

SENSORY  
RETREAT  
FOR  
INCLUSIVE  
EDUCATION

designed by mahlee wohlford





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# Sensory Retreat for Inclusive Education

Project Framework  
Mahlee Wohlford



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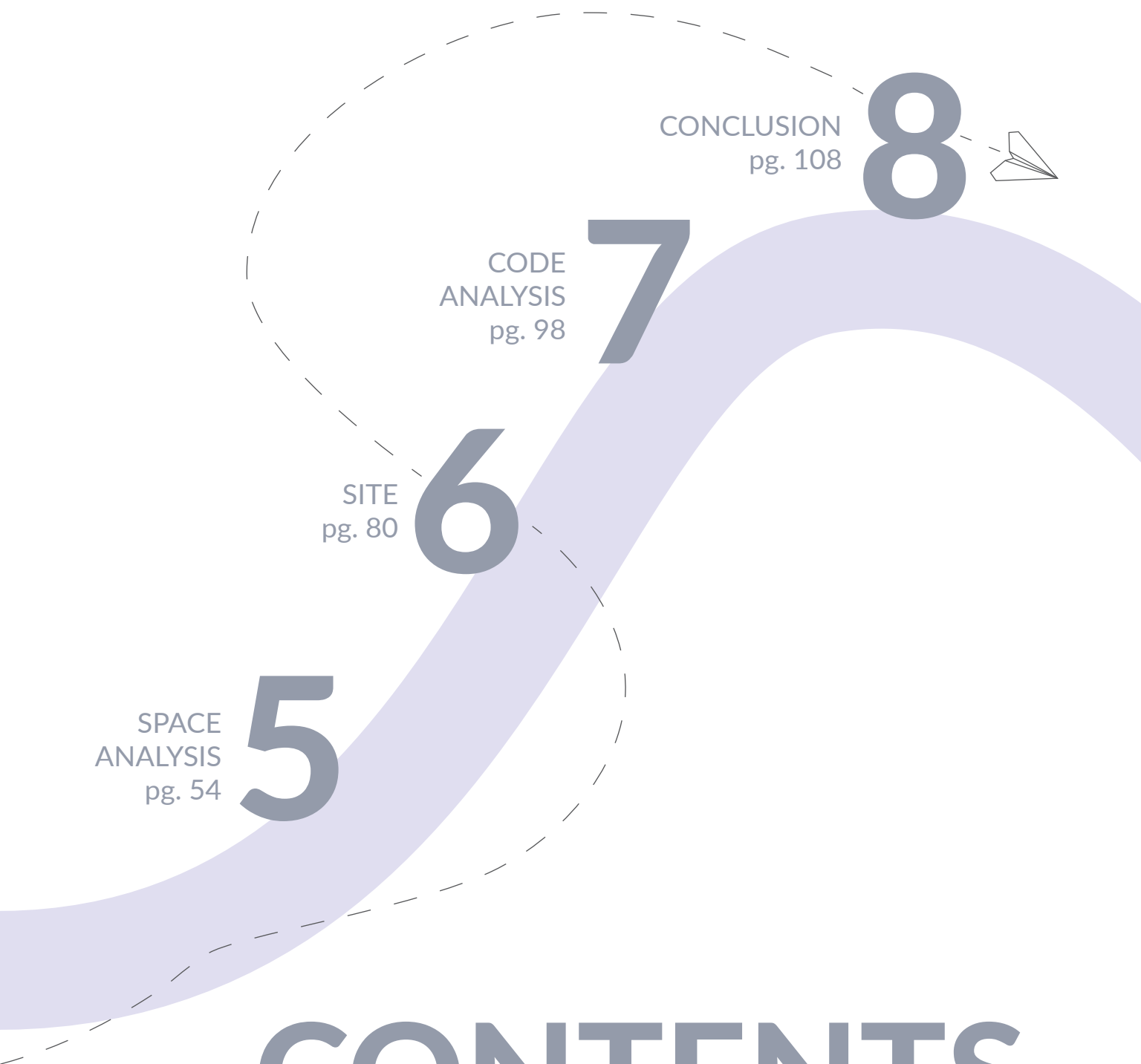
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# INTRO

# INTRODUCTION

## Project Framework

This book serves as a comprehensive collection of the data, research, and design decisions that have shaped my thesis project. It is organized to guide the reader through the overarching concepts of the project, providing context and a deeper understanding of the design process. The framework starts by introducing the central idea of the project, which is the concept of a retreat—spaces that allow individuals to disconnect, relax, and recharge. This concept will be explored in detail throughout the book, laying the foundation for the rest of the content.

The first chapter, Introduction, sets the stage by explaining the project as a whole and delving into the idea of a retreat. The following chapter, Position Statements, reflects the ongoing research and critical thinking I engaged with throughout the semester. By analyzing various readings, I formed positions on key questions, which were further explored through deeper analysis in this section. Typology, the next chapter, introduces the chosen typology for the project, explaining how it was selected and the research that informed this decision. Here, I introduce the specific problem my building will address and the solutions that will be implemented through design.

The Program chapter outlines the overall ideas behind the program and the relationships between various spaces within the design. This leads into the Space Analysis chapter, where I take a closer look at each space in detail, envisioning how they could physically and functionally manifest within the project. Site then takes a broader approach, beginning with the context of Tempe, AZ, and narrowing down to a specific site that will anchor the design. The Code and Regulations chapter follows, covering the meticulous research involved in ensuring the project complies with local building codes and regulations. Finally, the Conclusion wraps up the entire process, reflecting on the key insights, challenges, and outcomes of the project as a whole. This book is a journey through my thesis project, providing a detailed road map of the research, analysis, and decisions that culminated in the final design.

## The Idea of Retreat

Retreat can be understood in multiple ways: as a concept, an action, or a destination. It is both a physical shift to another place and the protective environment that comes with it, along with the activities undertaken once within that space. While retreat is often viewed as a reactionary act—escaping defeat, danger, or stress—it also has a deeper duality. It is not just a movement away from something but also a movement toward something. In some cases, the desire to escape prompts the retreat; in others, the pull toward safety, clarity, or purpose is the driving force.

Retreats are diverse and can include fleeing from conflict, uncertainty, or discomfort, or seeking refuge in safety, contemplation, focus, or community. Ultimately, retreat is a complex and multifaceted action, shaped by both external circumstances and internal motivations.

For this project, I have decided to broaden the idea of retreat, thinking of it not only as an escape but also as an essential practice incorporated into our daily lives. I want to explore how retreat can be integrated into the routine, particularly for children, who often find it harder to remove themselves from environments like classrooms. Given that children must remain in class despite potential emotional or sensory overload, creating spaces within their everyday surroundings where they can retreat for moments of calm, focus, and self-regulation becomes even more critical. This expanded view of retreat emphasizes its importance as a tool for well-being, especially in environments where it's not always easy for children to disengage from external pressures.







# POSITION STATEMENTS



### Figure 2.1 Tucson Retreat

The Tucson Mountain Retreat by DUST architects seamlessly blends architecture with its desert surroundings, using natural materials and minimalist design to create a tranquil escape that emphasizes connection to the landscape and stunning desert

# INTRODUCTION

Throughout the semester, our class engaged in writing concise and focused reflections called position statements. These writings centered on a single topic and would include material, concepts, or quotes from selected sources. The purpose of the position statements was to articulate our understanding of the topics and connect them to our design vision. After drafting our statements, we had the opportunity to reflect on and engage with the perspectives of our classmates.

The topics we explored over the semester included Designing in the Sonoran Desert, Designing for Place, Retreats, Community, and The Site. For this section, I have chosen to highlight Designing for Place, Retreats, and The Site, as they most closely align with my project.

In Designing for Place, I emphasized the importance of understanding regional identity and collaborating with communities to create architecture that resonates deeply with its cultural and environmental context. For Retreats, I focused on the idea of creating inclusive retreats that promote healing and reflection by integrating diverse cultural traditions into daily life. Lastly, in The Site, I explored the concept of designing for a full sensory experience in architecture, recognizing sites as sensory landscapes to create spaces that deeply connect with users and their environments.

Through further analysis and reflection on my initial statements, I've been influenced by both my classmates' ideas and the knowledge I've gained over the semester. My position statements, along with those of my peers, have created a strong foundation for how these topics can inform and enhance my design approach.

# DESIGNING FOR PLACE

## Initial Statement

Understanding the influence of place on architecture is essential for aligning the built environment with regional identity. Dennis Mann, in “Between Traditionalism and Modernism, noted that “most architectural students were not prepared by the nature of their education to design”<sup>1</sup> for place. As students, this insight shows the need to acquire a deep understanding of the unique characteristics of our environment. From my academic and professional experiences, one of the most effective ways to achieve this is through community engagement, which enhances our ability to design architecture that resonates with its cultural and regional context that might otherwise be missed when researching. Community engagement helps bridge the gap between theoretical knowledge and practical application, ensuring that our designs connect the people, the architecture, and the place in a meaningful way.

Effectively engaging with the community requires consideration of factors such as history, culture, and social dynamics, all of which are shaped by the people and their environment. This comprehensive understanding often requires a significant investment of time and resources, which explains why firms that are rooted in one place can set themselves up for more success by knowing more about the community and cultural context.

Local firms, who have a deeper understanding of those factors, are well-positioned to maintain and enhance a city’s unique identity. Mann noted that “there are regional styles and different patterns of building which are and have been connected to their specific areas in America for generations.”<sup>2</sup> For instance, regional architecture in the Midwest often features prairie-like structures with open plans that emphasize connection to the land, while Arizona’s architecture (Figure 2.2) reflects its desert environment and Native American influences through southwestern styles. By integrating local architectural styles into design projects, firms not only preserve the cultural essence of the area but also contribute to a sense of continuity.

Architects who don’t have resources to gain insights into these regional characteristics should immerse themselves in the local culture by attending community events, visiting historical sites, sampling cuisine, or simply engaging in conversations with residents. Such activities provide a richer understanding of regional identity and inform more contextually appropriate designs. Personally, residing in the Midwest and visiting Arizona has helped me gain a preliminary understanding of the regional identity to apply it to my architectural designs.



**Figure 2.2 Taliesin West**

Taliesin West's design integrates with the desert using local stone, sand, and plants. Its low horizontal lines, large windows, and adobe-like materials reflect Native American and Pueblo influences, creating a shelter that blends with the natural landscape.



## Further Analysis and Reflection

Throughout the semester, I've come to realize that I've mostly focused on modern architectural techniques, without fully exploring how the past shapes the future. Phoenix, with its rich Native American history—particularly from the Hohokam, Hopi, and Apache peoples—has deeply influenced its architectural identity.<sup>3</sup> Traditionally, Native American architecture responded to the harsh desert climate using sustainable materials like adobe and stone, prioritizing natural ventilation, thermal mass, and the connection between indoor and outdoor spaces.

As Phoenix has evolved into a sprawling urban center, much of this traditional knowledge has been absorbed into contemporary design, though often in abstract or symbolic forms. Today, architects incorporate modern materials like concrete and glass while still drawing on the region's historical reliance on climate-responsive building techniques. Features like courtyards, shaded walkways, and indoor-outdoor living spaces continue to reflect a deep understanding of the environment.

**Figure 2.3 SkySong Center**

This pavilion is inspired by Native American architectural forms, designed to provide shade and offer protection from the harsh climate. The design blends modern elements with traditional Southwestern aesthetics, thoughtfully honoring the region's Native American cultural heritage while adapting to contemporary

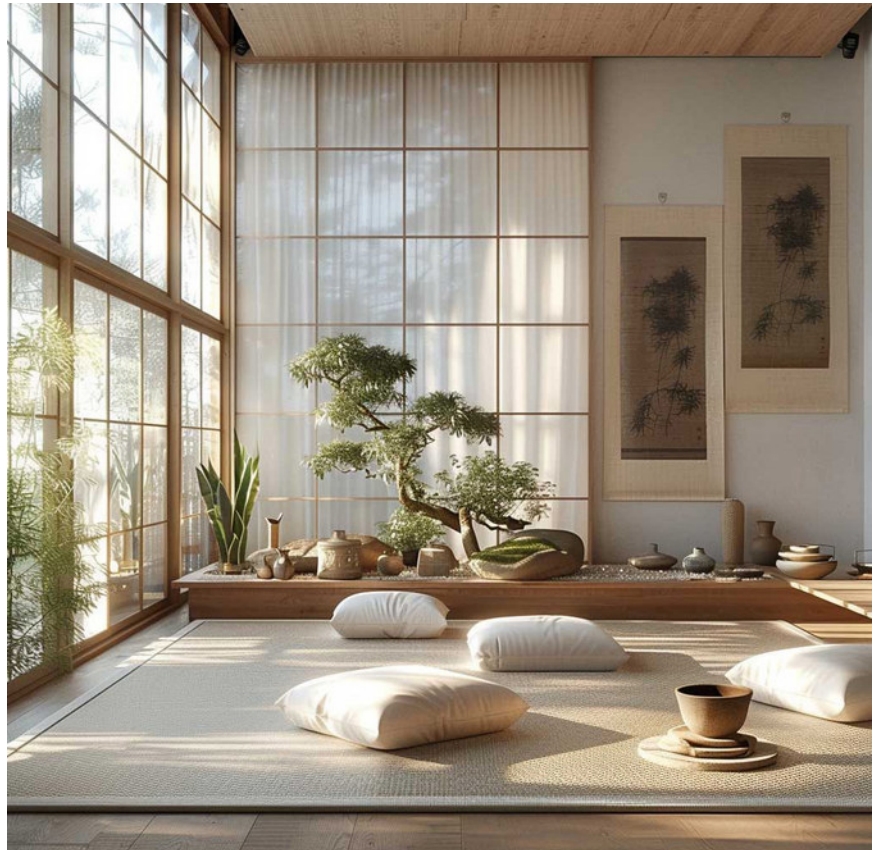


Reflecting on this, I realize that designing for place requires more than just technical knowledge—it's about engaging with the community's history, culture, and evolving identity. Phoenix's growth, globalization, and diverse population challenge architects to blend cultural heritage with modern needs. This has resulted in a hybrid architectural style, where traditional and contemporary elements coexist, creating spaces that reflect the city's dynamic identity.

As I listened to a presentation on socio-cultural context, I found that it reinforced my previous belief that architecture goes far beyond just physical structures. It's about understanding the emotional and cultural connections people have with their environment. Engaging with local communities, honoring historical influences, and integrating diverse cultural perspectives can create spaces that not only meet practical needs but also resonate deeply with the people who use them. This reflection has shown me the importance of designing not just for function, but for identity and collective memory.



## RETREATS



### Initial Statement

Architecture plays a crucial role in shaping retreats and their impact on individuals. In many countries outside the United States, retreats are embedded in everyday life through cultural and religious traditions that prioritize holistic well-being and a connection to nature. For example, Scandinavian cultures emphasize nature and outdoor recreation in their approach to retreats, while Japanese traditions focus on meditation and simplicity through Zen gardens and tea houses. Both cultures promote disconnection from the fast-paced world, creating spaces for reflection and healing.

From my perspective, the United States, despite its cultural diversity, lacks a unified and inclusive approach to retreats. Often described as a melting pot, the United States faces challenges in creating everyday retreats that respect diverse cultural traditions and practices. Architecture must respond by designing spaces that reflect this diversity, ensuring retreats accommodate different ways of healing, spiritual connection, or even end-of-life care.

### Figure 2.4 Zen House

A Zen house offers a peaceful retreat, providing a serene space for relaxation and simplicity, either within or adjacent to a home. It serves as a sanctuary for quiet reflection and escape.



End-of-life care serves as a retreat for reflection on one's life experiences. As Ken Warpole states in *Modern Hospice Design*, "Attitudes towards death change with historical and cultural circumstances."<sup>4</sup> These attitudes also shape broader concepts of healing and spiritual connection, which retreats aim to foster. By embracing openness and flexibility in architectural design, it is possible to create spaces where various cultural practices can coexist harmoniously, whether for hospice care or wellness. For instance, a retreat could integrate natural elements, as seen in Scandinavian designs, while providing private spaces like Japanese tea houses for individual meditation.

