the scientific development of interior architecture.

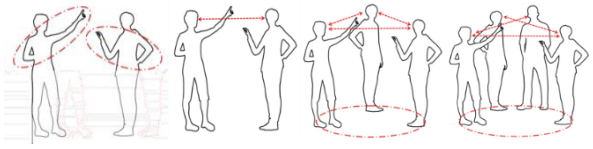


Figure 9. *Space and proximity* Illustration

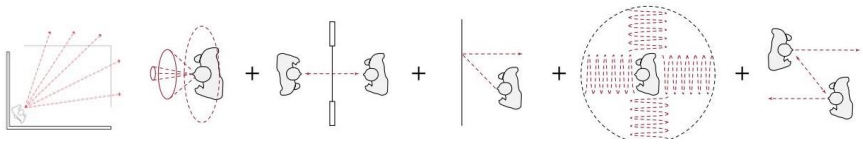


Figure 10. *Sensory reach* Illustration

Figure 11. *Mobility and proximity* Illustration

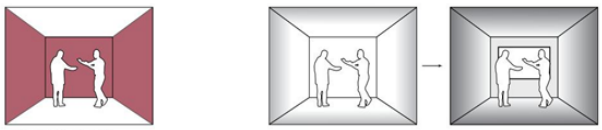


Figure 12. *Light and color* Illustration

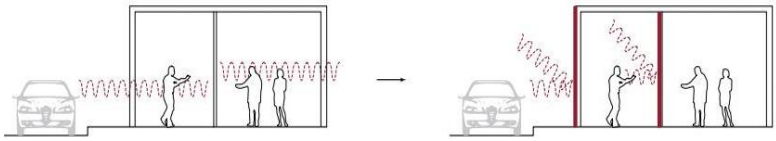


Figure 13. Acoustic Illustration

The five aspects of deaf space should be applied to spaces related to the Deaf experience with the aim of increasing the independence of activities and social interactions.

C. RESULT AND DISCUSSION

Deaf space studies related to the Deaf cultural experience are very important. A complete and comprehensive interior architecture needs to be understood through this perspective (point of view), that will be called as a subject. Deaf people as a subject, appears in the feeling of independence towards spaces, they can move and interact socially. Some of the keys to getting a Deaf room experience relate to the sensory elements of the space design criteria.

Table 1. Relationship between Deaf room experience and room design criteria

Sensory Elements	Deaf room experience	Interior architectural character
 sight/visual	Rely on visual skills and communication modes to get to know the environment	Provide ample space, to connect visually by avoiding walls.
	Utilize visual cues to determine its position indoors/outdoors	
	The nature of the extraordinary delinquency and does not understand the meaning of the information. For example, the logo is a picture of a male toilet but inside a female or vice versa, there is an image of an alarm sounding but no visual light siren/bell is provided.	
 hearing	Deaf users are very difficult to manage so that what is recorded in their minds and minds does not produce one orientation, so they do not realize that there are limits and distances that are informed of the spatial scale in their minds.	Provide room walls require soundproofing (acoustics) to reduce noise for hearing aids Deaf users (ABD/CI)

 smell	Smell or smell for Deaf people affects areas of the brain associated with emotions, feelings, memory, and motivation. The main motivational factor in Deaf behavior, plays an important role in spatial patterns	Provide ventilation holes, such as windows and jalousies, or also use air conditioners, so that deaf users can inhale stimulants
 hand – sign language	Utilize communication through body parts, such as hands as a medium for signal communication Tendency to find it difficult to understand the events around him	Provide a wide circulation space, so that the deaf can move freely when communicating using sign language with their friends, as well as bright lighting.
 body language	Utilizing and requiring free space (landscape) in moving, and communicating by using gestures or body language in interacting.	Provide a corner to avoid the elbow wall. Glass doors or windows, so that the deaf know the situation of activities inside or outside the room.

Table 1 shows that the relationship between Deaf cultural characters and space design criteria which are manifested in the form of sensory stimuli and modes of communication can be accepted by the Deaf. The Deaf experience residing in the room is integrated with the room experience. This spatial arrangement has a spatial context, resulting independence in activities.

The condition of the Deaf room experience on the character of the interior architectural elements as a parameter of physical quality will be discussed below in picture 14.

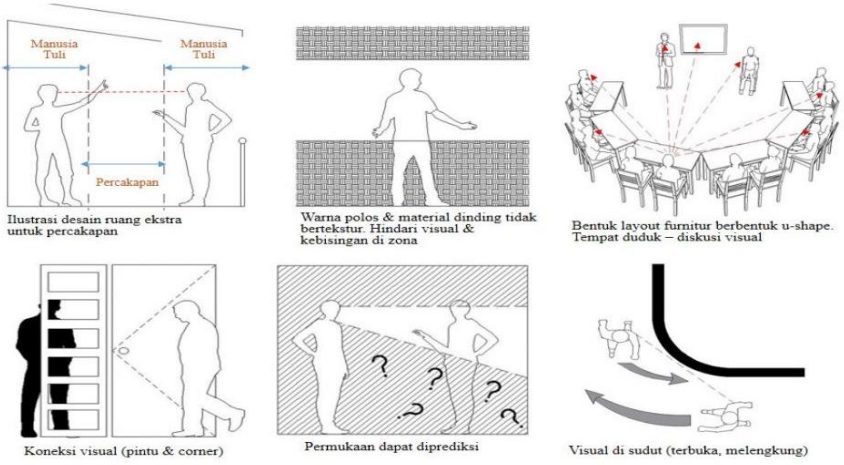


Figure 14. The relationship between deaf behavior conditions and the character of interior elements.

