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Design Engagement, Learning to See: Inclusivity in Sensory Experiences in Learning Environments

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INTRODUCTION

Profound architecture engages all our senses and placing us in the world with distinct specificity. Memories are triggered by the tactile, sonic, and aromatic qualities of an environment. We are at once very keenly aware of our surroundings while also sometimes viscerally transported to another time and place. This ability for environments to hold us in two places at once is powerful and speaks to the imprint memories can have on us when all our senses are employed.

How can sensory-centric design be utilized to create learning environments where the primary learner is dependent on non-visual cues? Can broader notions of exploration, journey, learning and discovery be elevated by these strategies? Can all learning environments benefit from non-visual design strategies

THE PROJECT

The project explorations presented here trace inclusive sensory-centric design strategies that allow visually impaired and blind children to engage with their surroundings within learning environments. In working with a community partner, The Kansas State School for the Blind and their orientation and mobility specialists, keen insights to the challenges and barriers in developing appropriate and inclusive environments were documented. The students also participated in a series of exercises in which they used blindfolds and wore goggles that simulated various visual impairments to navigate the built environment (Figure 1). This study also draws from two case studies that test the impact of sensory design and its ability to allow users to more fully experience their surroundings: the Denver Anchor School for blind children (2007) and the Glasgow Hazelwood School (2008).

Lessons can be taken from these learning environments designed for educational settings in which "ocularcentrism"[1] has not been privileged over experiencing the world through all our senses. The question explored here is whether projects that prioritize sensory engagement create greater human experiences by connecting us more meaningfully to our built environment. In this way, environments not only function better for those with sight impairment but inclusive to all users of the space.

The project revealed several meaningful strategies. Starting with working with a community to engage with the design partner for increasing the practical knowledge of the project, and a meaningful connection to studetns with visual impairment and blindness.

The design strategies of the exterior, sensory gardens designed to be accessible to people with disabilities engage all the senses by providing opportunities to see, smell, touch, and listen to plant life and garden fixtures.[2] These can often be expanded to allow more active interaction encouraging a safe space to develop children's motor and mental developments. Wayfinding in the exterior and the interior of the building employs tactile cues and trailing paths to assist with orientation and navigation (Figure 3). This is accomplished through consistent textured handrails, bright contrasting colors, datum lines, light paths and minimizing intersections in circulations

Acoustics that reduces background noise and limits distractions from heightened senses is critical (Figure 2), yet the subtle floor textures that create sound as one moves through the space, regardless of the use of aids, can assist with wayfinding as well. Further isolation of noise can be accomplished by creating seating nooks and learning pockets. In addition to material finishes, room volumes can have a significant impact on the acoustical experience and should be carefully considered. Lighting conditions, even for those with limited sight, can play an important role in allowing one to successfully navigate the learning environment. Diffused lighting that reduces glare and eliminates visual noise should be employed. Color-tinted glazed windows at sensory areas and highlighted spaces also serve to orient users.

Sensory spaces within the school are important opportunities for sight-impaired and partially sight-impaired children to explore the world around them in a safe, unencumbered manner. Different materials, forms, surface textures, sounds, aromas, and sensations stimulate the young person to explore their immediate surroundings and develop confidence in their spatial

Figure 1. Architecture students work with the orientation and mobility specialist Judy Imber from Kansas State School for the Blind using goggles simulating visual impairments. Image credit: ©2021 University of Kansas, Meg Kumin

Figure 2.Hazelwood School, Glasgow, Scotland. Cork walls provide acoustical barriers that reduce background noise and limit distractions. Image credit, Alan Dunlop Architects

Figure 3. Anchor Center for Blind Children, Denver, CO. Handrail and light-trail designed for tactile wayfinding . Image credit, Nilou Vakil

analysis skills. This can help young people to better develop their spatial analysis skills in navigating the school, its grounds, and the broader outside world with the goal of becoming independent individuals.