To truly make retreats a part of everyday life, like in Scandinavian and Japanese cultures, we must look beyond traditional settings and consider how retreats can be integrated into everyone's daily routine. Some approaches could include community pop-up retreats that celebrate cultural traditions or the incorporation of mindfulness and meditation spaces within workplaces. By integrating retreats into daily environments, architecture can help reduce stress and promote disconnection while respecting the diverse cultures of the United States. A retreat should be an integral part of one's routine, whether for life or death, allowing architecture to redefine what it means to retreat in our modern lives.

### **Further Analysis and Reflection**

As I reflect on this perspective, I find myself reconsidering the notion that the United States, despite being a melting pot of cultural traditions, must create a unified approach to retreats. Perhaps the strength of retreats in such a diverse nation lies not in cohesion but in adaptability. While diversity is often celebrated, it also presents a challenge: how can we design spaces that honor varied cultural practices and beliefs without creating a dominant perspective? Unlike countries where retreat spaces naturally align with longstanding, unified cultural values, the United States must navigate its various identities.

Achieving a fully inclusive retreat is both an aspiration and a challenge. True inclusivity demands a thoughtful understanding of how individuals from different cultural and spiritual backgrounds experience healing and connection. While architecture has the potential to bridge these differences, there is a risk of diminishing traditions in an effort to accommodate all. This raises an important question: can retreats ever be universally meaningful in such a culturally diverse society?

Perhaps the solution is not to strive for universal inclusion but to embrace adaptability. Architects can design retreats that celebrate local cultural traditions while remaining flexible enough for personal interpretation. By doing so, retreats can reflect the richness of cultural diversity.

# THE SITE

## Initial Statement

In architecture, a site extends beyond understanding the technical aspects like topography, geology, and hydrology. While these are essential foundations, a meaningful connection between architecture and its users only arises when we recognize the site as a complete sensory landscape. Site analysis should engage the full spectrum of human perception, integrating not just what we see but how we experience a place through all our senses.

In Site Analysis, James LaGro observes that “for most people, perceptions of the built environment are formed primarily through the sense of sight.”<sup>5</sup> However, vision alone cannot capture the true essence of a place. A site is multidimensional, engaging us through sounds, textures, and subtle shifts in light, all of which shape our experience. D.W. Meinig reinforces this, noting that “landscape is composed not only of what lies before our eyes but what lies within our heads.”<sup>6</sup> This insight emphasizes how designing for a full sensory experience enhances our connection to a place.

Alvar Aalto’s Paimio Sanatorium is a powerful example of sensory-driven design that incorporates site elements. Created for tuberculosis patients, Aalto used calming colors, positioned the building to maximize light, and ensured views of nature to provide a healing environment.<sup>7</sup> His approach demonstrates how sensory awareness in site design can profoundly impact well-being, reinforcing my belief that architects must think beyond physical characteristics to create spaces that resonate with people’s personal experiences.

In my design process, sensory qualities are not secondary but central to site analysis. I start by exploring how the site engages each sense, whether it’s the rustling of leaves, the texture of local stone, or the scent of native plants. These elements guide my design choices: the soothing sound of leaves could inspire open structures that welcome nature’s sounds, textures of stone become touchable surfaces, and the scent of plants informs landscaping that immerses users in seasonal changes. Rooted in the belief that architecture should be felt as much as seen, this approach allows me to create spaces that foster a genuine sense of place, enabling a deeper connection between the site, the architecture, and its users.

## Further Analysis and Reflection

Reflecting further on my initial statement of the site, I recognize that a site’s changing conditions deeply influence how people experience a space and how architecture responds. This is especially important for

my project, as sensory experience is central to my design. A site is never static—it shifts with the seasons, time of day, and cultural rhythms. These changes offer endless opportunities for architecture to engage with the passage of time and deepen the connection between users and their environment, making the design experience more dynamic and immersive.

In my design, I will focus on how natural light shifts throughout the day and year. Light plays a major role in shaping the atmosphere, and by incorporating shading devices, large windows, and strategic openings, I can create spaces that respond to these changes. These elements do more than provide comfort; they help make the space feel alive, transforming with the environment. The materials I will chose might react to light and temperature, further enhancing the sensory experience. Additionally, in Tempe's desert climate, I will consider how extreme heat in summer and cooler winter temperatures affect how spaces are used. I will focus on creating adaptable spaces with shading, thermal mass, and outdoor courtyards that are usable year-round. By responding to the natural rhythms of the desert climate, I aim to create spaces that are both functional and attuned to the unique environment of Tempe. This approach not only responds to environmental needs but fosters a deeper connection to the landscape, creating a truly immersive experience.

#### Figure 2.5 Sanatorium

Alvar Aalto's Paimio Sanatorium exemplifies sensory-driven design, using soothing colors, natural light, and nature views to create a healing environment for tuberculosis patients.





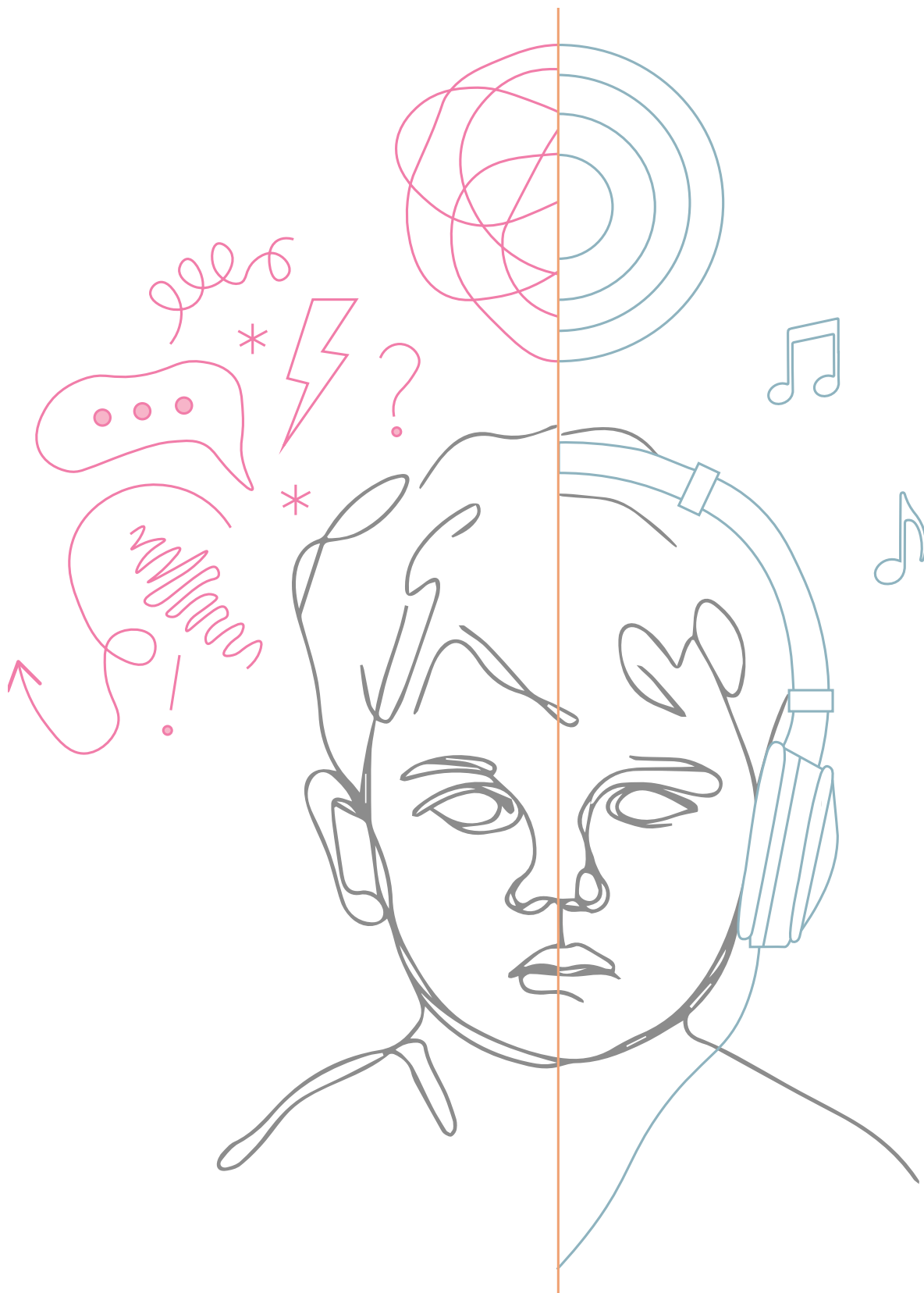
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# TYPOLGY





# INTRODUCTION

This section will provide a clear overview of the typology for this project: an extension of an elementary school for children with learning disabilities. It will include the problem faced and the goals to be met in order to solve this problem. Additionally, this section will explain why this typology was selected for the final project, detailing how it addresses the needs of the Tempe, Arizona community.

A detailed explanation will demonstrate how this educational extension supports children with learning disabilities, creating a restorative and inclusive environment. It will also articulate how the typology supports the idea of a retreat, emphasizing its role in fostering a sense of rest and restoration within a learning environment. The importance of including input from the impacted community in the design process will also be highlighted, ensuring the project is both meaningful and impactful for the people it serves.

Key precedents will be explored to illustrate the foundation of the design approach, including an innovative elementary school, a daycare center implementing strategies for learning disabilities, and a restaurant integrating sensory design. These examples will establish how similar principles can be adapted to this project while addressing the specific needs of the community.

By blending research, personal interest, and precedent analysis, this section demonstrates the thoughtful approach taken in choosing this typology as a meaningful and impactful solution for the Tempe community.

**Figure 3.1 Split Diagram**  
A diagram illustrating the impact of external stimuli on the brain: The left side depicts a chaotic environment, leading to a disorganized and overwhelmed brain, while the right side shows a calming atmosphere with music, resulting in a relaxed and focused

## PROBLEM STATEMENT

Children with learning disabilities, particularly those with ADHD and autism, face significant challenges in traditional educational environments. Sensory overload, emotional distress, and difficulty focusing are common obstacles in classrooms. Without appropriate spaces to retreat when overwhelmed or disengaged, these children can experience heightened frustration, anxiety, and diminished academic success.

Unlike adults, who have the privilege to step away from stressful situations, children in a school environment are often confined to their classrooms with limited opportunities for a break. This lack of freedom can intensify the struggles faced by children with learning disabilities, leaving them with few options to regulate their emotions or refocus their attention. A well-designed retreat space can provide this necessary outlet, offering a sanctuary where children can momentarily escape the pressures of the classroom.

The selected site for this project is Thew Elementary School in Tempe, AZ, a Grade C school that represents the pressing need for better support. Having approximately 600 students with only 25 teachers, classrooms are often overcrowded, creating an overwhelming environment that can intensify the challenges faced by children with disabilities. Sadly, the school has a chronic absenteeism rate of 45% among special education<sup>1</sup> students, further highlighting the barriers to success these children face. Located in an economically disadvantaged area, Thew Elementary lacks access to sufficient resources and is geographically distanced from other schools that might otherwise offer support.

This project seeks to bridge the resource gap by providing a thoughtfully designed retreat space tailored to the needs of children with learning disabilities. The design will not only address sensory challenges but also reflect the unique historical, cultural, environmental, social, and political contexts of Tempe. Historically, the city has made efforts to expand educational and mental health services, but these remain insufficient for many children. Socially, Tempe is diverse, with neighborhoods facing significant disparities in access to quality services. Politically, while Arizona has made strides in education and mental health reform, gaps persist in addressing the needs of children with learning disabilities, particularly in under served areas like Thew's community.

The space will reflect the community's values and address its challenges, fostering a supportive and inclusive environment where students can succeed academically and emotionally. Ultimately, this retreat aims to create a positive effect—reducing absenteeism, improving mental health, and nurturing a sense of belonging and well-being among students, teachers, and the broader community.



## TYOLOGY

### Narrative

The selected project typology is an extension from an existing school designed specifically for elementary-aged children with learning disabilities, such as ADHD (Attention-Deficit/Hyperactivity Disorder) and ASD (Autism Spectrum Disorder). This typology focuses on creating an environment that supports diverse sensory experiences, enhancing learning and well-being. By incorporating programmatic components, such as classrooms tailored to varied learning styles, sensory rooms for therapeutic engagement, a communal room for social interaction, and an exterior playground, the design will provide both physical and sensory development. The project aims to provide an inclusive and inviting atmosphere where children can find calmness, release energy, or regain focus in an environment designed to meet their unique needs.

**Figure 3.2 Little Girl**  
A child looks up at a wall of complex math problems, symbolizing the overwhelming challenges that children with learning disabilities often face.

*"I can definitely see something like that be beneficial, not just at our school, but within our district."<sup>2</sup>*

*- Araceli,  
School Office Manager*

### Relationship to Context

This typology allows me to explore a field I believe is essential to today's world, creating educational spaces that truly support holistic development. Schools are more than just places to learn academic skills; they are environments where children build friendships, develop problem-solving skills, and acquire foundational life abilities. Yet, many educational buildings are not thoughtfully designed to accommodate the diverse needs of children, especially those with learning disabilities. My goal is to create a space that not only addresses these needs but also forms a precedent that can be adapted and replicated in schools everywhere, ultimately fostering more inclusive and supportive learning environments.

An educational typology, focused on children with learning disabilities, is highly appropriate for Tempe, AZ. With around 600 students in the area classified as requiring special education services<sup>3</sup>, many local schools currently struggle to meet the diverse needs of this population. After reaching out to several schools, many in the area either lack resources entirely or have only one contained room for children with learning disabilities. Inadequate resources and poorly adapted environments make it difficult to provide the specialized attention and sensory support these children require to thrive academically and socially. As Tempe's population continues to grow<sup>4</sup>, schools are becoming increasingly crowded, creating chaotic environments that can be especially challenging for students who require calm, focused, and sensory-friendly settings. By designing an environment that is carefully created with sensory considerations, the school can better support developmental and academic outcomes. Elementary school is a critical time for addressing learning difficulties, as many mental health and learning challenges start to show during this time, often as early as kindergarten.<sup>5</sup> Early intervention is essential, and this project would ensure that resources and specialized spaces are available as soon as a diagnosis is made, providing children with a strong, supportive foundation to grow and succeed.



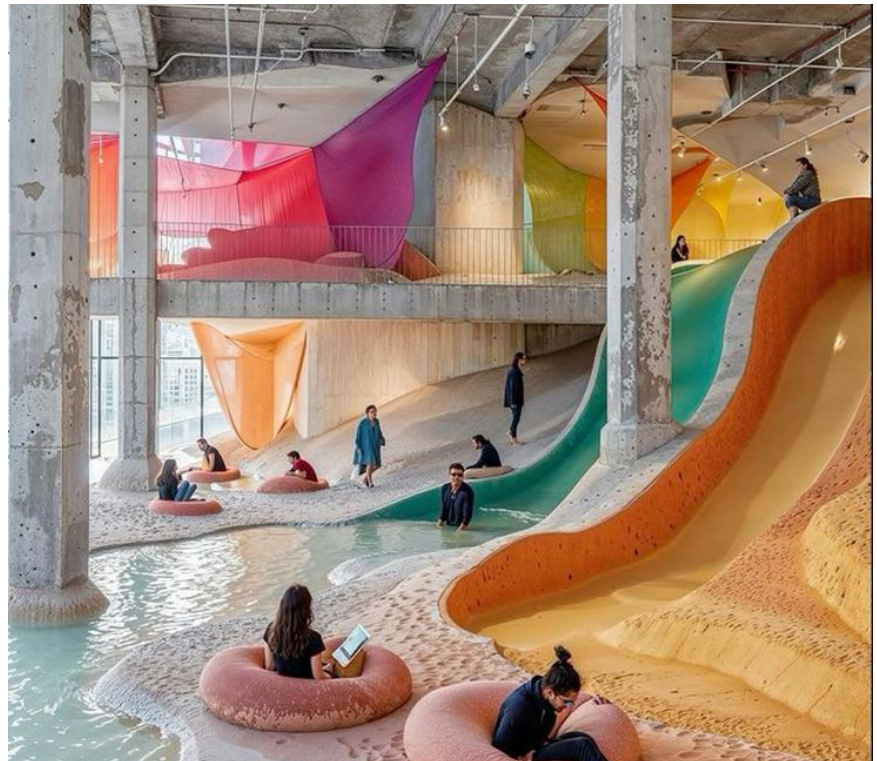
**Figure 3.3 Traditional**  
A traditional classroom setup, defined by static desks and chairs, offering a structured but limited learning environment.