Figure 14 above shows the relationship of the condition of the Deaf cultural experience to the elements of spaces. The following diagram depicts with the application of deaf space interpreted as an approach to produce design criteria that can be used as a reference for scientific development of architecture and interior design. For example the image below:

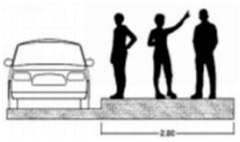
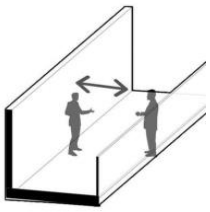
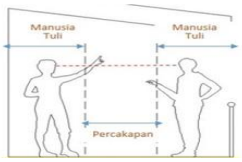
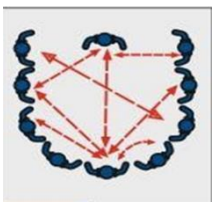
Sensory & mode of communication	Design concept illustration	Deaf Space Implementation
 Sight-visual  Touch(touch/hand gesture)	  Corridor width for conversation 	 The design of the pedestrian path used by the Deaf must be free of poles, garden furniture, signage, or other obstacles  *Ramps* are important to apply, because they provide easy access when deaf walks while communicating sign language with their friends without looking at the asphalt, potholes or embankments.  corridor wide distance design Deaf free to communicate using sign language

Figure 15 Illustration of the design of the connection between the Deaf cultural experience and the corridor between spaces

Sensory & mode of communication	Design concept illustration	Deaf Space Implementation
 Sight-visual 	 The deaf sitting position is circular or u-shape so that	 The deaf sitting position is in the form of a semi-circle or u-shape so that visual access is the same as the interlocutor

Touch (Touch/sign language)	the deaf can read signs	 The maluma-shaped sitting position tends to make it easier for the deaf to enjoy space and communicate

Figure 16. Design illustration of the link between the Deaf cultural experience and the layout of the furniture.

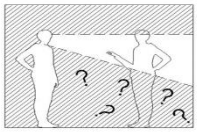
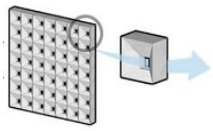
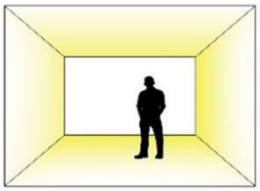
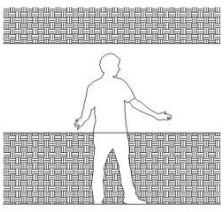
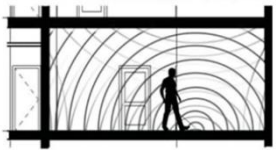
Sensory & mode of communication	Design concept illustration	Deaf Space Implementation
 sight -visual  smell  Touch(Touch/sign language)	  Predictable surface  Contrasting colors or parcels for easy reading of signs.	 ventilation position  the opening window makes it easy to communicate with the interlocutor  The whole room is beige

Figure 17. Illustration of the design of the connection between the Deaf cultural experience and lighting

Sensory & mode of communication	Design concept illustration	Deaf Space Implementation
 Hearing-Hearing Aid User  Sight-visual	 Avoid visuals & noise in the zone	 Pastel wall color design, plain and non-textured material  acoustic design on wall, ceiling and floor materials used

 Touch(Touch/sign language)  Body language	 Plain material walls	soundproof  Plain material wall design has been used soundproofing (acoustic)

Figure 18. Design illustration of the relationship between the experience of Deaf culture and color, material and acoustics

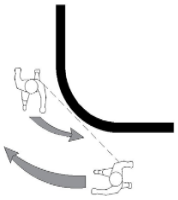
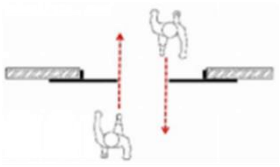
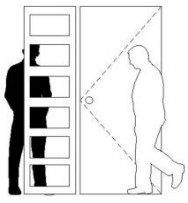
Sensory & mode of communication		Design concept illustration	Deaf Space Implementation
 Sight-visual	 Body language	 Visuals in open/ curved corners	 Circulation space design on curved walls (corner)

Figure 19. Design illustration of the link between the Deaf cultural experience and the circulation space.