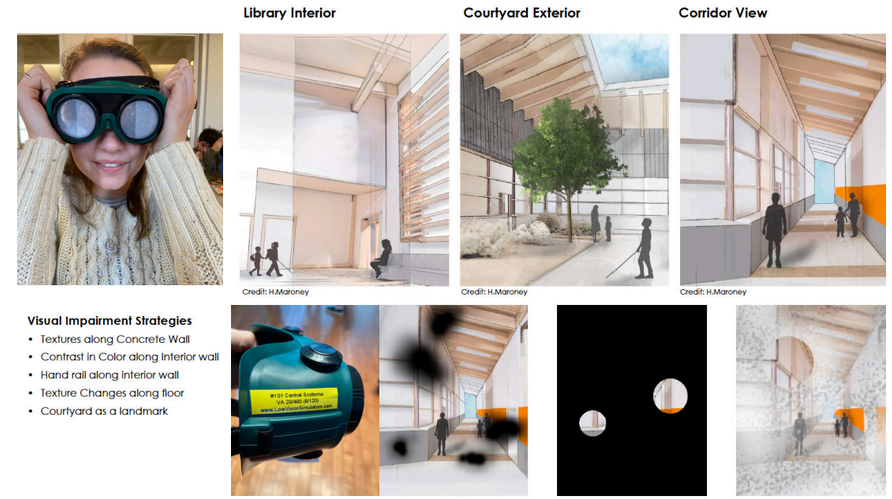
Finally, well-designed storage systems and the ability to "de-clutter" the space is key. The reduction of visual noise and unwanted distractions helps to keep focus and attention on the learning task at hand. Also, for smaller children particularly, the ability to quickly and efficiently put away toys and learning games reduces fall hazards.

The project here creates a framework for elevating the learning experience for the visually impaired. However, it is clear that the multi-sensory environment written of here could heighten the learning experience for visually-abled children as well. None of the strategies presented here displace positive characteristics of typical learning environments. They simply are an additional layer of the built environment with which one is able to engage. Simple sensory mnemonic devices help us to remember things because they engage all our senses.

Pedagogically, the exploration developed three important skills. First, the ability to conduct research into the needs of a very specific demographic in order to fully emphasize with the needs of that group (design ethics). Second, the ability to value a collaborative and participatory design processes with a community partner (participatory and community based design). And, three, the ability to recognize that designing environments with all senses in mind can yield more meaningful places than designing only for the visual (equity in design).

Figure 4. Students' response to the research based design strategies, Image credit, Bret Majarocon and Halle Maroney

Figure 5. Hazelwood School, Glasgow, Scotland. Image credit, Alan Dunlop Architects



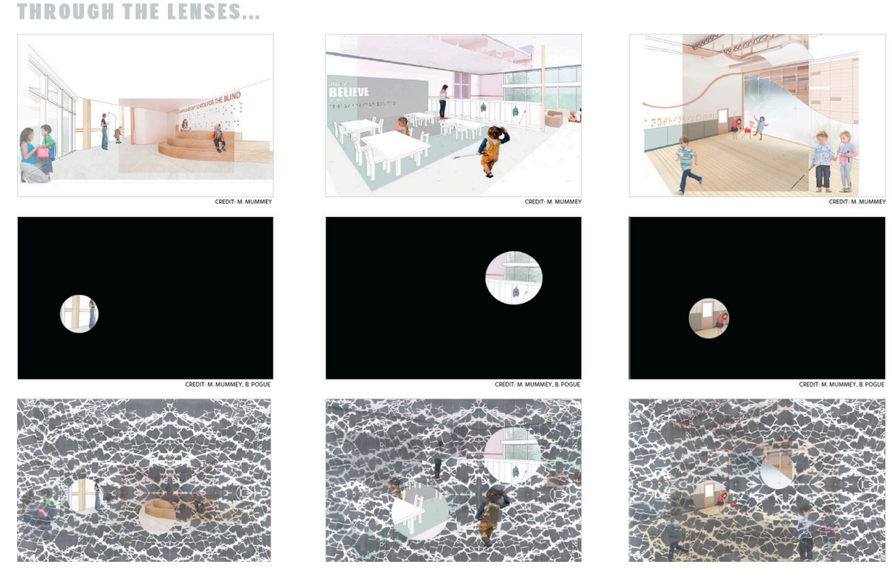


Figure 6. Students' response to research based design strategies. Image credit: Brooke Pogue, McKendree Mummey, Bret Majarocon and Halle Maroney

PROJECT

ENDNOTES

1. Juhani Pallasmaa, The Eyes of the Skin: Architecture and the Senses. (West Sussex, England: Wiley. 2005).
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