**Figure 3.4 Sensory - Based**  
An idea of sensory-based design for elementary schools, where the environment engages multiple senses to enhance learning and well-being



**Figure 3.5 Understimulated**  
Children who are understimulated often seek out play, contrast, and movement. This precedent image showcases how vibrant colors and engaging playground elements can provide those essential sensory resources.



**Figure 3.6 Overstimulated**  
Children who are overstimulated often seek neutral, controlled, and ordered spaces. This precedent image showcases how neutral color palettes and flexible seating allow children to have control over their own environment.



## **Relationship to Retreat**

When most people think of a retreat, they often picture a spa or a calm place of relaxation. However, my vision for a retreat is slightly different, focusing on how we can incorporate moments of retreat into our everyday lives. For example, children attend school on weekdays and don't experience the same freedom of breaks that many adults enjoy. A retreat is essential for children, a place where they can momentarily step away from the chaos of school, especially those with learning disabilities who are more sensitive to overstimulation or understimulation. The space will provide children with a calming space where they can refocus and regain mental balance. Beyond supporting the children, this retreat is also designed for the teachers who work tirelessly to educate and care for students who may be challenging to teach. Involved in this environment daily, teachers will have a space that provides the mental clarity needed to effectively support children with learning disabilities. This project will offer an environment that benefits both students and educators, promoting overall well-being and effective learning experiences.

## **Personal Interests**

What excites me the most about this project is the depth of research that can be embedded within programmatic elements. Sensory design-based architecture has been explored in various contexts, but often lacks a meaningful integration into our everyday lives. I am eager to discover how sensory design principles can be seamlessly incorporated into daily routines, particularly in school environments. Based on my previous research on sensory design and its psychological impacts, I understand how it can shape user experiences. As I dive deeper into the relationship between sensory design and children with learning disabilities, my goal is to develop thoughtful, research driven design solutions that address real needs and create a positive change.

## **Precedents**

I have included precedents to establish a visual and conceptual connection to the design, divided into three groups: learning disabilities in children, elementary schools, and sensory design. The learning disabilities precedents focus on creating spaces that support focus and emotional well-being. The elementary school examples highlight flexible learning environments that encourage collaboration. Lastly, the sensory design precedents explore how elements like lighting, color, and acoustics can enhance comfort and reduce stress. These examples guide the design choices to create an inclusive and supportive environment for children.

# PRECEDENTS

## Elementary School Precedent

Montessori School | coLAB Studio

The Montessori School designed by coLAB is an excellent example of a school focused on good learning environments. This 5000 square foot building<sup>6</sup>, an extension to an existing school in Central Phoenix, Arizona, incorporates various elements that engage the senses, creating a space that supports both the educational and emotional needs of its users. The most notable feature is the building's high-performance envelope, where the insulation is placed outside of the structural system. This allows for the wood structure and mechanical systems to be exposed, not only as a teaching tool but also to provide a tactile, biophilic experience. The warmth and natural texture of the exposed wood create a calming atmosphere that feels welcoming and grounded. The visual complexity added by the exposed elements also encourages a deeper connection to the space.

The design also pays careful attention to natural light, which is crucial for creating a positive and focused atmosphere. Large north-facing clerestory windows bring daylight into the interior spaces, ensuring that even the center of the classrooms receives natural light throughout the day. The translucent roof panels above the south patio allow for soft, diffused light to enter deeper into the building, contributing to an overall bright and uplifting environment. This approach to daylighting not only makes the space feel more expansive but also supports the students' circadian rhythms, which is especially important for children who may be more sensitive to light and its effects on mood and focus.

Incorporating elements from this precedent into my design for an elementary school for children with learning disabilities can create a sensory-rich environment that supports their unique needs. One of the key takeaways from the Montessori School is the use of natural materials, particularly wood, which can provide warmth and a sense of connection to nature. Exposing structural elements could also help children understand how systems work while offering a tactile experience that engages them. The flexible spaces in the Montessori design are another crucial element, allowing for different activities like play, physical movement, and performances. These types of spaces are essential in accommodating the varied needs of children with learning disabilities, offering opportunities for them to move, explore, and engage in a range of activities that support their development. Finally, the use of daylighting in the design will be important for creating an environment that enhances focus and well-being, helping to reduce sensory overload and improve the overall experience for children with learning disabilities.

### Figure 3.7 School

The image of the Montessori School by coLAB showcases exposed structure, tall ceilings, and abundant natural light, creating a flexible and dynamic space for various learning environments.





## Learning Disabilities Precedent

Day Care Centre For People | Urbain Architectencollectief

The Day Care Centre for People with a Mental Disability, designed by Urbain Architectencollectief, serves as a thoughtful precedent for spaces designed to support individuals with learning disabilities. Located in Belgium, this center is specifically designed to accommodate the unique needs of people with mental disabilities, ensuring that the space promotes a sense of safety, comfort, and empowerment. The design features a low-scale, carefully articulated building that is sensitive to its surrounding context while also addressing the physical and sensory needs of its users. One of the standout elements of the project is its approach to accessibility and adaptability, creating a flexible, user-centered environment that can accommodate a range of activities and needs.

The design of the Day Care Centre emphasizes creating a sensory-friendly environment through careful attention to lighting, acoustics, and spatial organization. Large windows provide ample daylight while allowing for views of the surrounding natural landscape, creating a calming atmosphere that is connected to nature. The building also features a series of open, interconnected spaces that allow for easy movement and flow, providing an intuitive layout for individuals who may have difficulty navigating complex spaces. The interior finishes are simple yet inviting, with soft, natural materials that contribute to a sense of warmth and comfort. The choice of materials and textures also ensures that the space is both visually and tactilely engaging, encouraging positive sensory experiences for its users.

Incorporating elements from the Day Care Centre into my design for an elementary school for children with learning disabilities can provide valuable insights into creating an environment that is both functional and emotionally supportive. The emphasis on natural light and connection to the outdoors is something that I would prioritize, as it can help reduce stress and promote a calming atmosphere for children. Additionally, the open, interconnected spaces that allow for flexibility and ease of movement would be essential in a school setting, as they enable children with learning disabilities to navigate the environment more easily and engage in different activities without feeling overwhelmed. The simple, inviting materials used in the Day Care Centre are also a key takeaway, as they create a space that is both aesthetically pleasing and soothing to the senses. By taking inspiration from this precedent, I can create a design that supports not only the learning needs of children with disabilities but also their emotional and sensory well-being.

### Figure 3.8 Centre

A serene walkway around the courtyard of a Day Care Centre for People with a Mental Disability, featuring warm wood and open spaces that promote calm and accessibility.





## Sensory - Based Precedent

Lolly-Laputan Educational Restaurant | Wutopia Lab

The Lolly-Laputan Educational Restaurant, designed by Wutopia Lab, is located in the city of Shanghai, China, and is a striking example of sensory design, merging playful, sensory-rich elements with an educational setting. The project functions as both a restaurant and an interactive educational experience for children, where the space is not merely a place to eat but a vibrant environment that stimulates curiosity and learning. The design embraces a sense of fantasy, using vibrant colors, immersive spatial experiences, and materials that engage multiple senses, from sight to touch and even sound. Architectural forms and interior design are infused with childlike whimsy, where playful shapes, textures, and dynamic lighting invite children to physically interact with their surroundings, sparking imagination while fostering connections to the food, environment, and each other. Situated in an urban context, the space is intended to engage children in an environment that contrasts with traditional educational settings, encouraging sensory exploration in an enjoyable and playful way. The goal is to create an immersive space that facilitates both physical and cognitive experiences, making it an ideal precedent for exploring how sensory design can enhance an educational environment.

The project's playful approach offers valuable insights for designing a school for children with learning disabilities. The bold use of color, playful forms, and sensory-rich features like tactile materials, varied textures, and dynamic lighting can create a stimulating yet comfortable atmosphere. These elements can enhance focus, promote engagement, and help with emotional regulation by providing different sensory inputs. For children with learning disabilities, such features are essential for maintaining attention and comfort in a learning space, offering a balance between calm areas and more vibrant, interactive zones. Sensory-rich spaces that allow students to transition between quiet, restorative environments and active, collaborative areas can support both focused learning and creative exploration.

In addition to the aesthetic qualities of sensory design, Wutopia Lab's precedent demonstrates the importance of creating spaces that offer flexibility and interaction. For an elementary school for children with learning disabilities, incorporating spaces that adapt to the sensory needs of each child is vital. Whether through adjustable lighting, soundproofing, or dynamic textures, providing sensory options within the classroom and communal areas can help mitigate stress and encourage positive learning outcomes. What's essential is the balance between stimulating design elements and calming, restorative spaces, allowing for both focused learning and moments of respite, tailored to the specific needs of students with diverse learning profiles.

### Figure 3.9 Restaurant

The image of the Lolly-Laputan Educational Restaurant showcases the playful area beneath a bright, white ceiling, creating an open, inviting space for children to engage and explore.







## Endnotes

- 1 | Schools - Tempe Elementary Schools. Accessed November 6, 2024. <https://www.tempeschools.org/discover/schools>.
- 2 | Araceli (office manager) in discussion with the author, October 2024.
- 3 | Transportation - Tempe Elementary Schools, accessed November 3, 2024, <https://www.tempeschools.org/resources/transportation>.
- 4 | Tempe, Arizona Population 2024. Accessed November 6, 2024. <https://worldpopulationreview.com/us-cities/arizona/tempe>.
- 5 | Child Mind Institute. "Early Signs of Learning Challenges." Accessed November 6, 2024. <https://childmind.org/article/early-signs-of-learning-challenges/>.
- 6 | coLAB studio, llc. "Commercial: Montessori School." Access December 12, 2024. <http://www.colabstudio.com/commercial-montessori-school>.







**PROGRAM**

# INTRODUCTION

This section outlines the proposed program based on the elementary school designed for children with learning disabilities. The program section provides a comprehensive breakdown of the program components, including broader zones, detailed descriptions of individual spaces, and their associated square footages.

The total square footage is calculated, followed by an adjustment for gross area, accounting for service spaces and circulation needs. Accompanying this is a series of diagrams illustrating the programmatic elements and spatial relationships between the zones. These diagrams will highlight primary and secondary adjacencies, showcasing how different spaces connect and interact, as well as potential patterns of movement within the building. Additionally, they distinguish between indoor and outdoor spaces, emphasizing the seamless integration of sensory design principles throughout the environment.

**Figure 4.1 Smithfield**

Smithfield Elementary School:  
An interior space within a space,  
where thoughtful design creates  
a sense of openness and intimacy,  
fostering a nurturing environment  
for learning and growth.





*"I've been doing this over 30 years and this is the first time that I walk into a school and feel, wow, this building loves these children."<sup>1</sup>*

*-Dr. Gayle Stinson, BISD  
Superintendent*

**Figure 4.2 Smithfield**  
Smithfield Elementary School:  
An interior space within a space,  
where thoughtful design creates  
a sense of openness and intimacy,  
fostering a nurturing environment  
for learning and growth.

# PROGRAM

## Programmatic Elements

The program for the sensory-design-based extension of the elementary school is organized into four main categories: individual spaces, communal spaces, administrative spaces, and service spaces, each tailored to the unique needs of children with learning disabilities.

Individual spaces serve as calming retreats, including sensory and testing rooms designed for focus and self-regulation. Communal spaces foster collaboration and connection through flexible classrooms, a welcoming communal room, and an outdoor playground, all designed to adapt to group activities and encourage interaction.

Administrative spaces provide teachers and staff with functional offices for planning and operations, while service spaces discreetly address the children's physical and emotional well-being, ensuring their comfort and safety.

Flexibility is central to these program elements, allowing the design to accommodate the evolving needs of children with ADHD, autism, and other learning differences. This thoughtful integration of sensory design and adaptable spaces creates a foundation for achieving the program's overarching goals of fostering inclusion, engagement, and development.

## Programmatic Goals

Recognizing the lack of adequate spaces for children with learning disabilities, specific goals have been established to address these challenges, serving as the primary driving forces behind the design.

### **Design Sensory Spaces for Individual Regulation**

Specialized rooms for children to regain focus in a controlled environment when overwhelmed or distracted.

### **Create Flexible Classrooms for Collaborative Learning**

Collaboration is key a factor to include as it is a big problem within children with learning disabilities.

### **Provide Passive and Active Explorations**

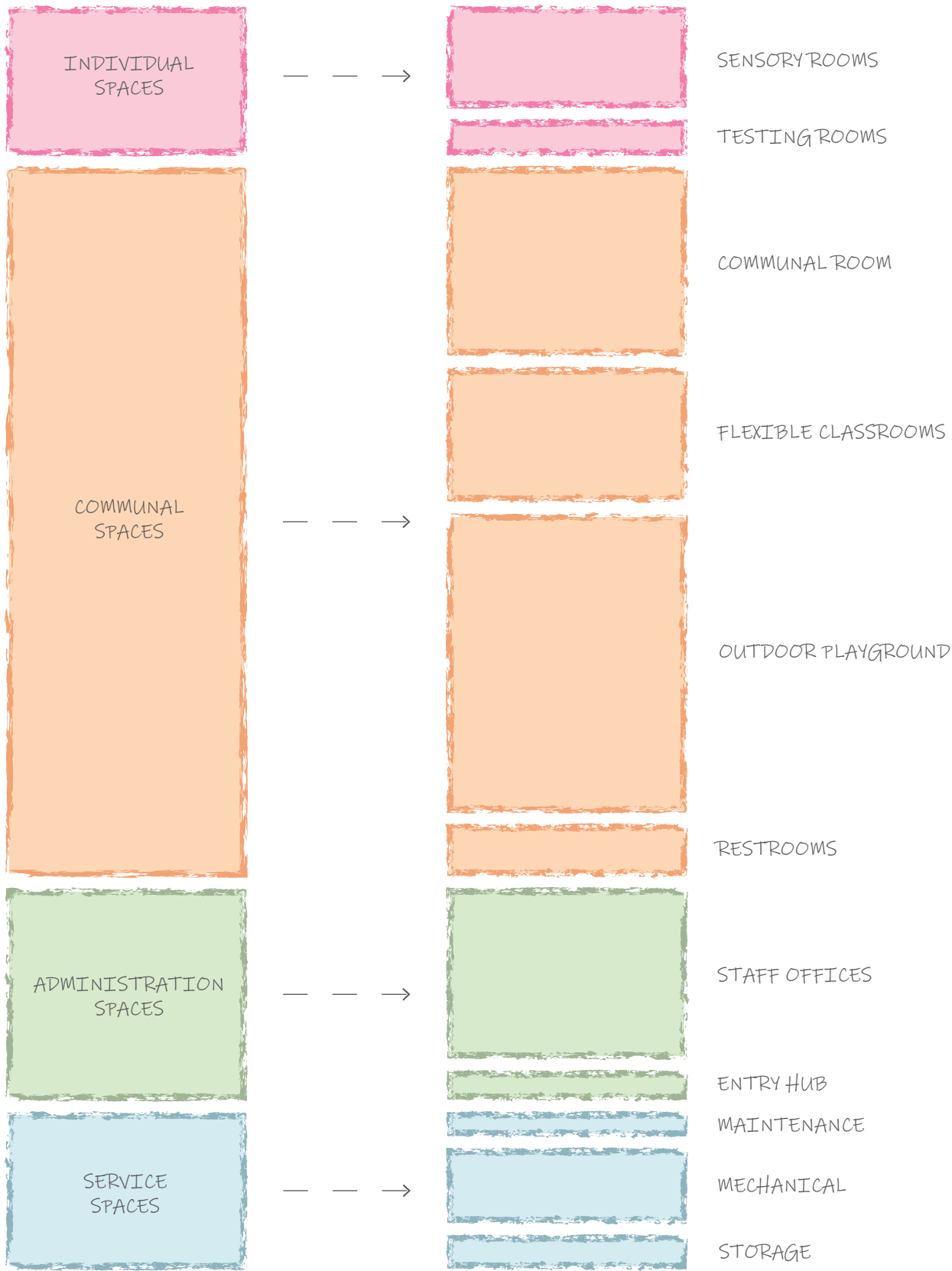
Incorporate interactive spaces for physical activity alongside secluded areas positioned to provide calming views of nature.