Sensory & mode of communication	Design concept illustration	Deaf Space Implementation
 sight - visual  Body language  touch	  Visual connection (door and vertical)	 Automatic door design so that the deaf still can communicate with signing while walking through  The door partially uses glass so the deaf know who is in the room

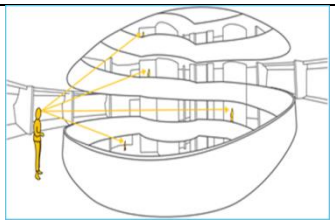
	 vertical connection	 The design of a vertically connected room with several floor levels so that the deaf can interact socially

Figure 20. Illustration of the design of the connection between the Deaf cultural experience and the interaction space

The picture above shows that facilities that accommodate the Deaf, buildings or spaces and environments need to have design features that help the Deaf to be active. Design features that require interior architectural elements are also related to objects in spaces, including modes of communication in the form of gestures, and landscaped viewing distances. Based on the description above, improvements for further research can review interior architectural elements that can accommodate deaf activities related to sensory and gestural space.

The concept of deaf space is a part of space design that relates between interior architecture and the Deaf experience. Deaf people when interacting with spaces use sensory and gesture spaces (communication modes) to perceive the impressions presented by the independence of space. The formulation of the discussion of the findings obtained in interior architecture with the application of deaf space will form the independence of the Deaf during their activities and social interactions.

D. CONCLUSION

There are issues in the design of buildings or spaces related to persons with disabilities, within the scope of architecture and interior design. Various facilities for persons with disabilities, especially those with hearing impairment or deaf, still do not fully meet the established standards. To overcome the problem of the Deaf cultural experience, it is necessary to consider interior architectural design that can increase independence in activities and social interactions, namely deaf space. The concept of deaf space is based on the issue raised in this project, namely how to create other spaces that suit the needs of the deaf. In general, many interior architectures for the Deaf in Indonesia have not adapted to their needs. Therefore, the approach chosen is the Deaf cultural experience approach. Through this research, it is hoped that it will increase public knowledge and insight regarding the existence of the theory of deaf space that exists in deaf people.

The application of deaf space can be used as a reference for both designers and architects in designing buildings or spaces and the environment. It aims to assist architects and designers in determining space problems that are influenced by the Deaf experience in the space. Exploration

of the Deaf cultural experience is indispensable in the design of a space that has three ways, namely sight, touch/touch (echo/vibration), and mode of communication (gestures, gestures, facial expressions, and eye contact). Indeed, not all deaf can hear through sound, because the level of deafness is different. However, by using hearing aids (ABD), only deaf individuals can feel independent, easy, comfortable, and safe.

E. ACKNOWLEDGEMENT

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F. REFERENCE

Bauman, H. (2010). *Deaf Space Design Guidelines, Volume 1. Hansel Bauman Architect (Working Draft).* Minneapolis: University of Minnesota Press.

Bauman, H., & Murray, J. (2014). *Deaf Gain: Raising the Stakes for Human Diversity.* Minneapolis: University of Minnesota Press.

Boothroyd, A. (1982). *Hearing Impairmentsin Young Children.* New Jersey: Prentice-Hall, Englewood Cliffs.

Bunawan, L. (1989). *Psikologi Anak Tunarungu.* Jakarta: Zinnia.

Canter, D. (1977). *Psychology of Place.* London: The Architectural Press.

Diani, M. R. (2012). *Mata yang Mendengar: Arsitektur Bagu Tunarungu.* Yogyakarta: Lamalera.

Hall, E. T. (1982). *The Hidden Dimension.* United States: Anchor Books.

Harahap, R. M. (2021). *Deaf Space Dalam Penataan Ruang Perkuliahan Untuk Meningkatkan Kemandirian Mahasiswa Penyandang Disabilitas Pendengaran.* Bandung: Institut Teknologi Bandung.

Harahap, R. M., & Lelo, L. (2020). Poster : Pengalaman Ruang Mahasiswa Tuli pada Setting Ruang Komunal di Universitas Mercu Buana. *Seminar Hasil Penelitian dan Pameran Poster 2020.* Jakarta: Universitas Mercu Buana.

Harahap, R. M., Santosa, I., Wahjudi, D., & Martokusumo, W. (2019). Interiority of Public Space in The Deaf Exhibition Center in Bekasi. *Sinergi, Vol. 23(3)*, 245-252.

Harahap, R. M., Santoso, I., Wahjudi, D., & Martokusumo, W. (2020). Study of Interiority Application in Deaf Space Based Lecture Space: Case Study: The Center of Art, Design & Language in ITB Building. *Journal of Accessibility and Design for All 10 (2)*, 229-261.

Myklebust, H. R. (1963). *The Psychology of Deafness: Sensory Deprivation, Learning, and Adjustment, Second Ed.* New York: Grune and Stratton.

Scott, R. (2011). *GU Campus Design and Planning.* Retrieved from Deaf Space: Deaf Culture Meets Architecture in Universal Design: https://gallaudet.edu/campus-design-facilities/campus-design-and-planning/deafspace/

Worrel, R. A. (2011). *Architectural Communication Accessibility for The Deaf and Hard-of-Hearing In Office Buildings. [Thesis].* Washington, D.C: The Catholic University of America.