### **Enhance Accessibility and Wayfinding to the Site**

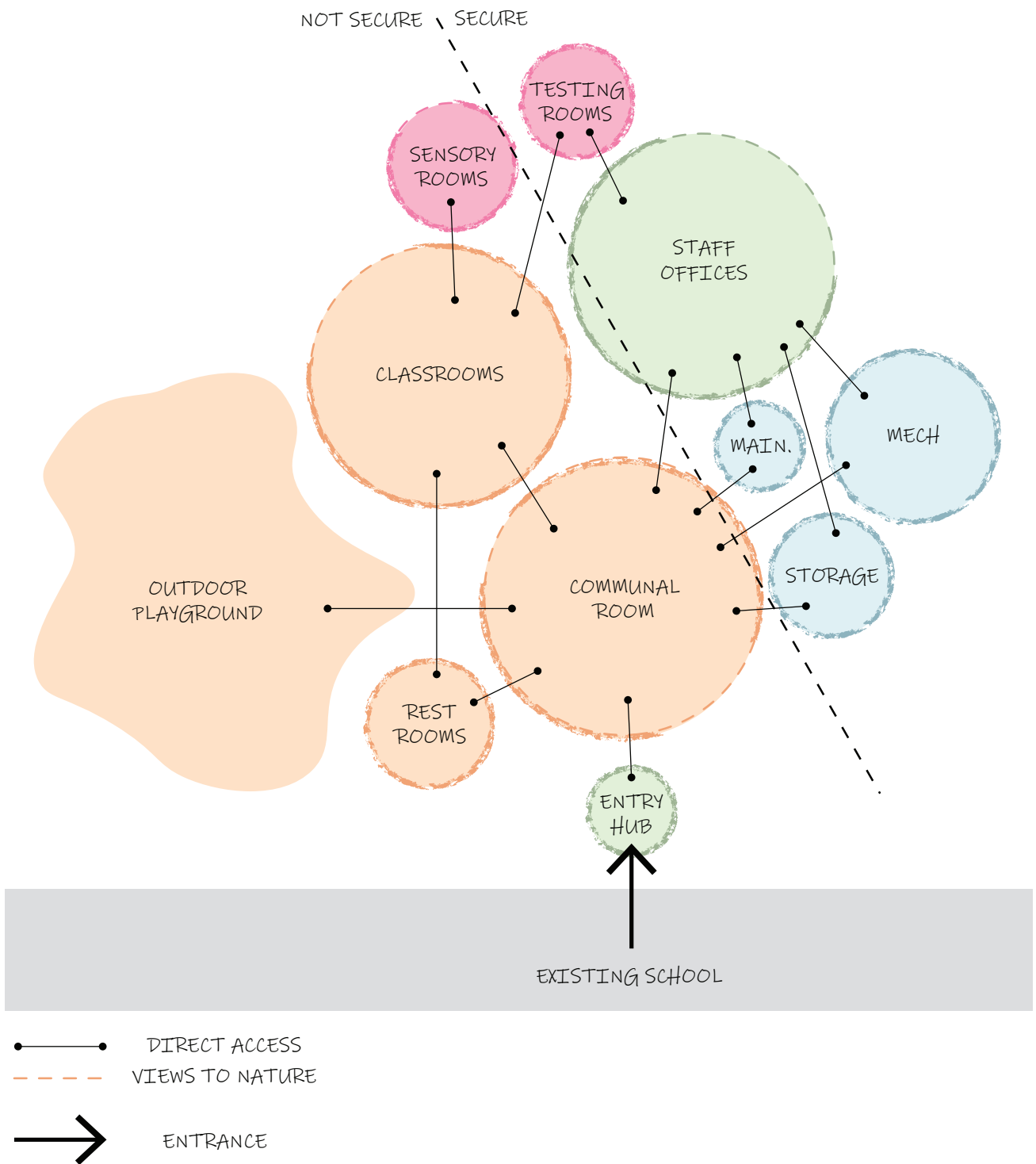
Ensure seamless access to the space when needed by incorporating clear pathways and intuitive, easy-to-navigate layouts.

**Figure 4.3 Program Diagram**

This diagram illustrates the evolution of the program, starting with four broad categories and developing into distinct, detailed programmatic elements.







# SPATIAL CONNECTIONS

## Sensory Rooms

520 sf  
4 at 130 sf

Each sensory room offers unique experiences to engage various senses, including specialized lighting and interactive elements. Designed for small groups of up to six, these spaces work best with fewer occupants to maintain a calming and focused environment.

## Testing Rooms

160 sf  
4 at 40 sf

The testing rooms are small, distraction-free spaces designed for students who need isolation or extended time for testing, featuring only a desk to maintain focus.

# INDIVIDUAL SPACES

## Sensory Rooms

520 sf  
4 at 130 sf

Each sensory room offers unique experiences to engage various senses, including specialized lighting and interactive elements. Designed for small groups of up to six, these spaces work best with fewer occupants to maintain a calming and focused environment.

## Testing Rooms

160 sf  
4 at 40 sf

The testing rooms are small, distraction-free spaces designed for students who need isolation or extended time for testing, featuring only a desk to maintain focus.

### Figure 4.4 Program Diagram

This diagram illustrates the evolution of the program, starting with four broad categories and developing into distinct, detailed programmatic elements.

# COMMUNAL SPACES

## **Communal Room**

800 sf

The communal room is a versatile space that serves as the first main area children encounter, fostering a welcoming and engaging environment. It features flexible seating, activity stations, and a small media library, accommodating up to 54 occupants comfortably.

## **Flexible Classrooms**

700 sf  
2 @ 350 sf

These classrooms provide a non-traditional learning environment where children can focus on their assignments and receive guided feedback from teachers. Designed to accommodate up to 10 students comfortably, the space features flexible seating to support diverse learning needs and encourage engagement.

## **Outdoor Playground**

1600 sf

The outdoor playground is a smaller, quiet space adjacent to the main playground, designed for children who need a break from the larger area. It incorporates sensory elements to provide a calming and engaging environment.

## **Restrooms**

160 sf  
4 at 40sf

Designed for accessibility and inclusivity, all restrooms are single-stall and unisex, ensuring privacy and comfort for users. Two restrooms are conveniently located near the flexible classrooms to provide easy access for children, supporting their independence and minimizing disruptions during learning.



# ADMINISTRATION SPACES

## Staff Offices

720 sf  
4 at 180 sf

Staff offices are dedicated spaces for staff to work, meet, and support students as needed. These offices are primarily for staff use but can accommodate students when necessary, featuring larger layouts to comfortably host one-on-one interactions.

## Entry Hub

100 sf

This transitional entry space helps children shift from the main school to the retreat-focused section. It includes cubbies for storing personal items, providing a welcoming and organized start to their day.

# SERVICE SPACES

## Maintenance

100 sf

This space will store cleaning supplies and emergency kits, ensuring quick access to essential items when needed.

## Mechanical

300 sf

The storage space will be located on a ground-floor exterior wall, with access from both the interior and exterior of the building for convenience and ease of use.

## Storage

150 sf

This storage space houses tools, resources, and sensory items, including larger items like tables and chairs. It is conveniently connected to the communal room and classrooms for easy access.

Total NSF =	5,310
sf	
Total GSF =	6,903



## Endnotes

- 1 | HKS Architects. "Smithfield Elementary School." Accessed December 12, 2024. <https://www.hksinc.com/what-we-do-case-studies/smithfield-elementary-school/>.





# SPACE ANALYSIS

## INTRODUCTION

The Space Analysis section delves into the details of the programmatic elements that were previously outlined, breaking down each space according to its specific functions and how they will interact with one another. This section will highlight the uses of each program, the intended users, and the essential adjacencies that ensure smooth transitions and usability. Additionally, the analysis will address the furnishings and fixtures needed to support the program's goals, ensuring that the elements are both functional and supportive of the space's intended atmosphere. Each space is also considered for its quality—whether that refers to acoustics, lighting, or comfort—and will comply with relevant building codes to ensure safety and accessibility.

For each program, basic plan drawings will illustrate the layout and dimensions, providing a clear understanding of how the space will be organized. These drawings offer a visual representation of the space's flow and scale, which is essential for understanding how each area fits within the overall design. Alongside the drawings, a precedent image will be included to provide inspiration and a sense of the aesthetic and functional qualities that the space should embody. This image serves as a reference to guide the design choices, ensuring that the spaces not only meet the functional requirements but also create a cohesive, attractive environment that aligns with the vision for the project.

Figure 5.1 Classroom

The classroom is a smaller setup which allows for better student to teacher interactions.





# INDIVIDUAL SPACES

## SENSORY ROOMS (4)

130 sf

### Uses

Sensory rooms are used to help children manage sensory overload or underload by providing a calm and controlled environment. These rooms use soothing elements to help children relax, regain focus, and reduce stress. They also offer sensory activities that help children engage with their surroundings in a way that supports self-regulation and emotional well-being.

### Users

The sensory rooms are intended for neurodivergent children, with teachers present to observe and support. While the rooms can accommodate up to 6 children, a smaller number of students is preferred to create a more individualized and effective environment.

### Adjacencies

The sensory rooms will be located adjacent to the classrooms and individual testing rooms, ensuring easy access for students. Staff offices will be nearby, allowing for direct oversight and support of the space.

### Furnishings + Fixtures

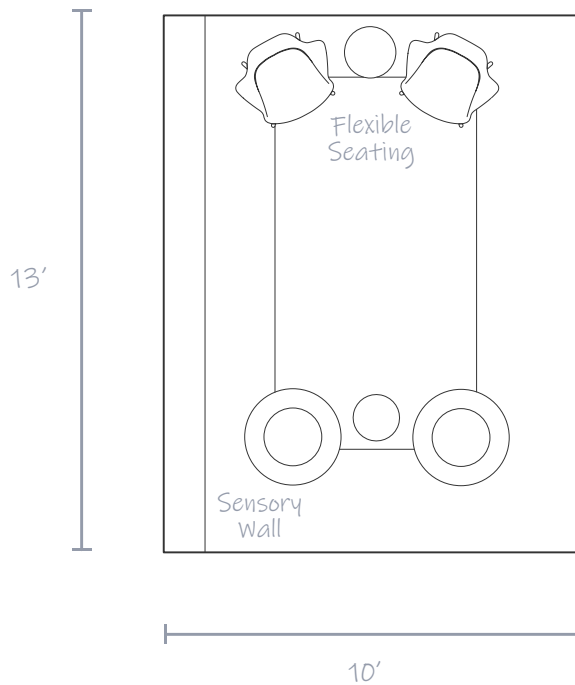
Each sensory room will feature adjustable temperature and lighting, flexible seating, and various sensory items. Soft, cushioned flooring will ensure safety and comfort, while sensory walls and calming visual elements will engage the senses. Soundproofing will create a quiet environment, and storage units will keep materials organized. Privacy screens may divide the space for different activities, and mirror panels can offer calming visual engagement.

### Qualities

The sensory rooms will offer a variety of environments to engage different senses. One room may feature a biophilic design with abundant plants and natural light to promote a calming, nature-inspired atmosphere. Another room may be darker, with minimal distractions and cozy spaces to encourage deep relaxation. A third room could be vibrant and colorful, designed for active play and sensory exploration. The spaces will range from highly interactive to more passive, providing diverse sensory experiences that cater to the individual needs of the children.

### Code + Standards

These sensory rooms will fully adhere to the 2010 ADA accessibility guidelines, ensuring that all spaces are accessible to students with disabilities.



**Figure 5.2 Sensory Plan**  
The plan highlights the dimensions of the space, incorporating a sensory wall designed to engage students' senses and flexible seating to accommodate various activities and comfort levels.

**Figure 5.3 Sensory Room**  
This sensory room is designed to accommodate a variety of needs, featuring diverse seating options and interactive walls to create an engaging and adaptable environment for all users.





**Uses**

Individual testing rooms are used to offer a supportive setting for students who need additional time or accommodations to focus and excel on their academic work.

**Users**

The space is primarily designed for student use, providing a quiet, focused setting for individual testing. Its use will vary based on class assignments, with each room accommodating one student at a time for brief periods as needed.

**Adjacencies**

The testing rooms will be strategically located adjacent to the classrooms and near the entry hub, ensuring accessibility for other students as needed.

**Furnishings + Fixtures**

The testing rooms will include a desk, multiple chair options, adjustable lighting, soundproofing, and calming decor to support focus. Additional features may include sensory tools, climate control, and storage for personal items.

**Qualities**

This space will be compact yet designed with optimal lighting and light-colored finishes to avoid a confined feel. The desk will provide sufficient space for a computer and paperwork, ensuring functionality and comfort.

**Code + Standards**

The testing rooms will fully adhere to the 2010 ADA accessibility

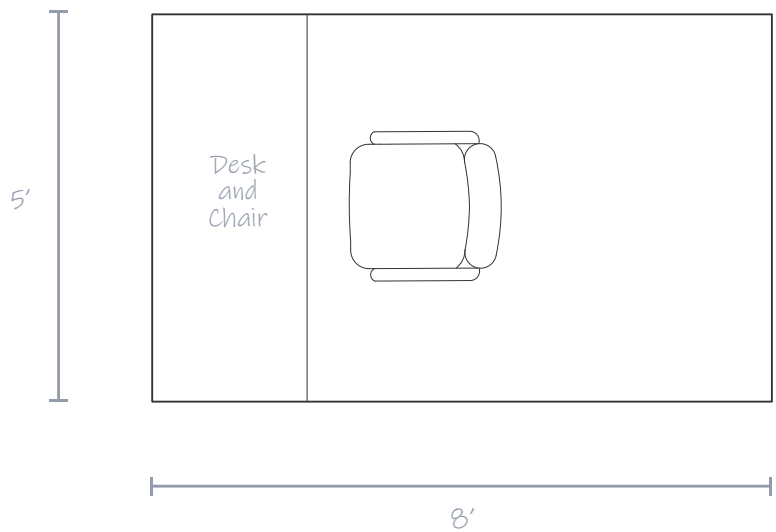


Figure 5.4 Testing Room  
Private rooms tailored for focused work and concentration.

Figure 5.5 Testing Plan  
The plan highlights compact spaces equipped with a desk and chair, designed for individual focus and concentration.

# COMMUNAL SPACES

## COMMUNAL ROOM

800 sf

### Uses

The communal space will support neurodivergent children in developing social skills through interactive activities. It may include a library with mixed media for learning and play, along with various seating options for individual or group engagement. The room will also feature areas for sensory play, creative expression, and collaborative activities.

### Users

The users are the children as well as the teachers within this building. There could also be possibilities that neurotypical children could inhabit this space. It can fit around 50 occupants.

### Adjacencies

The communal space will be located directly adjacent to the entry hub and classrooms, acting as a central transitional area connecting all spaces within the building. Restrooms and storage will also be strategically placed nearby, ensuring easy access while maintaining smooth flow throughout the building. This layout will create a flexible, cohesive environment, facilitating movement between the more individualized spaces and supporting a range of activities.

### Furnishings + Fixtures

The communal space will include flexible seating, bookshelves, nooks, and communal furnishings. Additional fixtures may include interactive display boards, sensory-friendly elements, tables for group work, and multi-functional storage. Soft rugs or mats will offer comfortable spaces for relaxation or play, creating a versatile environment for learning and socializing.

### Qualities

This space will feature soft, calming colors and an abundance of natural light to create an inviting and stimulating environment for children. The use of soft textures, such as plush seating and tactile elements, will provide comfort and sensory engagement. The materials will be chosen for their durability and ease of maintenance, with easily washable surfaces to accommodate frequent use by children. The overall quality of the space will prioritize both aesthetic warmth and practicality.

### Code + Standards

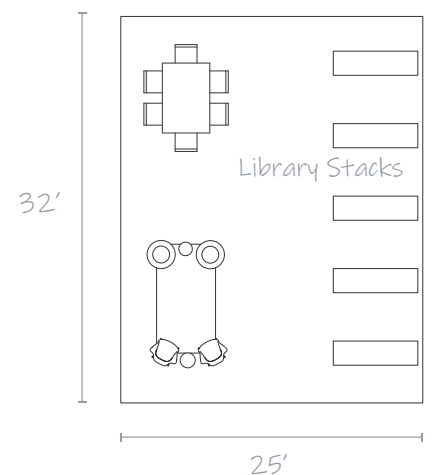
The communal room will fully adhere to the 2010 ADA accessibility guidelines, ensuring that all spaces are accessible to students with disabilities.





**Figure 5.6 Communal Room**  
A cozy, adaptable micro-library with flexible zones, modular seating, biophilic design, and tech-friendly features for diverse needs.

**Figure 5.7 Communal Plan**  
The plan features integrated library stacks with seating woven into the communal space.







# FLEXIBLE CLASSROOMS (2)

700 sf

## Uses

These classrooms are used to offer a focused environment for tailored learning, allowing children to step away from traditional settings to receive personalized instruction that supports their unique needs.

## Users

Each classroom accommodates up to two teachers and six students, fostering a focused environment with a 1:3 teacher-to-student ratio. Open during school hours, these spaces are dedicated to providing targeted, personalized instruction and will remain closed after school.

## Adjacencies

The classrooms are located directly adjacent to the communal room, providing easy access between the two spaces. Additionally, the classrooms have direct access to bathrooms and sensory rooms, ensuring functional connections to these supporting areas.

## Furnishings + Fixtures

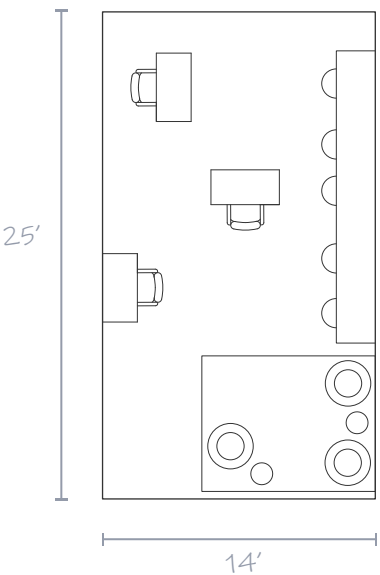
Each classroom will be furnished with flexible seating for six students and two teachers, allowing for adaptable arrangements. Essential elements include desks for students, a teacher's desk and chair, and a lounging area for reading or relaxation. Ample storage compartments will be provided to ensure easy access and organization of materials.

## Qualities

The classrooms should be quiet, well-insulated, and filled with natural light and ventilation. Comfortable floor materials and soft textures will help reduce noise and maintain a pleasant environment. Clear visual cues, flexible spaces, and adjustable lighting and temperature will support diverse learning needs and enhance focus for students with learning disabilities.

## Code + Standards

These classrooms will fully adhere to the 2010 ADA accessibility guidelines, ensuring that all spaces are accessible to students with disabilities.



**Figure 5.8 Classroom**

A warm, inviting space designed for students to learn and refocus, featuring flexible seating and abundant natural light.

**Figure 5.9 Classroom Plan**

The plan diagram shows the flexible seating options within the classroom area.

**Uses**

The outdoor playground supports physical activity, emotional regulation, and social interaction. It provides a calming retreat for students to decompress, fosters creativity and teamwork through play, and can serve as an outdoor learning space, balancing movement and personal growth.

**Users**

The primary users of the playground will be students with learning disabilities, as it is thoughtfully designed to support their unique needs through sensory engagement, movement, and social interaction. However, it will also be accessible to other students, fostering inclusivity and shared experiences.

**Adjacencies**

The playground is directly connected to the communal room, with access exclusively provided through this space, ensuring a seamless transition between indoor and outdoor activities.

**Furnishings + Fixtures**

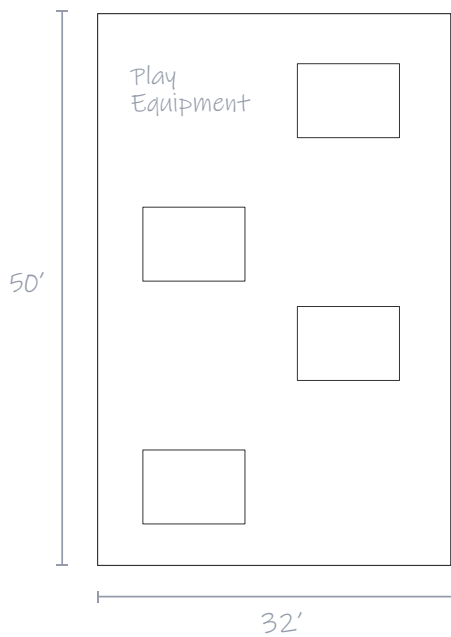
The outdoor playground will be thoughtfully designed with sensory equipment like swings, sensory walls, and climbing structures, all set on soft, safe grounding. Balance beams, stepping stones, and interactive panels will encourage exploration and motor skill development, while musical features and water or sand play areas provide engaging sensory experiences. Quiet zones with shaded seating, natural elements such as cacti and plants, and winding pathways create a calming yet stimulating environment, ensuring inclusivity and enjoyment for all students.

**Qualities**

The outdoor playground will feature vibrant colors and a variety of activity options to encourage movement and play. Soft, durable materials will be used for the grounding to ensure safety. The space will be partially enclosed to keep students within a defined area while still allowing for open exploration and interaction.

**Code + Standards**

The playground will fully adhere to the 2010 ADA accessibility guidelines, ensuring that all spaces are accessible to students with disabilities. It will also comply with all safety standards to provide a secure environment for all users.



**Figure 5.10 Playground Plan**  
This diagram demonstrates the sizing of the playground and potential placements of equipment.

**Figure 5.11 Playground**  
This vibrant school project uses colorful, brand-inspired designs to create dynamic indoor and outdoor learning spaces, featuring creative play areas, anti-impact floors, and engaging elements like a rockwall and a playhouse.



Figure 5.12 Restroom  
An orange bathroom with natural daylight seeping through.

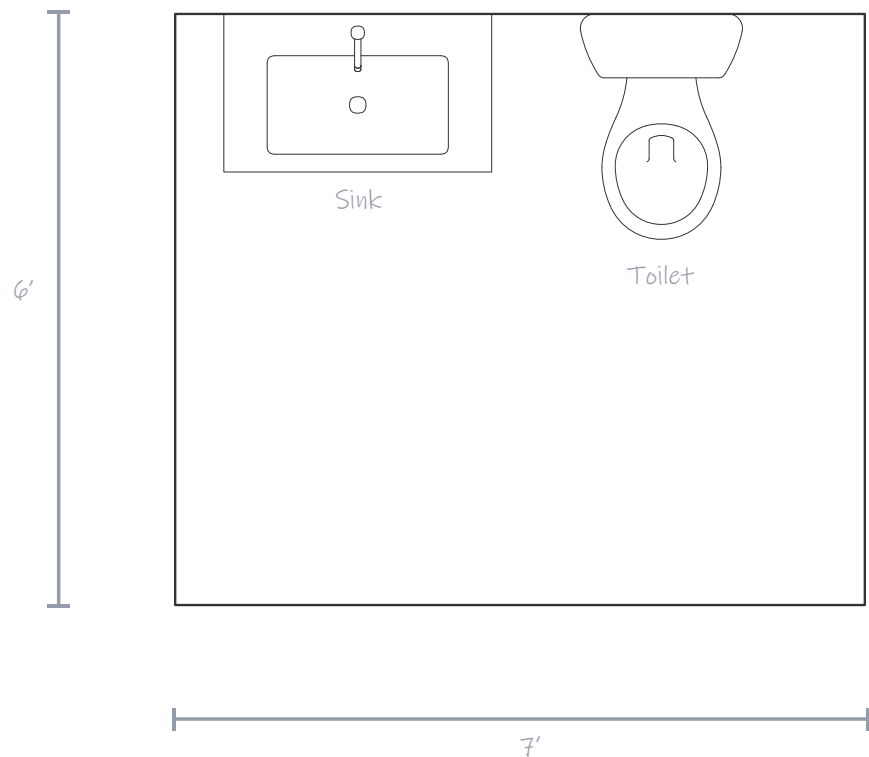


Figure 5.13 Restroom Plan  
This diagram demonstrates the layout of a typical restroom.

### Uses

This space will serve as the main bathrooms in the building, providing essential facilities for students, staff, and visitors.

### Users

The restrooms will be accessible to all occupants.

### Adjacencies

The four restrooms will be divided into two groups: two located directly adjacent to the classrooms and the other two positioned near the communal area, ensuring convenient access for different areas of the building.

### Furnishings + Fixtures

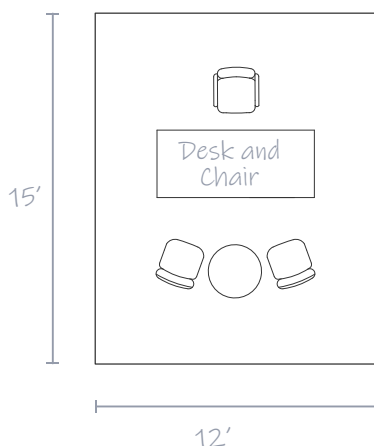
Each individual unisex restroom will be equipped with a self-flush toilet and lavatory, along with a mirror for personal grooming, hand drying facilities such as paper towels, and a waste bin for disposal of trash and hygiene products. To ensure safety and accessibility, grab bars will be installed, and towel or soap dispensers will be provided for convenience. The space will feature adequate lighting, non-slip flooring for safety, and proper ventilation to maintain air quality and prevent odors.

### Qualities

The restrooms will feature subtle, playful colors to create an inviting atmosphere while avoiding loud or overwhelming elements. Designed with accessibility in mind, the spaces will be suitable for both younger children and adults, ensuring comfort and ease of use for all occupants.

### Code + Standards

The restrooms will fully adhere to the 2010 ADA accessibility guidelines, ensuring that all spaces are accessible to students with disabilities. Shorter toilets will be installed to accommodate younger children, making it easier for them to use the facilities.



## ADMINISTRATION SPACES

### STAFF OFFICES (4)

720 sf

#### Uses

The staff offices are multifunctional spaces where staff can work, hold meetings, and provide student support. They are also used for one-on-one interactions, such as testing or private conversations.

#### Users

The offices will serve as dedicated spaces for staff, primarily for their use but with the flexibility to accommodate students when needed.

#### Adjacencies

The staff offices will be located adjacent to the main program areas, providing easy access for children and allowing staff to oversee the spaces for better supervision and support.

#### Furnishings + Fixtures

The offices will include an individual desk and chair for teachers, additional seating for children, to create a comfortable and functional environment. Additional features may include lockable storage for sensitive materials, shelving for resources, and a small whiteboard or pin board for planning and communication.

#### Qualities

The rooms will be designed with natural, durable materials to ensure longevity and a warm, inviting atmosphere. Abundant natural light and expansive views of nature will enhance the welcoming feel and create a calming environment for staff and students alike.

#### Code + Standards

The offices will fully adhere to the 2010 ADA accessibility guidelines, ensuring that all spaces are accessible to students with disabilities.

**Figure 5.14 Office Layout**

The office layout is simple yet functional, supporting one-on-one conversations and meetings within the space.

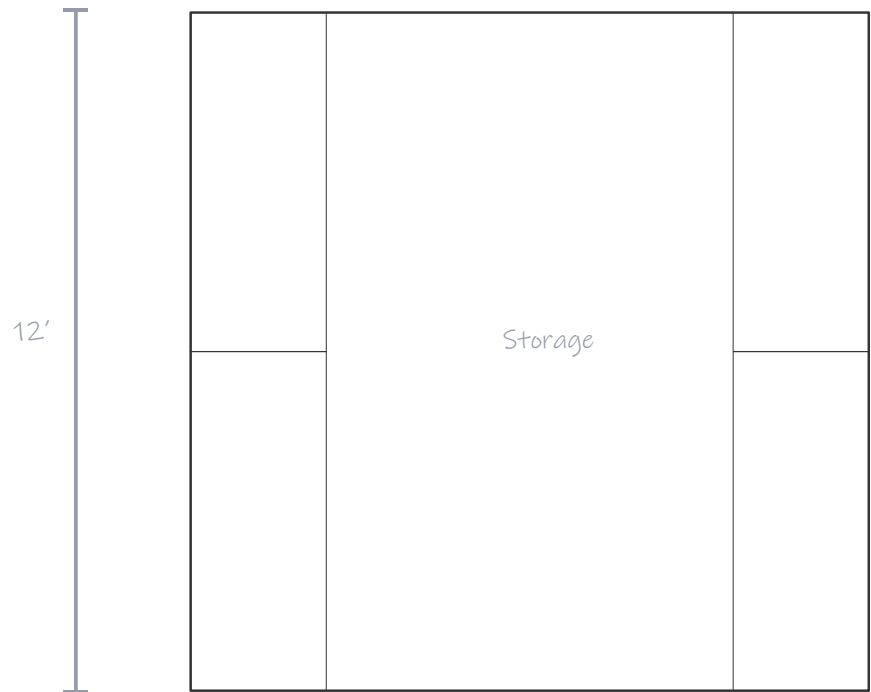
**Figure 5.15 Office**

This office showcases natural light, greenery, and an overall design focused on enhancing well-being.









**Figure 5.16 Entry**  
The entry should be warm and inviting but within a smaller setting.

**Figure 5.17 Entry Plan**  
The plan highlights the dimensions and the cubbies along the sides.



**Uses**

The entry hub serves as a transition zone, easing the shift from the regular school environment to the sensory-designed space—an essential support for children who may struggle with sudden changes. Additionally, it provides small storage areas for children to securely store their belongings.

**Users**

This area will primarily function as a flow through space for students and teachers. It is designed to accommodate up to 9 people at a time, ensuring smooth transitions and accessibility.

**Adjacencies**

The entry hub, located adjacent to both the existing school and the communal room, serves as the first space children encounter, facilitating a seamless transition into the sensory-designed environment.

**Furnishings + Fixtures**

The entry hub will include storage cubbies, benches, and calming artwork to set the sensory-focused tone. Warm lighting, soft flooring, a communication board, and natural elements like plants create a welcoming and functional space.

**Qualities**

The entry hub will offer optimal views of the outdoors, creating a welcoming connection to nature. It will feature warmer materials to provide a subtle departure from the typical school setting, fostering a more inviting and comfortable atmosphere.

**Code + Standards**

The entry hub will fully adhere to the 2010 ADA accessibility guidelines, ensuring that all spaces are accessible to students with disabilities.

# SERVICE SPACES

## MAINTENANCE ROOM

100 sf

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### Uses

The maintenance space is used for storing cleaning supplies and an emergency kit, ensuring these essential items are easily accessible when needed.

### Users

The maintenance space will primarily be used by maintenance workers but may also be accessed by teachers or staff as needed.

### Adjacencies

This space will be located near other service programmatic elements at the center of the building.

### Furnishings + Fixtures

The maintenance room will include shelving and hooks for organizing brooms, brushes, and other cleaning tools, along with a sink for easy access to water and cleaning tasks.

### Qualities

The maintenance space will be designed to feel clean and organized, with efficient storage and a functional layout that promotes easy access to cleaning supplies and equipment.

### Code + Standards

The maintenance room will fully adhere to the 2010 ADA accessibility guidelines.

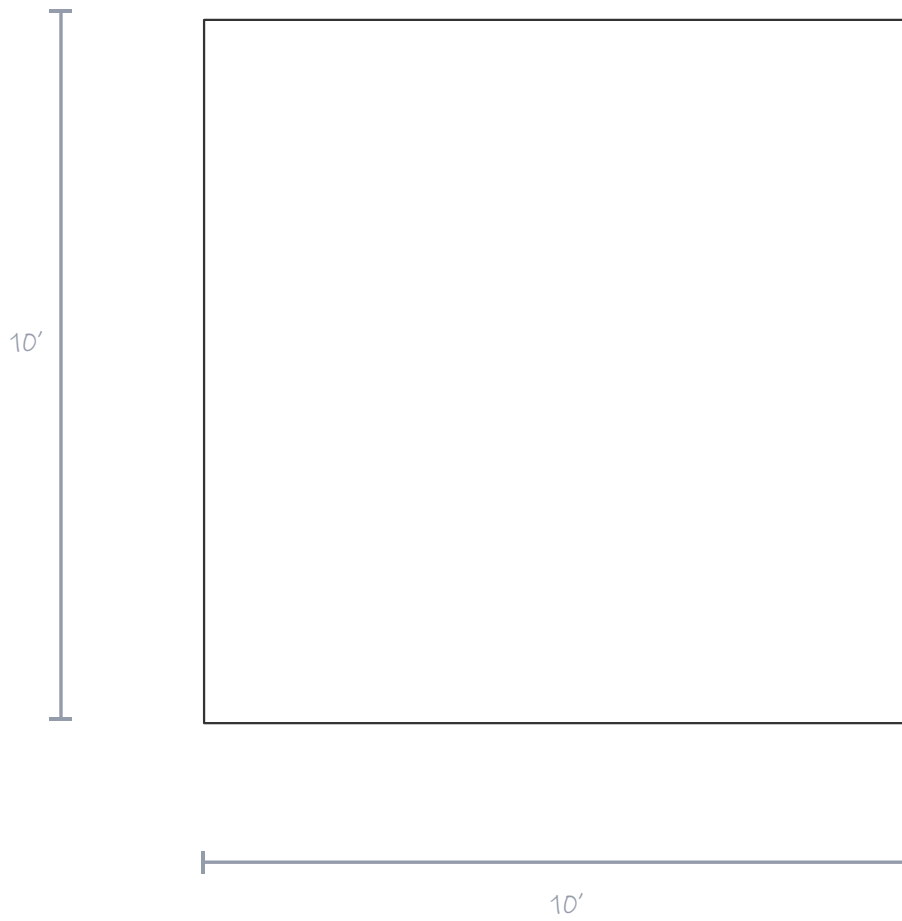
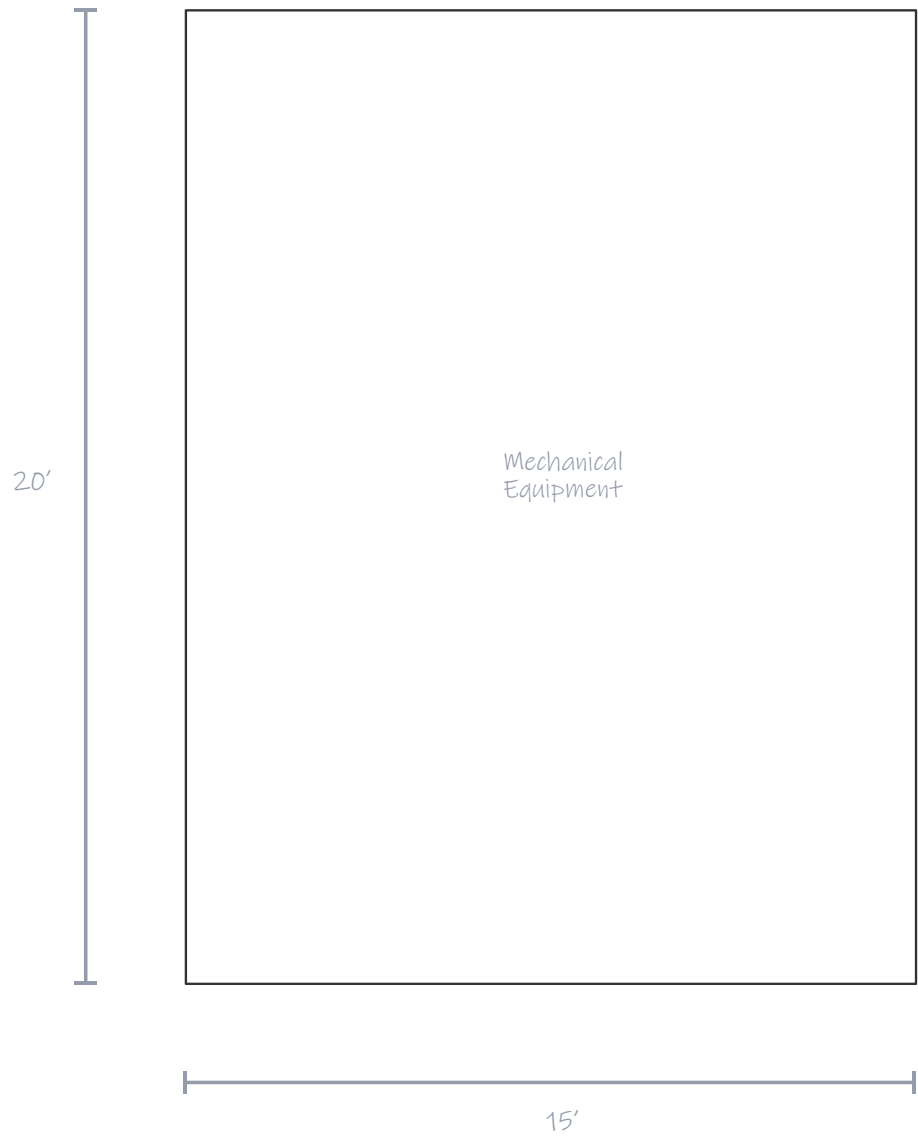


Figure 5.18 Maintenance  
This diagram shows the dimensions  
of the maintenance room.



## MECHANICAL ROOM

300 sf

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### Uses

The mechanical room is dedicated to housing all essential mechanical equipment, ensuring the proper functioning of the building's systems.

### Users

The primary users of the mechanical room are the building's maintenance workers, who manage and service the equipment housed within.

### Adjacencies

The mechanical room should be centrally located within the building plan for efficient access and functionality. It must also be adjacent to an exterior wall to facilitate the entry and installation of equipment.

### Furnishings + Fixtures

The mechanical room will be equipped with all essential systems and equipment required to service the building, ensuring smooth operation and maintenance.

### Qualities

The mechanical room will be constructed with durable, easy-to-clean materials to ensure longevity and facilitate regular maintenance.

### Code + Standards

The mechanical room will fully adhere to the 2010 ADA accessibility guidelines.

Figure 5.19 Mechanical  
This diagram shows the dimensions of the mechanical room.

# SERVICE SPACES

## STORAGE ROOM

150 sf

### Uses

The storage room is designated for storing additional furniture, sensory tools, and other resources essential for supporting the program's needs.

### Users

The storage room will be exclusively accessed by staff, ensuring that students do not enter the space for safety and organization purposes.

### Adjacencies

The storage room will be located adjacent to other service spaces, such as the mechanical and maintenance rooms, as well as the communal room, to ensure easy access to equipment and resources frequently used in those areas.

### Furnishings + Fixtures

The storage room will include heavy-duty shelving for organization and open floor space to accommodate larger items that cannot be stored on shelves.

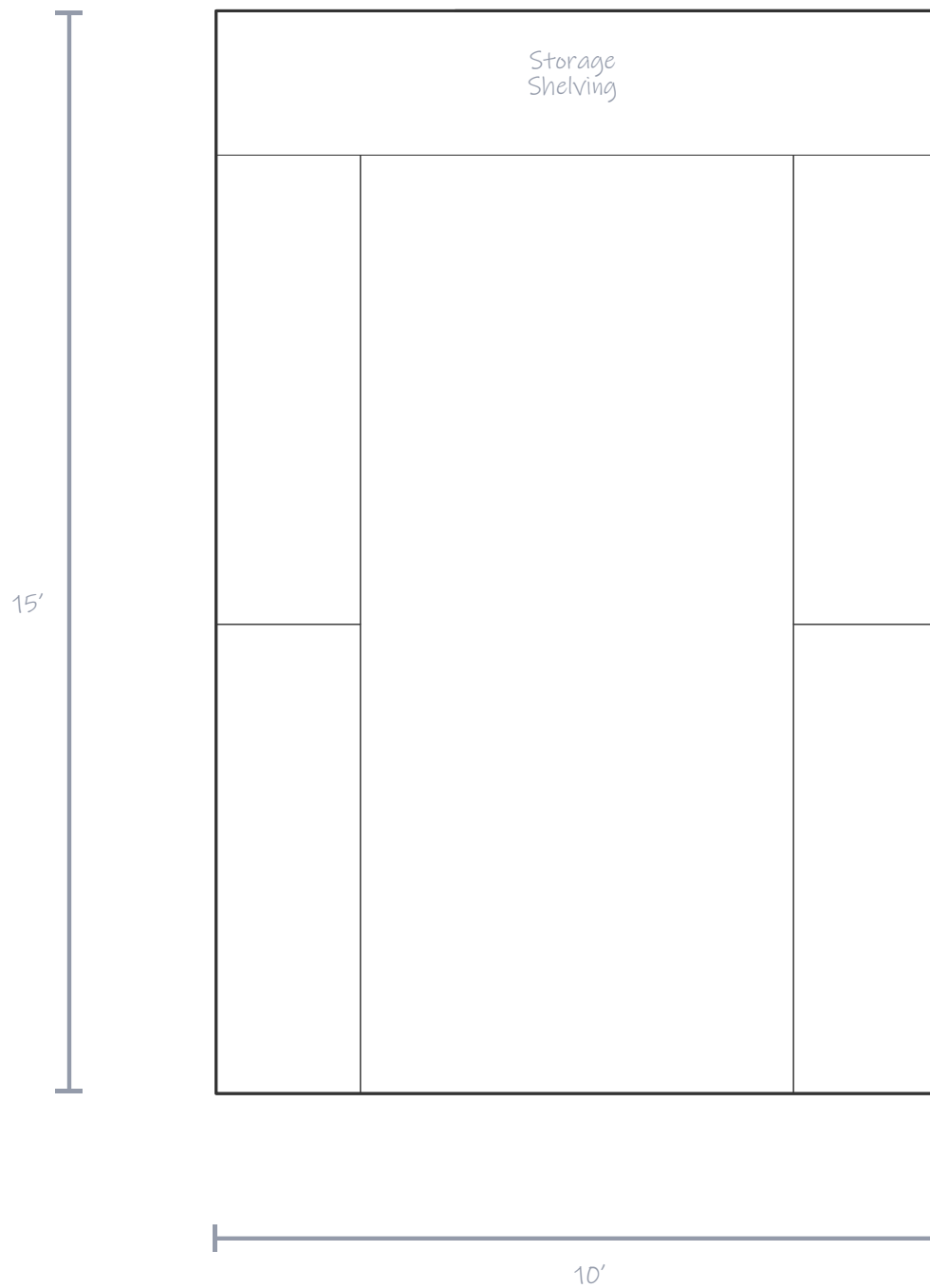
### Qualities

The storage room will be designed to remain clean and organized, ensuring easy access to items and maintaining a functional space for staff.

### Code + Standards

The storage room will fully adhere to the 2010 ADA accessibility guidelines.





**Figure 5.20 Storage**  
This diagram shows the dimensions of the storage room as well as the shelving.





SITE

## INTRODUCTION

This section provides a comprehensive overview of the contextual and site selection process, narrowing the focus from Arizona's broader landscape to the specific site chosen for the project. The discussion begins with an analysis of the political, environmental, historical, and socio-cultural contexts that shape the project. Politically, the analysis highlights zoning regulations and educational policies that influence the design of schools for children with learning disabilities, emphasizing how these frameworks align with inclusive and sensory-focused education. Environmentally, Tempe's desert climate and natural features are explored, showcasing design strategies that respond to light, climate, and sustainability concerns. The historical context examines Tempe's architectural heritage and Native American influences, revealing how these cultural elements inspire the sensory and community-oriented aspects of the design. Lastly, the socio-cultural context focuses on community dynamics and demographic needs, addressing gaps in resources for children with learning disabilities and aligning the design with values of inclusivity and well-being.

The section also outlines the site selection process, detailing the criteria that guided the choice of location. Key factors include accessibility for under served communities, environmental suitability for sensory-focused design, and compatibility with zoning and infrastructure needs. The selected site stands out for its quiet surroundings and alignment with the project's goals, while alternative sites were dismissed due to logistical challenges or redundancy of resources near existing specialized schools. Comparative analysis and visuals highlight my rationale for the final decision, illustrating why the chosen site best supports the project's mission of creating a sensory retreat for children and educators.

**Figure 6.1 Tempe, AZ**

This image provides an aerial view of Tempe, AZ, highlighting the layout of the city and its



# REGIONAL ANALYSIS

## Political Context

In the presentation from the political context group, I learned that my project, which is an extension of an existing school, needs to comply with the regulations of the R1-6 zoning area. This means I'll have to consider setback requirements, height restrictions, and the allowable floor area ratio to ensure my design fits within the zoning code. The group also emphasized the importance of checking if I need any special permits or variances, as these might be necessary for the extension.

The presentation highlighted the significance of understanding the site's relationship to larger infrastructure. Since my site is near Highway 101 but not directly connected to major transportation networks, I'll need to think about how to design safe entry points and traffic flow for drop-offs and pick-ups. While the highway provides access to the area, I must also consider pedestrian routes to ensure children and staff can navigate safely to the school extension, even without a direct link to the main portion of the school.

Nodes, paths, and edges can help guide my design. I'll focus on creating clear, well-defined entry points and safe walking paths, considering how these features can enhance orientation and accessibility within the school grounds. Integrating the extension with the surrounding neighborhood will be important to create a cohesive and functional environment, making sure the new spaces are easily connected to the existing school and the broader community.

## Environmental Context

From the environmental context presentation, I've identified several key strategies to incorporate into my school extension project. First, integrating green spaces or shaded areas will help mitigate the urban heat island effect while promoting mental well-being for children and staff. My site's current shading is only at 5-9%, planting trees will contribute to Tempe's goal of 25% shaded coverage by 2050,<sup>1</sup> enhancing livability and providing much-needed cooling during outdoor activities. To complement this, I'll design both overhead and vertical shading to ensure consistent comfort throughout the day, particularly for the playground and sensory spaces. For the outdoor playground, I'll avoid traditional turf, which retains heat and increases the urban heat island effect, and instead explore alternative materials that are functional and sustainable.

Using cross-ventilation in my design will help improve indoor air circulation, creating a healthier learning environment for children with learning disabilities. High insulation will further ensure thermal comfort inside the classrooms and sensory rooms, supporting focus and well-being.

site

85



## Temperature

Arizona's hot, dry climate sees temperatures ranging from 53 to 95 degrees, often reaching the 120s in summer. This impacts my design by requiring cooling strategies for the playground and effective insulation to maintain comfortable indoor spaces.

## Wind

Winds in the area typically range from 5-7 mph, with north-to-south winds being the most common. Since my site is oriented north to south, I can take advantage of this natural airflow by incorporating cross-ventilation into the design to enhance cooling and indoor air circulation.

## Sun and Shade

With about 300 sunny days each year, Arizona relies heavily on shading to reduce heat and glare. Effective shading can be achieved through structures or natural elements like trees and plants, helping to protect ground surfaces and create more comfortable indoor environments.

## Vegetation

The project will feature mesquite and desert willow trees to create micro climates and improve air quality. Drought-tolerant plants like prickly pear cacti and saguaro will also be included for their low maintenance and visual appeal.



**Figure 6.3 Prickly Pear Cacti**

The prickly pear displays its vibrant color even under extreme conditions, showcasing its resilience and creating a visually striking appearance.

## Socio-Cultural Context

From the presentation, there are approximately 12,000 children between the ages of 5-9 in Tempe, and my project will aim to serve a portion of this population. The site is located in the Apache character area, a culturally rich part of Tempe that holds significant Mexican-American heritage. This area values the preservation of its history and identity, which is reflected in its neighborhoods, including Escalante, which surrounds my site. Half of the Apache area's population identifies as Latino or Hispanic, emphasizing the importance of cultural sensitivity and representation in the design of this project.

To honor the identity of the local community and create a space that resonates with the children and their families, I plan to incorporate cultural elements into both the architecture and landscape design. The Apache area is known for its distinctive use of purple plants in the landscape, such as lantana, purple hearts, Texas sage, and prickly pear cacti. Including these plants in the school's outdoor spaces will not only tie the project to its surroundings but also create a sense of familiarity and belonging for the children. These vibrant, low-maintenance plants will also contribute to the shaded and sustainable outdoor environment essential for this project.

**Figure 6.4 Apache Area**

The Apache is a character area within Tempe, and this image focuses on the urban portion of it, highlighting the more developed areas, as the majority of the region is residential.







**Figure 6.5 Pueblo Style**

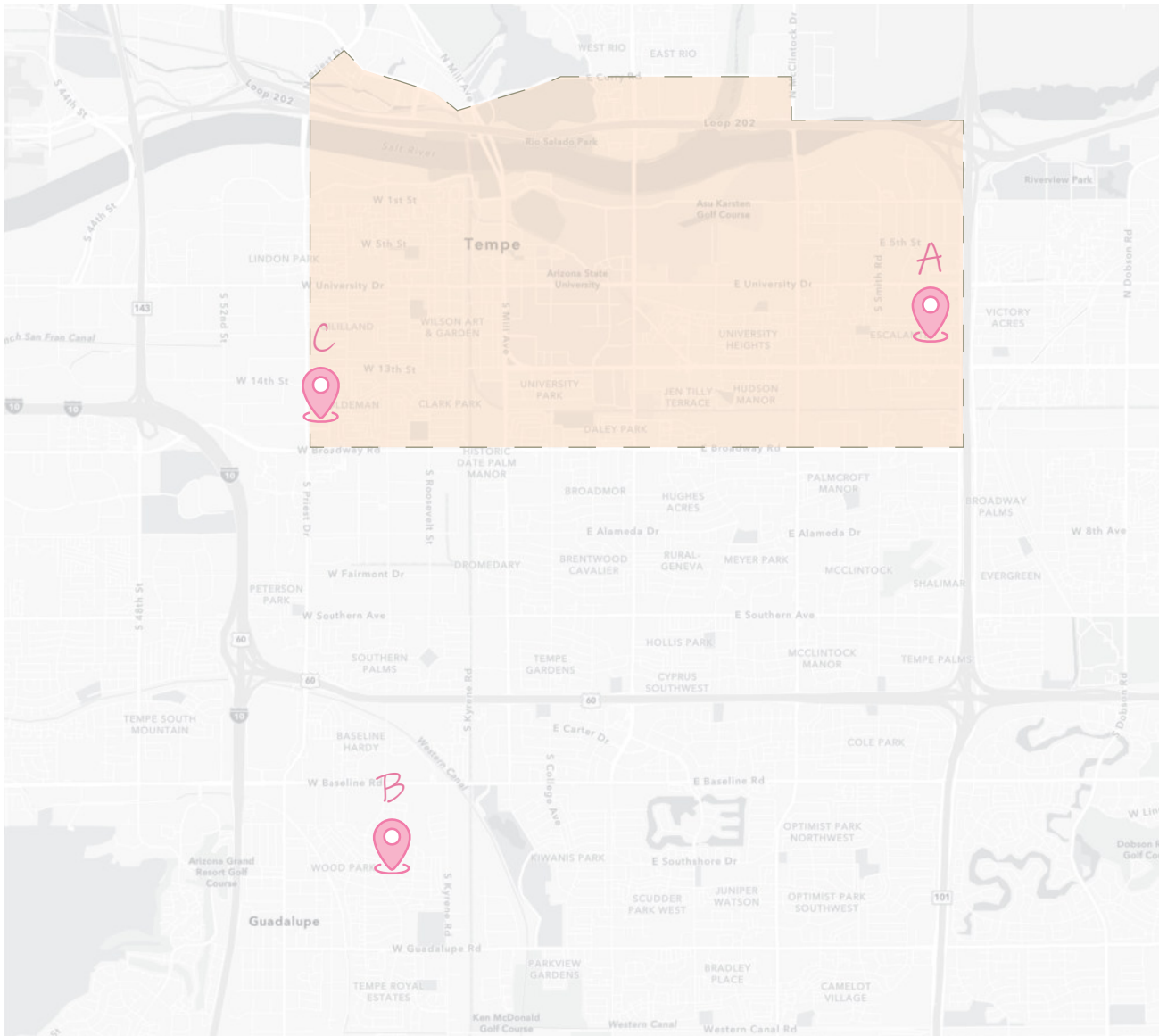
The diagram highlights our project site and its current shaded area percentages. Tempe has set a goal to achieve 25% shade coverage by 2050.

## Historical Context

The first settlers of the area were of Mexican heritage, a significant connection to the cultural identity of my site. With this in mind, I could consider using locally sourced materials like adobe and rammed earth. These materials are structurally sound, high in thermal mass, and fire-resistant, making them ideal for Arizona's hot, dry climate. Their use would not only reflect the region's historical building traditions but also offer modern benefits in terms of energy efficiency.

I could also draw inspiration from Pueblo Revival style, which incorporates earthy materials and enclosed courtyards. These courtyards could provide private, shaded outdoor spaces for the children, promoting a connection to nature while offering a cooling effect. Similarly, the Spanish Colonial style's stucco cladding might be another option, as it helps insulate the building and release heat, maintaining a comfortable indoor environment.

For sustainability, I could reference the example set by ASU's Hayden Library reinvention, which focused on removing carbon-intensive materials and using more sustainable, higher-quality materials. This approach aligns with my goal of creating a school extension that is both environmentally responsible and energy-efficient, while also respecting the cultural heritage of the community.



**Figure 6.6 Site Options**  
 The three selected sites are shown in this diagram, clearly indicating whether they fall within the defined boundaries of the overall project

## SITE CRITERIA

My goal for site selection was to identify the most appropriate elementary school for my project, one that could both benefit from the resource and accommodate an extension of the existing school. Given the presence of 15 elementary schools within Tempe, AZ,<sup>2</sup> I had a variety of considerations to navigate when making this decision. The process was guided by a combination of in-depth research and phone conversations with representatives from multiple schools, allowing me to gain insights into their specific needs, resources, and space availability.

Several factors influenced the site selection process. First, I considered the proximity to the existing school specialized for children with learning disabilities, ensuring that the site would be in a location where the new facility could complement, not duplicate, the existing resources. The availability of land for an extension was another critical factor, as it would allow the new school to seamlessly integrate into the existing school community while offering room for expansion and growth.

In addition to these practical considerations, I also focused on the broader context of each potential site. Factors such as the surrounding community, accessibility, and the demographic makeup of the area were essential in ensuring that the project would serve the children who need it most. I considered the environmental characteristics of the sites, such as noise levels, traffic patterns, and overall atmosphere, to ensure the spaces would provide a calm, supportive environment for children with learning disabilities.

Out of the 15 elementary schools, two sites were located within the boundaries of the project's focus area, aligning well with the goal of extending the resources of the existing specialized school. These sites offered ample space for the new school extension and were situated in areas with a clear need for additional support services. However, the remaining site fell outside the defined project boundaries, raising concerns about accessibility for the children it would serve. While this site offered a potential opportunity for expansion, it was ultimately ruled out due to logistical challenges, particularly in terms of distance and transportation.

Ultimately, the final site selections were based on a balance of available space, the potential for integration with the existing school, and the needs of the community. Each of these considerations helped shape a strategic approach to site selection that prioritizes both practicality and the well-being of the children the new facility aims to support.



## CHOSEN SITE | A

Thew Elementary School  
2130 E Howe Ave  
Tempe, AZ 85281

Thew Elementary School, located on the east side of Tempe, AZ, has been selected as the project site after careful consideration. This site was selected because of the need for improving existing resources within the school. Out of the three options, Thew Elementary School has a “high number of children with learning disabilities”, stated by Araceli, and teachers who could benefit from a space designed with sensory elements to enhance the overall environment. The other options either lacked the need for special education resources or already had a well-thought-out design that did not require further additions.

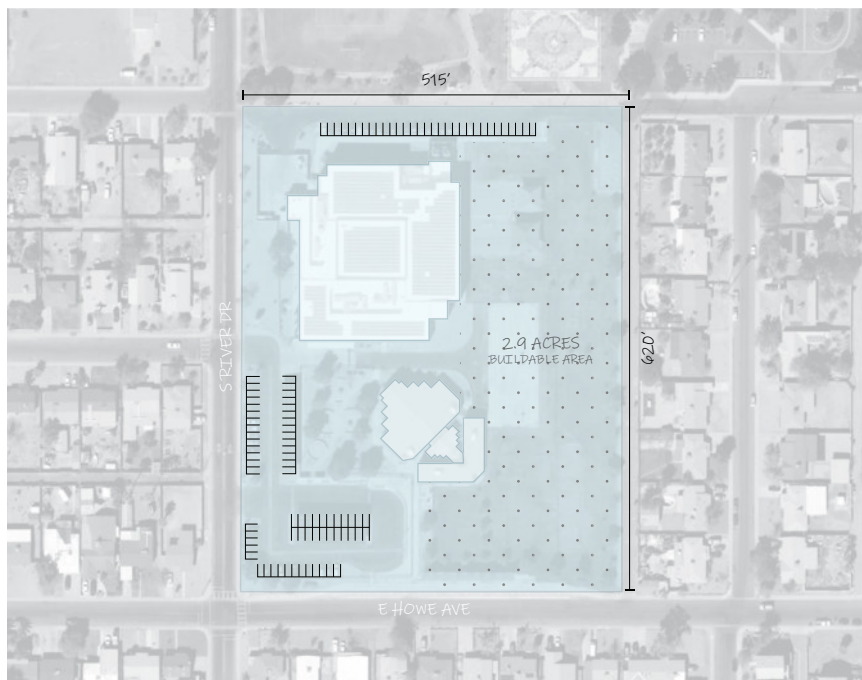
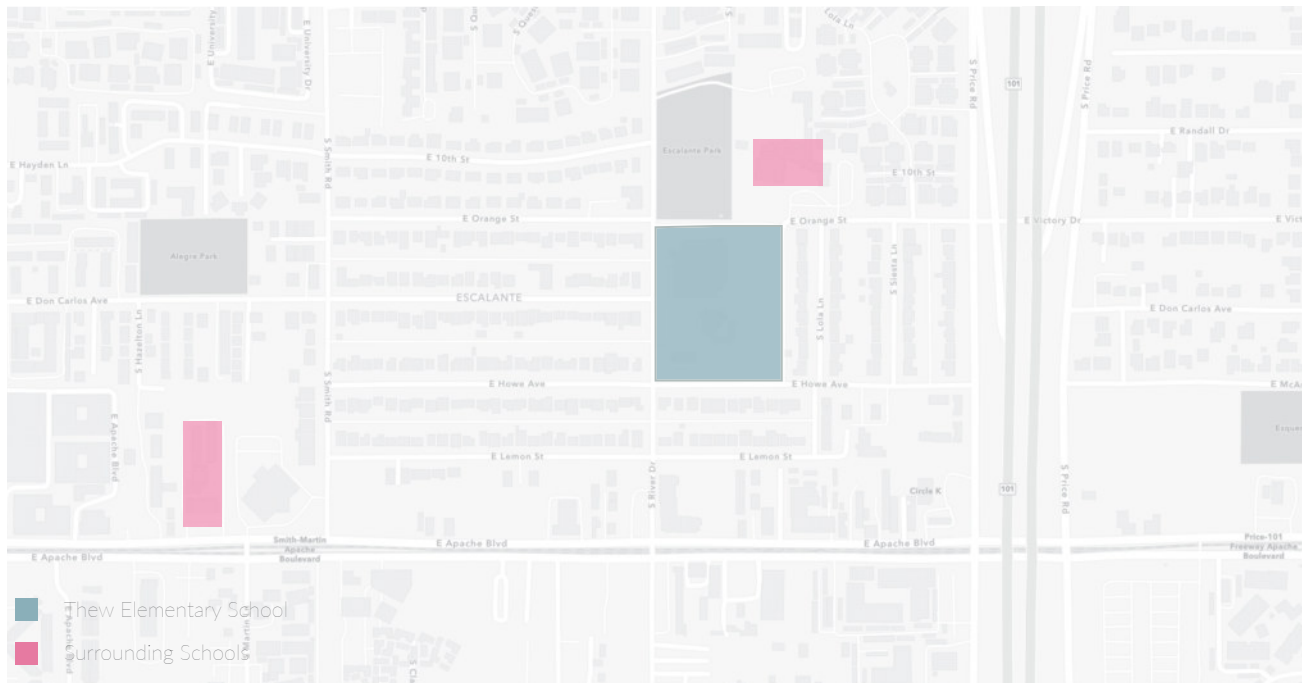
Thew Elementary School is currently a grade C school, indicating that most test scores fall within that range. The proposed project aims to address these challenges by providing spaces that promote mental and physical well-being, with the hope of contributing to improved academic outcomes. A concern at this school is the 45% rate of chronic absenteeism among special education students. By creating an inviting and engaging sensory space, the project has the potential to reduce absenteeism and encourage consistent attendance. A key advantage of Thew is the amount of buildable space available for an extension. Its location near a multi-generational center offers potential community collaboration, especially given the diverse background of the school, with 65% of students identifying as Hispanic and 17% as African American. The community context will guide the design to ensure cultural inclusivity and a welcoming atmosphere.



**Figure 6.7 Thew Aerial**

This image provides an aerial view of Thew Elementary School, showcasing the entire site and its surrounding context.





**Figure 6.8 Site Plan**  
An overall site plan showing surrounding schools.

**Figure 6.9 Detailed Plan**  
This detailed plan is indicating the site boundaries, existing parking, and buildable area.

## ALTERNATE SITE | B

Wood Elementary School  
727 W Cornell Dr  
Tempe, AZ 85283

Wood Elementary School in Tempe, AZ, was considered during the site selection process but ultimately deemed unsuitable for several reasons. The first challenge lies in its location, which is significantly distant from the original site of focus. This geographical separation makes it difficult to leverage existing research and data gathered about the original community and its specific needs. Using Wood Elementary as the site would have required starting anew in terms of community engagement, environmental analysis, and demographic research, leading to inefficiencies in both time and resources.

Additionally, the adjacent school already provides specialized resources and facilities for children with learning disabilities. These existing programs and infrastructure sufficiently address the needs of the local community, reducing the necessity for a new facility with similar capabilities in the same area. Developing another resource-intensive project nearby could result in redundancy, rather than effectively expanding support to underserved regions. Instead, the goal is to locate the project in an area that lacks these specialized resources, ensuring it fills critical gaps in accessibility and service rather than duplicating efforts in a well-equipped location. This approach aligns with the broader mission to maximize the impact of the design and provide equitable access to education for children with learning disabilities.

### Figure 6.10 Site Plan

This overall site plan of Wood Elementary shows the school's layout along with its surrounding schools, providing context for the area.

## ALTERNATE SITE | C

Holdeman Elementary School was a strong contender during the site selection process because of its convenient location within the project area and its existing special education resources, which had the potential for further development. As a Grade B school with higher test scores than the final selected site, it offered a strong academic foundation that seemed well-suited for piloting innovative sensory design principles. These factors made it an appealing option for enhancing resources for children with learning disabilities and creating an immediate educational impact by building on the school's existing strengths.

However, despite these promising aspects, there were several challenges that ultimately led me to rule out this site. One of the biggest issues was the lack of detailed and accessible information about the school's current programs, facilities, and community needs. When I reached out for more information, many of my questions went unanswered, leaving me uncertain about whether the school could fully support the goals of this project. Without a clear understanding of the needs of the students, the capacity of the school's resources, or its openness to collaboration, it was hard to justify selecting this site.

Holdeman Elementary School  
1326 W 18th St  
Tempe, AZ 85281

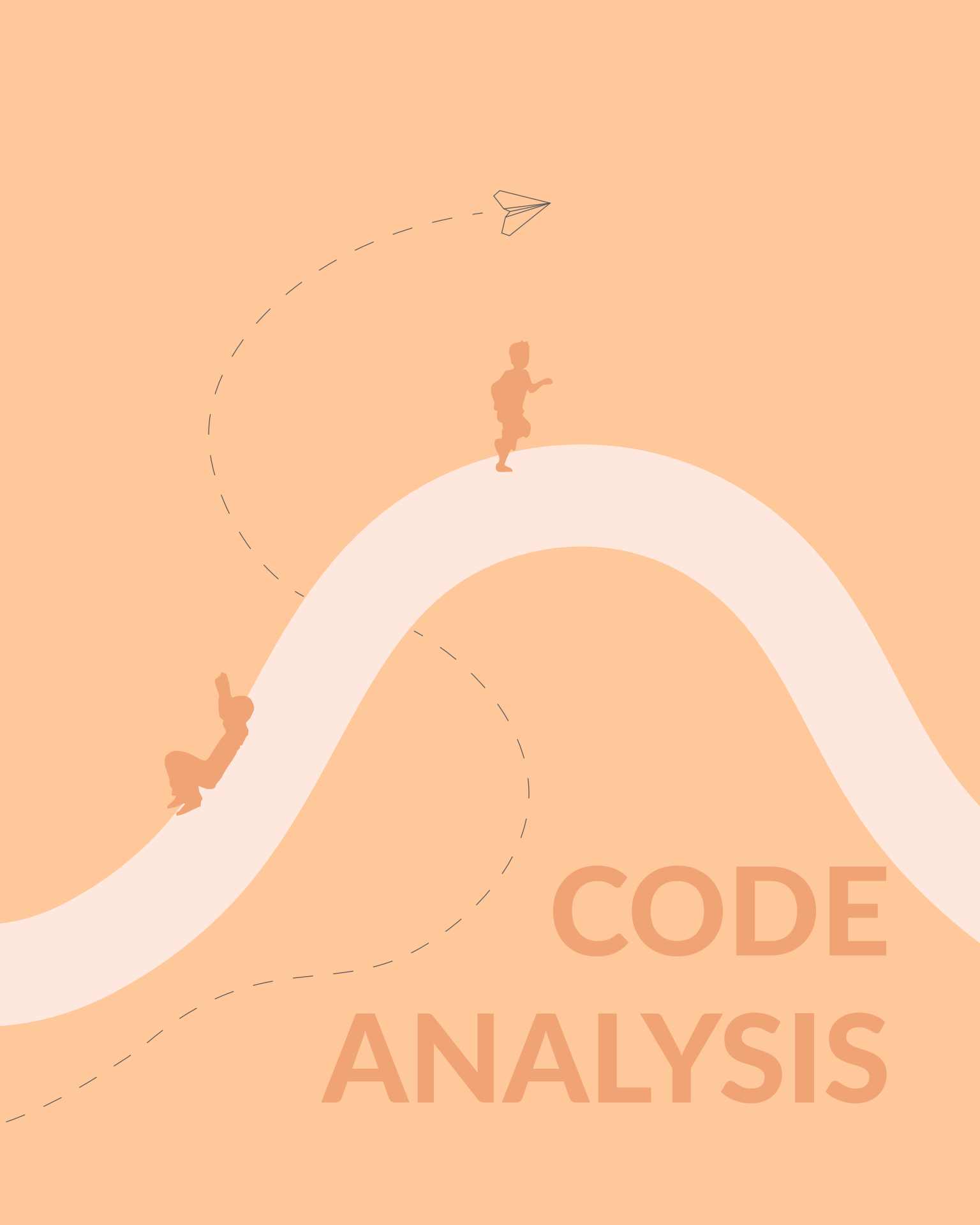
**Figure 6.11 Site Plan**  
This overall site plan of Holdeman Elementary shows the school's layout along with its surrounding schools, providing context for the area.



## Endnotes

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# CODE ANALYSIS





**Figure 7.1 Tempe Municipal**  
This building expresses a distinctive character worthy of preservation and fulfills the criteria for designation as a historic property.

## CODE ANALYSIS

The Code Analysis section is a critical part of the design process, ensuring that the project complies with all relevant building codes and zoning requirements. This section will provide a detailed overview of key regulatory aspects, including occupancy classification, construction type, means of egress, and plumbing fixtures, among others. Each element is essential in ensuring the safety, functionality, and legality of the design.

The occupancy classification will define the intended use of the building, guiding decisions on space layout and safety measures. The construction type will specify the materials and structural system, determining the fire resistance and overall safety of the building. Means of egress are addressed to ensure that the space allows for safe and efficient evacuation in case of emergency, detailing exits, stairways, and pathways. Plumbing fixtures are analyzed to meet health and comfort standards, ensuring sufficient sanitation facilities for the users. This section also considers zoning requirements, ensuring that the project adheres to local regulations regarding building height, setbacks, parking, and land use.

By addressing these elements, the Code Analysis section ensures that the project not only meets functional and aesthetic goals but also complies with legal and safety standards, creating a secure and sustainable environment for its users.

*"We have building codes that protect people with disabilities we can see, but we lack the same codified protection for people whose disabilities we can't see."*

*- Jonah Schatz,  
Architectural Designer*

# CODE ANALYSIS

## Building Occupancy Classification | IBC Chapter 3

Education - Group E

Group E (Education) is an occupancy classification used to define spaces primarily intended for educational purposes.

## Building Construction Type | IBC Chapter 6

Type III - A Classification

Type 3A provides a balance between cost and fire safety but may not offer the same level of protection as Type 1 or Type 2. For schools, Type 3A is more commonly used to ensure a reasonable level of fire protection while keeping costs manageable.

Construction Regulations:

Bearing Walls:

Exterior - 2 hrs

Interior - 0 hrs

Non-load-bearing walls and partitions (Exterior):

$X < 5$  - 1 hr

$5 < x < 10$  - 1 hr

$10 < x < 30$  - 1 hr

$X > 30$  - 0 hr

Floor Construction - 1 hrs

Roof Construction - 0 hrs

## Building Allowable Height and Area | IBC Chapter 5

Allowable Height | (Section 504.3) :

Group E - 85ft

Allowable Stories | (Section 504.4) :

Group E - 4 stories

Allowable Area | (Section 506.2) :

Group E - 70,500 sf

## Preliminary Occupancy Calculations | IBC Chapter 10

### Occupancy Calculations:

#### Individual Spaces:

Sensory Rooms (4): 520 nsf / 20 nsf	26 occupants
Testing Rooms (4): 160 nsf / 20 nsf	8 occupants

#### Communal Spaces:

Communal Room: 1000 gsf / 15 gsf	67 occupants
Classrooms (2): 700 nsf / 20 nsf	35 occupants
Restrooms (4): 64 nsf / 20 nsf	4 occupants

#### Administration Spaces:

Staff Offices (4): 900 gsf / 150 gsf	6 occupants
Entry: 125gsf / 15 gsf	9 occupants

#### Service Spaces:

Storage: 150 gsf / 300 gsf	1 occupants
Maintenance: 100 gsf / 300 gsf	1 occupants
Mechanical: 375 gsf / 300 gsf	1 occupants

Total Occupancy:	158 occupants
------------------	---------------

## Plumbing Fixtures | IBC Chapter 29

These plumbing fixtures will be integrated throughout the entire building, ensuring accessibility and functionality in every space.

Water Closets:	4
Lavatories:	4
Drinking Fountains:	2
Service Sink:	1

## Building means of egress | IBC Chapter 10

### Sizing Standards:

Minimum Width of Egress:  $158 \text{ occupants} \times 0.2 \text{ inch per occupant} = 31.6''$

Other Egress Components:  $158 \text{ occupants} \times 0.15 \text{ inch per occupant} = 23.7''$

Maximum: 75 feet to travel to egress path

Occupant Load per Story: 1-500

Number of Exits and Exits Access Doorways: 250 feet travel distance, 2

### Figure 7.2 Zoning

My site is located in an R1-6 zone, designated for single-family residential use, and is surrounded by similar R1-6 zoning on all sides.

R1-6 =  
Single Family Residential

R2 to R3 =  
Multi-Family Residential

Site Total Area =  
7.3 Acres

Site Total Buildable Area =  
2.9 Acres



### Zoning of the Site and Adjacent Properties

Zoning: R1-6, Single Family Residential

Adjacent Zoning: R-2, Multi-Family Residential

Within my site, there are no overlays or any preserved historical buildings.

### Permitted Uses + Relationship to Proposed Use

Permitted Use: This project is permitted in this district because it is a public school.

### Development Standards

Max Height: 30'

Minimum Front Setback: 20'

Minimum Lot Depth: 100'

Minimum Lot Width: 60'

Minimum Rear Setback: 15'

Minimum Side Setback: 5'

Minimum Site Area: 6,000

Minimum Side Street Setback : 10

### Parking Standards

Considering I am attaching to a school, there is already existing parking within this site. However, within an elementary school, 1 parking space is needed per 300 sf of classroom + office. There is currently 88 parking stalls on site. I will be adding 1,420 sf of classroom and office space.

$1,420 \text{ sf} / 300 \text{ sf} = 4.7$ , + 5 additional parking stalls

I will need to add 5 stalls to the site considering I am adding more square footage.

# TEMPE ZONING

Design standards play a critical role in ensuring the functionality, safety, and visual appeal of the built environment. Chapter 4 addresses mechanical equipment, such as satellite dishes and cooling towers, which cannot be concealed due to their unique functional requirements. These features must be made visually subordinate through architectural elements that blend with the main building's design, maintaining compliance with building code standards. Development plan reviews ensure these elements are properly integrated into the overall design.

Chapter 7 focuses on landscape design, establishing standards for plant materials, hardscapes, and screening elements to create functional, accessible, and visually appealing outdoor spaces. Landscaping must reduce dust, glare, and erosion while supporting ADA accessibility. Water-intensive landscape features are limited to 20% of the landscapable area over 10,000 square feet, excluding certain large-scale facilities like parks and schools. Trees play an essential role in screening and shading, with specific guidelines for size, placement, and prohibited species. Street trees are required along all frontages, with a minimum of one tree per 30 linear feet. Clear vision requirements ensure unobstructed sightlines at intersections and driveways, while pathways must maintain appropriate groundcover and shrub heights. Pedestrian amenities such as wide sidewalks, seating, and shade structures further enhance the landscape, contributing to a welcoming and safe environment. Masonry walls must match the primary building's materials, with decorative or living walls as potential alternatives when visual screening isn't required.

Chapter 8 emphasizes appropriate lighting levels to support wayfinding, safety, and architectural flexibility. Exterior lighting is required for pathways, courtyards, entrances, and other outdoor spaces to reduce conflicts between design and landscaping. Lighting also aids in crime prevention and surveillance while minimizing glare and light pollution that could intrude on neighboring properties or the night sky.

Finally, Chapter 9 governs signage to balance functionality and aesthetics. Sign regulations are designed to promote an attractive cityscape by preventing visual clutter and ensuring adequate identification for businesses and other uses. Standards address the size, type, location, and maintenance of signs, distinguishing between those visible to pedestrians and those for vehicular traffic. The regulations aim to uphold public safety, enhance the community's visual appeal, and support free speech rights.

Together, these chapters provide a comprehensive framework for ensuring the built environment adheres to functional, safe, and visually cohesive design standards.





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**CONCLUSION**

## CONCLUSION

This section serves as a concluding reflection on the research and work completed throughout the semester. It provides an opportunity to revisit the project's overarching themes, insights gained, and the evolution of ideas. The reflection highlights the connections between the initial concepts, the detailed analysis, and the final outcomes, emphasizing how these elements collectively shaped the design process.

In addition to the reflection, a figure notes section will be included to conclude the book. This section will serve as a reference, offering detailed explanations and acknowledgments for the visuals, diagrams, and figures presented throughout the chapters. Together, these components provide a cohesive wrap-up, bringing the project's narrative to a thoughtful and organized close.

This semester has been an incredible journey of discovery and learning, particularly as I explored the intricate process of designing a building for the real world. I've gained a deep appreciation for the extensive research and thoughtful planning required before even submitting a proposal. Each layer of analysis—from understanding the needs of users to adhering to codes and regulations—has reinforced the importance of a methodical, informed approach to architecture.

Moving forward, my goals are clear: I aim to design sensory spaces that allow for individual regulation, creating specialized rooms where children can regain focus in controlled, supportive environments. Additionally, I will develop flexible classrooms that foster collaboration, addressing a critical need for children with learning disabilities. By incorporating spaces that offer both passive and active explorations, I will balance physical activity with moments of calm, offering restorative views of nature. Lastly, enhancing accessibility and wayfinding will ensure that the space remains intuitive and easily navigable for all users.

Through thoughtful design, careful consideration of the research, and an unwavering commitment to user needs, I am confident in achieving these goals. This project is not just about creating a functional building—it's about crafting a space that truly enhances the lives of its users, committing to growth, inclusion, and well-being.



# FIGURE NOTES

## Chapter 1 - Introduction

Figure 1.1 blah blah blah

## Chapter 2 - Position Statements

Figure 2.1 Tuscon Retreat

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Figure 2.2 Taliesin West

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Figure 2.3 SkySong Center

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Figure 2.6 IDK

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## Chapter 3 - Typology

Figure 3.1 Split Diagram

By Author

Figure 3.2 Little Girl

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Figure 3.3 Traditional

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Figure 3.7 School

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## hapter 4 - Program

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## Chapter 5 - Space Analysis

Figure 5.1 Classroom  
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Figure 5.17 Entry  
By Author

Figure 5.18 Maintenance  
By Author

Figure 5.19 Mechanical  
By Author

Figure 5.20 Storage  
By Author

## Chapter 6 - Site

### Figure 6.1 Tempe, AZ

Tempe, Arizona, Housing Development Bans Residents from Having Cars - Curbed." Accessed December 11, 2024. <https://archive.curbed.com/2019/11/20/20973302/tempe-arizona-development-no-cars-culdesac>.

### Figure 6.2 Shading Area By Author

### Figure 6.3 Prickly Pear Cacti

"The Plant List : The Arizona Native Plant Society." Accessed December 11, 2024. <https://aznps.com/the-plant-list/>.

### Figure 6.4 Apache Area

Homes.com. "Apache." Accessed December 11, 2024. <https://www.homes.com/local-guide/tempe-az/apache-neighborhood/>.

### Figure 6.5 Pueblo Style

Phoenix Home & Garden. "A 1990s Adobe Gets a Crisp, Contemporary Update," December 1, 2022. <https://www.phgmag.com/a-1990s-adobe-gets-a-crisp-contemporary-update/>.

### Figure 6.6 Site Options

Homes.com. "Apache." Accessed December 11, 2024. <https://www.homes.com/local-guide/tempe-az/apache-neighborhood/>.

### Figure 6.7 Thew Aerial

Homes.com. "Apache." Accessed December 11, 2024. <https://www.homes.com/local-guide/tempe-az/apache-neighborhood/>.

### Figure 6.8 Site Plan By Author

### Figure 6.9 Detailed Plan By Author

### Figure 6.10 Site Plan By Author

### Figure 6.11 Site Plan By Author

## Chapter 7 - Code Analysis

Figure 7.1 Tempe, AZ

"Historic Preservation Facilities Directory | City of Tempe, AZ."  
Accessed December 12, 2024. <https://www.tempe.gov/Home/Components/FacilityDirectory/FacilityDirectory/534/20780?npag=5>.

Figure 7.2 Shading Area

By Author

Figure 7.3 Prickly Pear Cacti

"The Plant List : The Arizona Native Plant Society." Accessed  
2024.











